POST-2015 CONSENSUS

Post-2015 Development Agenda

Bangladesh Perspectives

ICT Infrastructure

SPEAKERS AND CONTRIBUTORS

Marcus Adaktusson of Grameenphone

Grameenphone is the leading telecommunications service provider in Bangladesh. With more than 50 million subscribers (as of October 2014), Grameenphone is the largest mobile phone operator in the country. Grameenphone was the first company to introduce GSM technology in Bangladesh. It also established the first 24-hour Call Center to support its subscribers. With the slogan Go Beyond, Grameenphone promises its customers to bring the best of communication technologies so that they can Go Beyond.

Alliance for Affordable Internet

The Alliance for Affordable Internet (A4AI) is the world's broadest technology sector coalition. A4AI wants everyone, everywhere, to be able to access the life-changing power of the Internet affordably. A4AI's goal is to achieve the UN Broadband Commission target of entry-level broadband priced at less than 5% of monthly income, thereby enabling billions more people to come online.

To achieve this vision, A4AI assembled a powerful coalition of the willing. Through A4AI, public sector, private sector and not-for-profit organizations are coming together to create policy and regulatory solutions that drive down the cost of Internet access around the world.

Alexia Gonzalez Fanfalone

Alexia Gonzalez Fanfalone is currently a doctoral candidate at the Toulouse School of Economics (TSE). Her main areas of expertise are ICT infrastructure and regulatory issues in the telecommunications sector. Ms. Gonzalez Fanfalone holds a master's degree in Economics from TSE. Her recent publications include: "OECD Review of Telecommunication Policy and Regulation in Colombia" (2014), "International Traffic Termination" (OECD, 2014), "Mobile Handset Acquisition Models" (OECD, 2013), and contributions to the chapter on Internet Infrastructure of the "OECD Communications Outlook 2013."

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Summary: White Paper Report by Alexia Gonzalez Fanfalone

A global Copenhagen Consensus study on broadband connectivity showed that tripling the coverage of mobile networks in the developing world from 21% to 60% led to benefits worth 17 times the original investment. Bangladesh's mobile broadband penetration lags significantly behind most other developing countries, with less than 1% of the population having broadband subscriptions. Increasing this to 60% would have enormous value, but every taka spent would only return between 3 and 6 taka of benefits.

Information and Communications Technology (ICT) is a transformative technology for any economy. It improves productivity for businesses at all scales and can also help deliver health, education and government services to citizens. Mobile technology, in particular, is a big factor in boosting rural economic development, which is particularly important for Bangladesh.

Not only does Bangladesh lag far behind the average developing country in terms of broadband coverage, it is also well behind other countries in the region. In 2013, only 6.5% of Bangladeshis used the Internet, compared to 15.3% in India and 10.9% in Pakistan. Mobile broadband reaches just 0.4% of the population and only 1% of households have fixed broadband connections.

Broadband is such an important enabling technology that it is difficult to estimate the complete impact on the economy. Because the country starts from such a low baseline, getting up to the target of 60% broadband penetration means getting 107 million subscribers online.

The sheer cost of building the infrastructure is one reason why the return on investment in broadband is lower in Bangladesh than elsewhere. The country's relatively low GDP is also a factor: investment costs will be similar across countries, but economic benefits will not be as large as for a more prosperous country. In fact, though, the benefit estimate is quite conservative, so this probably represents the lower end of the possible range.

But there are several institutional changes which could make the benefit higher. One constraint is the current control of the transmission network by two established players: Power Grid Company of Bangladesh and Fiber@Home. Opening up the network to competition would see better use of existing capacity. A second constraint is international connectivity, via six cables through India and a single submarine cable. Fortunately a second undersea cable should be ready for use in 2017.

The ICT sector is also unfortunately loaded with excess costs, with a 21% import duty on handsets and a 57.8% levy on goods and services. Although this might seem like a good way for the government to raise revenue, as it holds back economic growth this is a very short-sighted policy.

Bangladesh, in common with Pakistan and some African countries, has also kept the price of connecting incoming international calls high to maximize revenue, but in practice reducing the cost would greatly increase traffic.

Investing in a massive extension of mobile broadband coverage could give a real boost to growth in Bangladesh, but to make the most of this, the government must increase competition and reduce the burden of taxation.

White Paper Report by Alexia Gonzalez Fanfalone

The Post 2015 UN development Agenda includes as a target to increase the availability of ICTs in the developing world. The research undertaken for the Copenhagen Consensus Center, published last December 2014, pinned down more specific ICT targets related to broadband deployment with the aim of increasing the impact of this development goal by rendering it more precise and measurable. The study found that expanding mobile broadband about three-fold in developing regions – from 21 to 60% -- will have a significant cost (about $1.3 trillion), which represents simply the cost of connecting up about two billion more people to the Internet, but this investment is money very well invested yielding a return **$17** for every dollar spent.[1]

Bangladesh, however, is severely lagging in Broadband infrastructure compared to the average of developing countries, so the investments needed to achieve this target are very large, to say the least, as the target embeds a 60-fold increase in terms of mobile broadband subscriptions per 100 inhabitants. The present paper attempts to put this suggested development target in the context of Bangladesh, and using a similar methodology as the report published in December by the Copenhagen Consensus Center, it finds that it yields a significant benefit of around **$5** for every dollar spent.

In addition, this paper points out some reasons why this Benefit Cost Ratio (BCR) may be smaller for the case of Bangladesh, which is mostly related to the current regulatory framework that may be providing too few incentives to invest in network deployment. As such, some policy suggestions are made as to improve the impact of public investment on ICT infrastructure.

Importance of ICT infrastructure and the UN development Post 2015 Agenda

Why do we care about information communication technologies (ICT) infrastructure in the context of the next round of UN development goals? Expanding affordable access to ICT infrastructure has become a priority for policy makers because they are important enablers for social inclusion and economic development.

With the Internet being such an important resource in the modern world, broadband has become a vital platform that helps boost economic growth and has the potential to lift people out of poverty (e.g. a World Bank 2009 study showed a 10% increase in broadband penetration increased GDP growth by 1.34% in low to medium income countries). Not only does it help firms' productivity, but also health, education and government services can be delivered through this platform. Therefore, there is a strong case for governments looking to the next set of global targets to include broadband access.

Why do ICTs matter for Bangladesh?

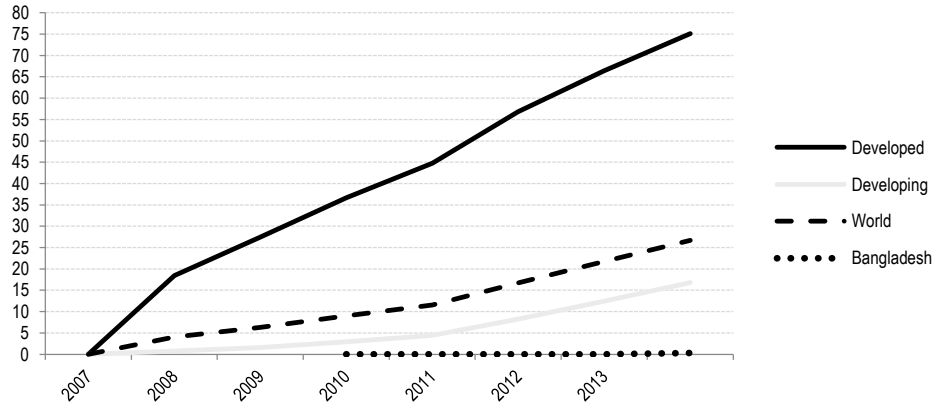
Several studies have identified ICT infrastructure, and in particular mobile telephony, as a key enabler of rural economic development through different channels like increasing price efficiency and reducing travel costs

[1] The increase of penetration would be from an average level of around 20% in 2014 to a level of 60% in 2030. The resulting Benefit-Cost Ratio (BCR) is in the realm of 14.41 to 21.74 (depending on scenario assumptions and considering a discount rate of 3%).

(Aker 2010, Parker et al. 2012, Jensen 2007, Fafchamps & Minten 2012).[2] Given that Bangladesh is predominantly a rural country, the development of ICT infrastructure could potentially increase the country's overall productivity (Chowdhury and Alam, 2009).[3]

Despite tremendous growth in broadband availability around the world in recent years, major differences persist among developed and developing countries (e.g. mobile broadband penetration was only 21.1% in developing countries in 2014 compared to 83.7% in the industrialized world). This '*digital divide'* is even more striking in Bangladesh where mobile broadband penetration was less than 0.4% in 2013, (Figure 1).

Figure 1: Active mobile Broadband subscriptions per 100 inhabitants



Source: ITU-ICT Eye http://www.itu.int/net4/itu-d/icteye/Topics.aspx?TopicID=7

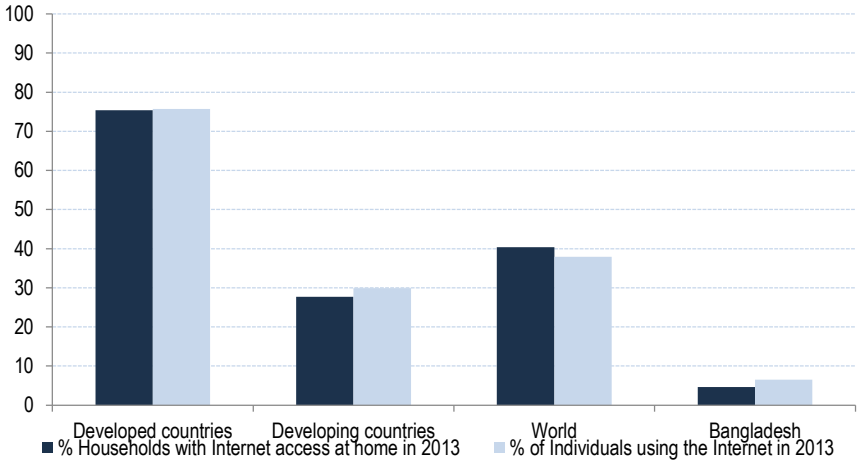
Therefore, Bangladesh has a strong case for investing in broadband as it could potentially harness incredible growth opportunities. With the help of the international donor community and adequate regulations in place, it could have a real shot at reducing the *digital divide*.

a. Status quo of Broadband Infrastructure in Bangladesh

Bangladesh is lagging in terms of ICT infrastructure compared to the average of developing countries, as well as to its regional peers. For instance, in 2013 it had less than half the amount of people using the Internet than India (i.e. India had 15.3%, Pakistan 10.9%, and Bangladesh only 6.5% of individuals).[4] Only 4.6% of households had Internet access in Bangladesh compared to an average of 28% of households in developing countries and 76% in developed economies (Figure 2). Furthermore, Internet connections exhibit about half the speed than connections in Sri Lanka (i.e. 1.8 Mbps versus 3.4 Mbps, according to Akamai data).[5]

[2] See http://lirneasia.net/wp-content/uploads/2014/07/4-LIRNEasia_Kapugama_Mobile-phone-impacts_250814.pdf for a review of existing literature. Also find Parker et al (2012) here http://faculty.london.edu/nsavva/RML22Jul.pdf
[3] See http://www.tlainc.com/articl185.htm
[4] http://www.itu.int/ITU-D/ict/statistics/explorer/index.html
[5] "State of the Internet 2013" See http://www.akamai.com/stateoftheinternet/soti-visualizations.html#stoi-map

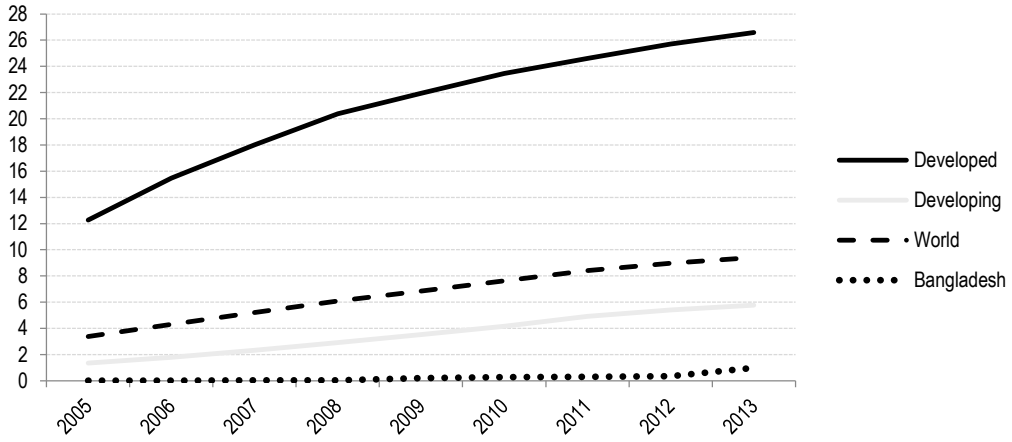
Figure 2: Household and Individual access to the Internet in 2013



Source: ITU-ICT Eye http://www.itu.int/net4/itu-d/icteye/Topics.aspx?TopicID=7

With 1% fixed broadband penetration in 2013, it is still lagging from the average of developing countries of 6% (see Figure 3). In addition, fixed broadband penetration in Asia was 8 times larger than in Bangladesh in 2013.[6]

Figure 3: Fixed (wired) broadband subscriptions per 100 inhabitants



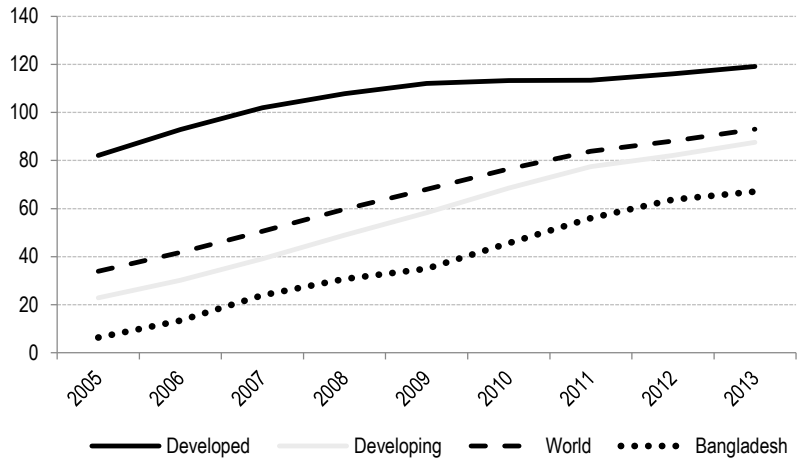
Source: ITU-ICT Eye http://www.itu.int/net4/itu-d/icteye/Topics.aspx?TopicID=7

On the bright side, most people from developing countries are getting online for the first time through mobile phones (LIRNEasia, 2014). In Bangladesh, as is the case in many developing countries, although fixed networks are insipient, mobile telephony is the most readily available ICT good in the population (e.g. mobile telephony penetration grew from less than 1% in 2003 to 67% in 2013, Figure 4). Therefore, mobile

[6] If we consider exclude outperformers (e.g. Singapore, New Zealand, South Korea, Japan, and Australia), this average was still around four times larger (i.e. 4.2%).

broadband may play a crucial to reach end users in rural and remote areas in Bangladesh given that it is a cost effective solution.

Figure 4: Mobile telephony subscriptions per 100 inhabitants



Source: ITU-ICT Eye http://www.itu.int/net4/itu-d/icteye/Topics.aspx?TopicID=7

a. ICTs and the Sustainable Development Goals in the Post 2015 UN agenda

Given its importance for development, ICT infrastructure deployment has been embedded in the current draft of Sustainable Development Goals for the Post-2015 Agenda (e.g. "increase availability of ICT infrastructure"). The research paper on ICT Infrastructure from the Copenhagen Consensus reduced the scope of this target to broadband availability to increase the precision and impact of this goal.

Broadband is such an important enabling technology that it is difficult to estimate the complete impact on the economy, which will vary with local circumstances (i.e. geographical conditions, technology used to deploy networks, regulatory frameworks, etc.). Nevertheless, investing in mobile broadband in the developing world seems like a really smart move as it results in an average benefit **$17** for every dollar spent.[7]

To adapt the Cost Benefit Analysis to the context of Bangladesh, a similar methodology is used. Given its cost effectiveness, the main target selected is to **increase mobile broadband penetration in Bangladesh up to 60%** (from a 1% level in 2014) by the year 2030 (see Table 1 below). Mobile broadband is likely to play a significant role in Bangladesh given its high population density, insipient fixed voice networks (only 1% penetration), and large mobile voice penetration. Furthermore, it is a cost effective solution for developing countries with similar characteristics as the cost per user of deploying a mobile network may be three times lower than a fixed network (Rahunathan, 2005). Two other targets -expanding fixed broadband to 20%, and

[7] The precise target was: Increase mobile broadband penetration around three-fold in developing regions of the world by the year 2030 (with a Benefit-Cost ratio ranging from 14.41 to 21.74), with the BCR depending on the scenario assumptions and considering a discount rate of 3%.

achieving universal mobile broadband coverage by the year 2030- can also be consulted in Tables A1-A3 of the Annex.

Table 1: Mobile Broadband Target analysed for Bangladesh

Target examined for Bangladesh	Equivalent broadband targets contained in Copenhagen Consensus (CC) Infrastructure Report
Increase mobile broadband penetration in Bangladesh from 0.4% to 60% in the year 2030	**Target 4 of CC report:** Increase Developing countries' mobile broadband penetration from 21% in 2014 to 60% in 2030

Increasing mobile broadband subscriptions up to 60% (per 100 inhabitants) in 2030 yields high returns for Bangladesh resulting in an average benefit **of $5** (i.e. $4.72) for each dollar spent in a conservative scenario, and **$6.5** in an optimistic scenario (Table 2).[8] This would require vast amounts of network investment as it represents the cost of getting **107 million subscribers online** (i.e. a 60-fold increase in broadband penetration instead of a 3-fold increase of the comparable developing world target). However, it would also reap significant benefits in terms of GDP in the range of $140 -200 billion (see Table A4 in the Annex).[9] In other words, each Bangladeshi inhabitant would receive a benefit of around USD 900-1200 (in net present value terms) during the next 15 years.

Table 2: Benefit to Cost Ratio of increasing mobile broadband penetration to 60% in Bangladesh (years 2015-2030)

Discount Rate 5%			**Discount Rate 3%**		
NPV Benefits* (millions USD)	**NPV Costs (millions USD)**	**BCR***	**NPV Benefits* (millions USD)**	**NPV Costs* (millions USD)**	**BCR***
$209,381	**$46,580**	**4.5**	**$254,714**	**$53,987**	**4.72**

Notes: (*) The Benefits and costs are the average of two different methodologies with different ways of calculating the benefits, based on the Copenhagen Consensus Infrastructure Assessment paper (see Table A4 of Annex for details). A conservative scenario is assumed with an elasticity of the impact of broadband in the economy of 0.014, a growth rate of the economy assumed to be around the regional average for Asia from the World Bank Estimates (5%), a status quo GDP for Bangladesh of USD 149,990,454,541, and high cost of infrastructure deployment (i.e. USD 640 for a wireless line and USD 1910 for a fixed line).[10]

The difference of this BCR with respect to the developing world target could be due to the fact that Bangladesh is starting from much lower levels of people being online, as well as a lower GDP level. The main caveat of this methodology is that it simplifies the assumptions of deployment costs (that may vary given the regulatory framework in Bangladesh). Also, it uses a conservative estimate of the impact of broadband on

[8] The average BCR is considering two different methodologies that yield a BCR of 3.01 and 6.43 with a 3% discount rate to calculate the NPV. The optimistic scenario considers a growth rate of Bangladesh´s economy of 6.8% (based on World Bank projections) instead of 5%. The BCR of the optimistic scenario ranges from $4.55 to $8.4, depending on the way of calculating benefits.
[9] Using a 5% discount rate, an assuming the 1st methodology and a conservative scenario. The dollar value difference among methodologies relies on how benefits are assessed, which is explained in the Infrastructure Assessment Paper.
[10] See http://data.worldbank.org/indicator/NY.GDP.MKTP.CD/countries/BD?display=graph for Bangladesh's GDP and http://www.worldbank.org/en/publication/global-economic-prospects/regional-outlooks/sar#1 for growth estimates.

GDP growth (i.e. elasticity of 0.014 based on Koutroumpis, 2009). Other studies, such as Katz (2012) found that for India the impact of broadband on GDP had an elasticity of 0.031. Thus, the BCRs presented here could be the lower bound of the potential benefits that broadband could deliver to Bangladesh.

Given the importance of ICTs for development, what type of regulatory measures should be kept in mind for Bangladesh?

Lowering the cost of network deployment and fostering investment incentives

Deployment of broadband infrastructure is without a doubt expensive given the fixed costs it entails. Given the insufficient broadband network deployment in Bangladesh, any regulatory measure that reduces the cost of network deployment should help public funds have a greater impact. In this sense, two policies that prove important for Bangladesh are: i) providing incentives to invest in fiber that connects cities (i.e. backbone and backhaul), and ii) increasing the number of international connectivity points (e.g. another submarine cable).

i. The importance of backbone and backhaul fiber connectivity

A regulation put in place in 2011 under the label of "Amended Guidelines for Infrastructure Sharing" restricted the ability of mobile networks to lease their excess capacity on links that connect different cities in the country (i.e. transmission links). This means that a duopoly on transmission capacity was created, so Internet Service Providers can only buy capacity from two players (Power Grid Company of Bangladesh (PGCB) and Fiber@Home.) Meanwhile, industry ISPs and Network Operators have complained that this measure results in lower coverage of Internet services with inadequate quality given capacity constraints.[11]

ii. **International connectivity**

At present, domestic Internet traffic in Bangladesh is connected to the world through one fiber optic submarine cable (i.e. the SEA-ME-WE 4), and six cross-border terrestrial cables that go through India. Relying on a sole submarine cable can be problematic as experienced last January 2015 when this cable was disconnected for ten days and users experienced lower broadband speeds.[12] A move in the right direction is that there is a new cable is under construction to be finished in 2017 (i.e. the SEA-ME-WE 5).[13]

Lowering the cost of telecommunications services by fostering competition

i. Reduction ICT goods and services taxes

Despite the fact that the expansion and adoption of ICTs deliver positive externalities to the economy, Bangladesh is the world leader on ICT sector specific taxes taxing an average of around 60% among different ICT goods and services, way above the country's general VAT tax of 15%.[14] For instance, telecom infrastructure providers have to pay 55% in taxes to import network equipment, and mobile handsets have an import duty of 21%, even if this is a necessary input for the most prevalent form of ICT service in

[11] Albeit, quality of service (QoS) issues, especially relating to mobile, is a rather technical area, nevertheless, barriers to infrastructure deployment in definite terms affect quality of service.
[12] See http://lirneasia.net/2015/01/route-diversity-saves-bangladesh-for-now/
[13] See http://lirneasia.net/2014/09/sea-me-we-5-to-improve-bangladesh-connectivity-because-of-myanmar-will-cost-usd-10m-less/
[14] In second and third place one can find countries like are Turkey and the Republic of the Congo, which only add 26.1% and 23.8%, respectively.

Bangladesh (Information Technology and Innovation Foundation, 2014).[15] Although governments in the past have been keen to tax telecommunication services due to the rapid growth of the sector (Cave and Mfuh, 2011), this can prevent the sector's development and its positive economic spillovers (Hausman, 2000; Katz and Roux, 2010). Thus, an easy way to boost the adoption of ICTs is to reduce these taxes.

ii. **Increasing competition in international incoming traffic**

Around the globe, liberalization of telecommunications markets has allowed the price of international calls to drastically drop, accompanied by a large increase in traffic. For instance calls from the United States to India have increased 8-fold from 2003 to 2011, while the rates decreased by 10-fold. However, contrary to this trend, -Bangladesh, Pakistan and some African countries- from 2008 onwards have introduced monopolies on international incoming traffic (through international traffic gateways).[16]

Bangladesh introduced International Gateway Services (IGW) in 2009.[17] The main argument to impose this policy is the belief that raising international termination rates contributes to government revenue, but given the reduction in calls this entails (and the "*grey traffic*" it may create), it is unclear that this policy proves beneficial (OECD, 2014). For instance, when Pakistan raised its rates from $0.02 to $0.088 in October 2012, traffic fell from more than 2 billion minutes per month to 500 million, with a resulting loss in consumer welfare (OECD, 2014). Given the latter negative effects, the Pakistani Government withdrew from this policy in June 2014, and now prices of international incoming calls should drop thanks to competition. [18] Furthermore, even though all countries in the East African Community (EAC) region, except Kenya, have imposed these surcharges on International Incoming Traffic, in November 2013 the EAC argued that these practices hindered trade and urged member states to withdraw from these practices.[19]

Finally, the difference between international and domestic termination rates provides incentives for a "grey" market to arise in order to bypass official rates, and estimates suggest that the amount of *grey traffic* in Bangladesh in 2009 was almost 50% of total traffic.[20] In light of these challenges, it is worthwhile revising this international gateway policy in Bangladesh.

Taking advantage of the cost effectiveness of deploying mobile broadband networks in Bangladesh

i. Spectrum Management

Given the potential role of mobile networks for Bangladesh, spectrum policy is of vital importance, as 3G and 4G network deployment depends on it. How spectrum is awarded will naturally have an impact on

[15] See http://www.itif.org/publications/digital-drag-ranking-125-nations-taxes-and-tariffs-ict-goods-and-services. Also see http://lirneasia.net/2014/10/bangladesh-has-highest-ict-equipment-specific-taxes/ and Daily Star, http://bd.thedailystar.net/bangladesh-worst-offender-in-ict-tax-47858

[16] See http://www.btrc.gov.bd/sites/default/files/ildts_policy_2010_english_0.pdf for Gateway Regulation in Bangladesh, and see http://www.thedailystar.net/business/hasina-gives-nod-to-proposal-for-an-igw-common-switch-58074

[17] See http://www.breezecom.biz/doc/%28IGW%29%20Services%20in%20Bangladesh.pdf

[18] See http://propakistani.pk/2014/06/17/breaking-pakistan-government-withdraws-ich/

[19] See http://eala.org/key-documents/reports/doc_details/437-on-spot-assessment-of-regionalcooperation-in-ict.html.

[20] See http://lirneasia.net/wp-content/uploads/2011/09/CurbingGreyTraffic.pdf

competition, which is currently a pressing issue given the forthcoming spectrum auctions in Bangladesh.[21] There is concern that publicly owned mobile operators might face differential treatment since they are the only ones currently not paying their spectrum dues. The regulator is trying to tackle this issue, but if unaddressed, it may inhibit investment incentives.[22]

[21] GSMA recently stressed the importance of transparency for the forthcoming spectrum auctions in Bangladesh, and made a plea to reduce ICT taxes http://www.thedailystar.net/gsma-stresses-transparent-spectrum-auction-65671 http://www.thedailystar.net/mobile-operators-threaten-to-shun-spectrum-auction-61262

[22] http://www.thedailystar.net/telecom-regulator-to-go-tough-on-operators-for-dues-54565

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Qiang, Christine Zhen-Wei (2010), *Broadband Infrastructure Investment in Stimulus Packages: Relevance for Developing Countries*, info, Vol. 12 No. 2, p. 43, http://siteresources.worldbank.org/EXTINFORMATIONANDCOMMUNICATIONANDTECHNOLOGIES/Resources/282822-1208273252769/ Broadband_Investment_in_Sti

Rahunathan, Adithya (2005), *The Economic Advantage of Wireless Infrastructure for Development*, Inter-American Development Bank, Sustainable Development Department Technical Papers Series.

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ANNEX

Table A1: Targets analysed for Bangladesh

	Targets for Bangladesh examined	Equivalent broadband targets contained in Copenhagen Consensus Infrastructure Report
Target 1B	Increase fixed broadband penetration from 1% in 2013 to 20% in 2030 in Bangladesh	**Target 2 of CC report:** Increase Developing countries' fixed broadband penetration from 6% in 2014 to 20% in 2030
´Target 2B	Increase mobile broadband penetration in Bangladesh from 0.4% to 60% in the year 2030	**Target 4 of CC report:** Increase Developing countries' mobile broadband penetration from 21% in 2014 to 60% in 2030
Target 3B	Universal mobile broadband in Bangladesh by the year 2030	**Target 8 of CC report:** Universal mobile broadband penetration by the year 2030

The number of subscriptions that would be covered by each of the three targets allows to calculate the stream of costs and benefits over the period 2015-2030 (see Table A2).

Table A2: Mapping penetration targets to the change in lines needed for each target

	Mobile Broadband Penetration 2013	Subscribers 2013	Penetration target 2030	Change in penetration 2013-2030	Subs. in 2030* (millions)	Change in subs. 2013-2030 (millions)
Target 1B Fixed Broadband	1%	1522443	20%	19.02%	35.9779082	34.4554652
Target 2B Mobile broadband	0.4%	485270	60%	59.6%	107.9337	107.4485
Target 3B Universal mobile broadband	0.4%	485270	100%	98.6%	177.3711	176.8858

Note: *To estimate targets in terms of subscribers for the year 2030, the following estimated population figure for Bangladesh in the year 2030 was used: 179 889 541 (United Nations population estimates with constant mortality rate).

The resulting Benefit Cost Ratios according to two different methodologies of assessing the benefits are the following.

Table A3: Benefit to Cost Ratio of ICT Infrastructure, Bangladesh (years 2015-2030)

	1st Methodology		2nd Methodology		
Discount rate	3%	5%	3%	5%	**3%***
Target 1B: Increase fixed broadband penetration from 1% in 2013 to 20% in 2030 in Bangladesh	3.14	3.05	3.70	3.57	5.25
Target 2B: Increase mobile broadband penetration from 0.4% in 2013 to 60% in 2030 in Bangladesh	**3.01**	**2.92**	**6.43**	**6.07**	**8.39**
Target 3B: Achieve Universal Mobile broadband penetration by 2030 in Bangladesh	1.83	1.78	6.38	5.94	7.94

Notes: A conservative scenario is assumed, with an elasticity of the impact of broadband in the economy of 0.014, a growth rate of the economy assumed to be around the regional average for Asia from the World Bank Estimates (5%), a status quo GDP for Bangladesh of USD 149,990,454,541, and high cost of infrastructure deployment (i.e. USD 640 for a wireless line and USD 1910 for a fixed line). [23] * The expected growth rate for Bangladesh of 6.8% is used instead of 5%

Table A4: CBA of ICT Infrastructure: Increasing mobile broadband penetration to 60% in Bangladesh in 2030

Discount Rate	**5%**			**3%**		
	NVP Benefits*	**NPV Costs***	**BCR**	**NVP Benefits***	**NPV Costs***	**BCR**
1st Methodology						
	$136,145.32	**$46,580.06**	**2.92**	**$162,390.87**	**$53,986.84**	**3.01**
2nd Methodology						
	$282,616.75	**$46,580.06**	**6.07**	**$347,036.50**	**$53,986.84**	**6.43**

Notes: conservative scenario is assumed, with an elasticity of the impact of broadband in the economy of 0.014, a growth rate of the economy assumed to be around the regional average for Asia from the World Bank Estimates (5%), a status quo GDP for Bangladesh of USD 149,990,454,541, and high cost of infrastructure deployment (i.e. USD 640 for a wireless line and USD 1910 for a fixed line). [24]

[23] See http://data.worldbank.org/indicator/NY.GDP.MKTP.CD/countries/BD?display=graph for Bangladesh's GDP and http://www.worldbank.org/en/publication/global-economic-prospects/regional-outlooks/sar#1 fro growth estimates.
[24] See http://data.worldbank.org/indicator/NY.GDP.MKTP.CD/countries/BD?display=graph for Bangladesh's GDP and http://www.worldbank.org/en/publication/global-economic-prospects/regional-outlooks/sar#1 fro growth estimates.

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BRIEFING NOTE FOR BANGLADESH

Social Economic Impact

Broadband can have a significant impact on socio-economic development, most notably in developing countries like Bangladesh.

The World Bank indicates that a 10% increase in broadband penetration (the percentage of people in a country who have fixed or mobile broadband subscriptions) can contribute to a 1.38% increase in GDP.

There is a significant return on investment from broadband. A recent statistic from the Copenhagen Consensus Center suggests increasing mobile broadband penetration levels threefold across the developing world would provide a return of $17 for each $1 invested.

The socio-economic impact of Internet and broadband- improved healthcare, education, social cohesion, transparency and governance - is well documented.

Bangladeshis Internet and Broadband

The Bangladeshi government has recognized the importance of broadband. Amongst other things, its 2009 Broadband Policy set ambitious targets to increase broadband penetration to 30% by 2015. With 9 months left until 2016, the latest data from the International Telecommunications Union (ITU) indicates this target will be missed.

The ITU suggests Internet usage in Bangladesh, which includes shared usage, is 6.5%, and fixed broadband penetration is only 0.63%. (It should be noted that these are the ITU's 2014 statistics that were gathered in 2013).

Recent statistics from the Government of Bangladesh put Internet penetration at 25%. This figure is in stark contrast to the ITU numbers, but still below the target set out in the 2009 Broadband Policy.

Most Bangladeshis will access the Internet through mobile phones with the recent introduction of mobile broadband, following the 2013 breakthrough licensing of operators to provide 3G services.

Mobile broadband penetration is now said to stand at 6% and presents a real opportunity for Bangladesh to catch up with its regional neighbors.

The need to catch up is obvious when one looks at Bangladesh's rate of Internet usage vis a vis its regional neighbours. Internet usage in Iran stood at 31.4%, Sri Lanka 21.9%, India 15.10%, Nepal 13.3%, Pakistan 10.90%, Iraq 9.2%. Usage in Afghanistan 5.9% and Myanmar 1.2%, is less than in Bangladesh.

Affordability

While access to broadband remains a challenge to Internet and broadband use in Bangladesh, it is clear the cost of services and the quality of those services presents another significant challenge.

In an assessment of 165 countries Bangladesh does not rank well in terms of broadband costs.

Ranked 105, a fixed line broadband connection has a download speed of 0.25MBps and costs 5.89% of GNI per capita, above the UN target of 5% of GNI per capita and totally unaffordable for the millions of Bangladeshis living on $2 per day or less (World Bank - 2010 Poverty headcount was 76.5%).

For mobile broadband costs, Bangladesh ranks 122 out of 144 countries assessed. An entry-level prepaid mobile broadband connection costs 11.78% of GNI per capita, more than double the UN target of 5%.

Mobile broadband is the way most Bangladeshis will connect to the Internet. In most countries mobile broadband connections cost less than fixed line connections, which are usually more costly to provide. The high cost of mobile broadband in Bangladesh is a concern. It suggests the cost structures for the industry might be too high and this is having a knock-on effect on consumers.

The 2014 Affordability Report by the Alliance for Affordable Internet (A4AI) also highlights the challenges facing Bangladesh. The report assesses broadband Infrastructure and the policy and regulation that should enable cost-effective investment in improving it. It also assesses current broadband adoption rates and the policy and regulatory frameworks in place to encourage growth and ensure provision of affordable and equitable access.

The report ranked Bangladesh 33 out of 51 developing countries, with a composite score of 37.1 out of 100. India was ranked 30 with a score of 39.1. The top performing country was Costa Rica, with a score of 63, and the top performing developing country was Rwanda at 52.

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Internet Speed

The speed of Internet in Bangladesh is a challenge. Slow speeds undermine the Internet experience for users and the potential for the Internet to create the socio-economic benefits it can create. In the 2009 Broadband Policy broadband was defined as 128kbps, well below global standards set by the UN and leading countries like the USA, which recently defined broadband as providing upload speeds of 1Mbps to 3Mbps and downloads of 4Mbps to 25Mbps.

Clearly, a revised broadband policy will need to establish a definition of broadband that is "real" high-speed Internet and provide a policy environment for it to be achieved.

Factors that Affect Affordability, Speed and Access

Tax

The Global System for Mobile Association (GSMA) has cited Bangladesh as one of the world's worst performing countries in terms of the level of tax levied on the mobile sector- see Mobile taxes and fees A toolkit of principles and evidence

The average annual growth of the taxes and fee burden on mobile services across all markets is 2.1 per cent. In Bangladesh the annual increase rate is 8%.

Seven or more different taxes appear to be levied on the Bangladeshi mobile sector, including spectrum and operating license fees, social obligation fund contribution and revenue share tax – accounting for 26 per cent of the burden placed upon the mobile sector. Currently, fines and penalties due to different interpretations of the tax base make-up around 30 per cent of that burden.

These sector specific taxes are said to undermine the investment for Internet and broadband use.

It should be acknowledged that some progress is being made on rationalising the taxation of mobile services. Bangladesh recently announced planned reductions to levies on new mobile subscriptions. Time will tell how these work out.

Limited power supply and intermittent electricity

Less than 50% of Bangladeshis are connected to the national grid. Of the 25858 mobile towers in Bangladesh (2014), 14% off-grid. DG-battery is the main supply of power. The intention is to have 36679 sites by the end of end 2015. Whether the power challenges can be mitigated remains to be seen.

Spectrum

Operators' access to, and use of, spectrum has a huge bearing on their ability to provide services and the quality and cost of those services.

Bangladesh regulator, BTRC has issued guidelines for the 1800 and 2100 spectrum auction, which was recently approved by the Prime Minister. The auction is scheduled for the 30th of April 2015. BTRC plans to allocate 10.6 MHZ spectrum in 2 slots and another of 5.6MHz. A floor price has been set at BDT 22 million per MHz.

The government plans to raise revenues to its exchequer up to BDT 50 billion (1USD = 77BDT). For those focused on making services more affordable, it is important the price set for the auction is commercially rationale and obtaining the potential windfall is not the priority of government.

Already, there have been some criticisms about the process. The GSMA, for example, has concerns about a perceived lack of transparency in the spectrum allocation process – observers suggest Grameen Phone will not be able to participate on the basis of conditions that apply to the auction. In light of this and other factors, there have been calls for greater transparency.

Opportunities for Policy and Regulatory Change

The government of Bangladesh hopes to achieve 100% Internet penetration and 50% broadband penetration by the Golden Jubilee of liberation in 2021 (in six years).

By far the biggest opportunity is the development of a new Bangladesh broadband policy that puts issues of affordability at its center.

A draft policy has been made open to the public, and it is important that all key stakeholders in Bangladesh's ICTs development provide comment on it.

The future of the internet in Bangladesh

Copenhagen Consensus Centre, Dhaka, March 9

grameenphone

About Grameenphone

Subscriptions	Market share	Mobile penetration
52 million	**~42%** SIM market share	**~44%** Real mobile penetration **15%** Active data users

Internet for All

New verticals - new opportunities

Education

Health

Agriculture

The barriers

Coverage

Afford-ability

Awareness

Content

WIKIPEDIA
The Free Encyclopedia

a2i
জনগণের দোরগোড়ায় সেবা
Service @ Doorsteps

We have a choice

See internet as any other new service and optimize resources for the short term

We have a choice

See internet as the great equalizer and a critical GDP driver

Summary

- Clear and strong ambition is to drive the market, not wait for it to develop
- Internet is still an “elite” phenomena in Bangladesh
- Affordability, awareness and content need to work in unison