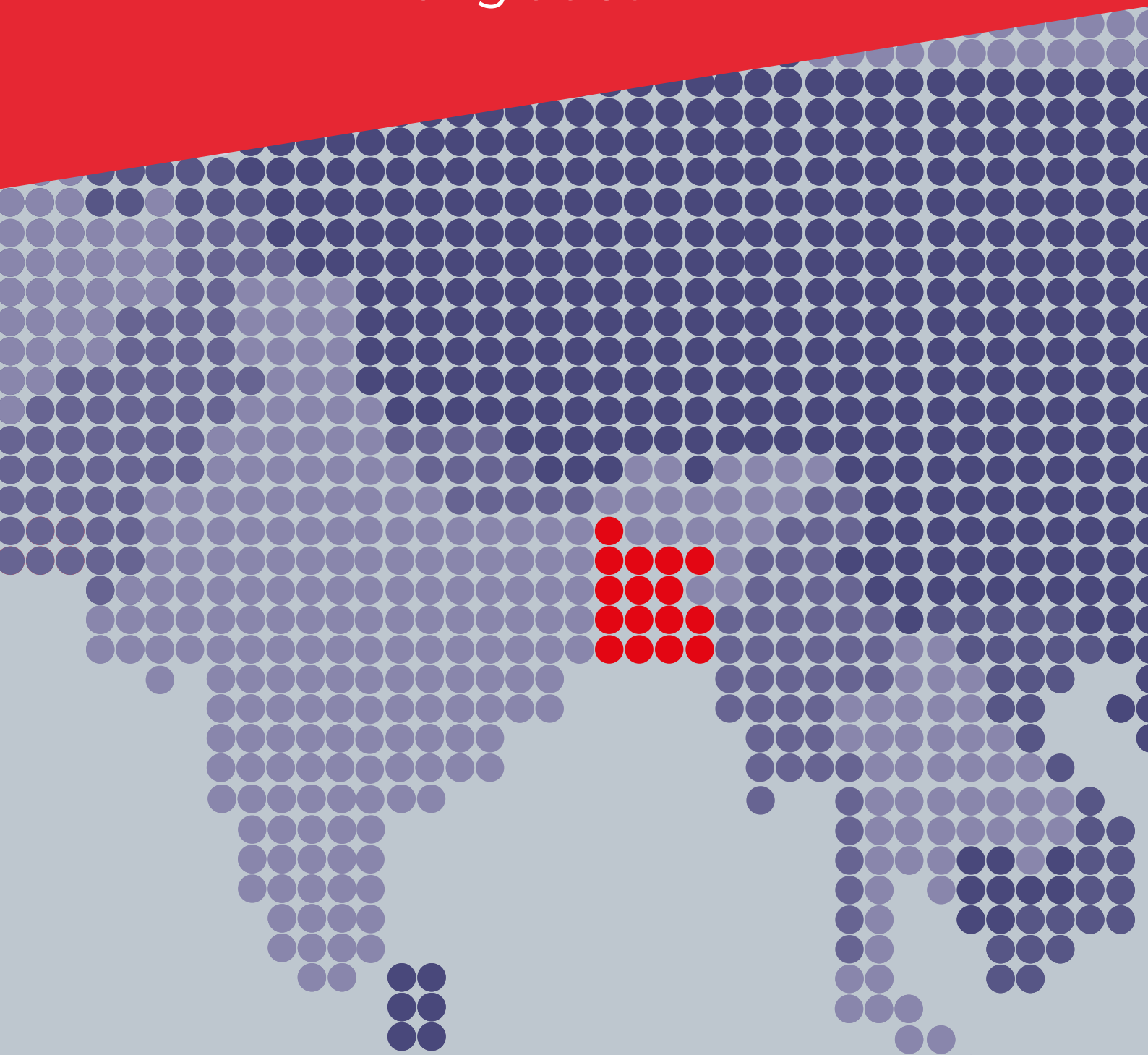
Digital Inclusion and Mobile Sector Taxation in Bangladesh



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Deloitte contact
Davide Strusani
TMT Economic Consulting, London
dstrusani@deloitte.co.uk
www.deloitte.co.uk

CONTENTS

"Achieving Middle Income Country status by 2021 will require more than business as usual. Bangladesh will need to do more of the same and beyond."

Dr. Zahid Hussain, Senior Economist, World Bank Bangladesh[1]

Executive Summary

Digital inclusion: the role of mobile

Since the award of the first licence in 1989, the **mobile sector in Bangladesh has enabled 66 million Bangladeshis to gain access to transformative mobile technologies, including the mobile internet**[2]. The increase in mobile access has brought a wide range of benefits to the Bangladeshi economy and society, including increased productivity and economic growth. Further increasing access to mobile has the potential to further accelerate Bangladesh's economic and social development towards the government's objectives of "Digital Bangladesh" and its wider Vision 2021 objectives[3], which include reaching middle-income country status in the next six years.

A number of economic studies have recognised the potential that mobile has to support positive economic impacts, in particular:

- Studies by the GSMA and the Word Bank have estimated that a 1% increase in mobile penetration could lead to an increase in the GDP growth rate of 0.28%, while a 1% increase in internet penetration can lead to an increase of up to 0.077% in the GDP growth rate[4].
- The World Bank has found that in low and middle-income countries, such as Bangladesh, every 10% increase in broadband penetration accelerates economic growth by 1.38%[5].
- Other research suggests that for every new job created in the Bangladeshi mobile sector, 11 are generated in the wider economy[6].

In terms of social benefits, mobile supports a wider ecosystem which enables millions of Bangladeshis to benefit from the exchange of ideas and information, as well as improved access to healthcare, education, financial and agricultural information services.

Mobile operators also make a significant contribution to public finances. **Mobile operators' turnover represented about 0.74% of the country's GDP in 2013. In parallel, they accounted for 6.6% of Bangladesh's total tax revenues**[7]. By investing in network rollout and innovation, mobile operators have the potential to extend access to mobile services – or "digital inclusion" – thereby enabling more Bangladeshis to fully participate in the economy and gain access to vital services.

Today, Bangladesh's fixed line penetration is less than 1%[8]. On the other hand, **over 90% of people with access to the internet use it via a mobile connection over the 2G network, via feature-phones or low-end smartphones**[9,10] and, in the future, it appears likely that **mobile will represent the most cost-effective way of extending access to Information and Communications Technologies (ICT) and broadband internet in the country.** The key role of mobile technologies, which can be deployed quickly and at relatively low cost, has been recognised by the Broadband Commission, which has found that typically mobile is more effective than fixed line telephony in enabling countries to achieve their national broadband goals[11].

1. http://www.worldbank.org/en/news/feature/2012/11/13/towards-accelerated-inclusive-and-sustainable-growth-in-bangladesh
2. Unique subscribers, measured by the GSMA Intelligence Database.
3. Centre for Policy and Dialogue, 2007, Bangladesh Vision 2021.
4. This is based on GSMA 2012 and Qiang, C. Z. W., Rossotto, C.M., 2009.
5. Qiang, C. Z. W., Rossotto, C.M., 2009.
6. See, for example, Moretti, 2010, O2 for ONS, 2002, Ovum, 2010; Zain, Ericsson, 2009, Kaliba et al., 2006.
7. Deloitte analysis based on operator data and IMF. This includes non-recurring fees, such as the initial spectrum fee, 2G licence fee and advance income tax. If these fees are excluded, mobile operators contributed 4.1% to total tax revenues in 2013.
8. World Bank Development Indicators, 2013.
9. http://www.basis.org.bd/resource/Bangladesh-Telecoms-Tiger.pdf
10. GSMA Intelligence, 2014, Country Overview: Bangladesh,
11. ITU/Broadband Commission/Cisco, Planning for progress: Why national broadband plans matter, 2013.

What is holding digital inclusion back?

Despite substantial industry growth recently, 92 million Bangladeshis remain without access to mobile services, and only 4.5% of the population is connected to a 3G network[12]. This places Bangladesh behind its neighbours in terms of subscriber penetration, and below global and regional averages[13]. Although 2G coverage is already close to 100%, the first new generation networks have only recently been deployed and the expansion of mobile broadband and digital inclusion in Bangladesh is constrained by barriers to affordability on the part of consumers and barriers to investment on the part of mobile operators. Both of these types of barriers are affected by mobile-specific taxation.

In Bangladesh, nearly 31.5% of the population lives below the national poverty line[14], and annual GDP per capita was approximately US$958 in 2013[15]. This means the cost of a smartphone is, for some people, similar to a monthly wage. The taxation of mobile services raises costs and prevents access to mobile for many of the poorest Bangladeshis.

Among the taxes that directly impact the affordability of mobile in Bangladesh are[16]:

- **The "SIM card sales tax":** This is a special tax on SIM card sales that amounts to BDT 300[17], which equates to 5% of the average monthly wage in Bangladesh[18] and reduces demand for mobile services.

- **Surcharges on mobile services:** The potential introduction of a 1% surcharge on mobile services such as calls, SMS and data usage, in addition to the VAT rate, has been considered by the government. This has the potential to reduce take-up and usage of mobile, especially of 3G and 4G services.

In Bangladesh, Average Revenue per User (ARPU) is one of the lowest in the world and the second lowest in the region. With six national mobile operators, the high level of competition in the market means that mobile operator revenue has been decreasing over recent years, creating a challenging environment for investment. At the same time, Foreign Direct Investment (FDI) in the telecoms sector has fallen in recent years compared to other sectors[19]. In this uncertain climate for investment and low profitability, high mobile-specific taxes may further discourage investment, especially in new 3G and 4G technologies. This is reflected by Bangladesh's low ranking on the Ease of Doing Business Index, ranked 170 in 2014, a decline relative to its position at 129 in 2013[20].

Mobile operators in Bangladesh paid about US$1.2 billion in recurring tax payments in 2013, which represented about 45% of total sector revenue. If one-off spectrum and licence fees are included, the total payments amounted to over US$1.8 billion in 2013. Of these tax payments, mobile operators pay a number of taxes and fees that are specific to the sector or are imposed at higher rates for mobile:

- **Higher taxes on profits and revenues compared to other sectors:** The standard rates of corporation tax are 27.5% and 37.5% for publicly and non-publicly traded companies respectively, while the corresponding rates for mobile operators are 45% and 40%. This is in addition to a 5.5% revenue share tax that is applied to mobile operators only.

- **Customs duties and other charges on imports:** The rates of customs duties in Bangladesh vary between 2% and 25%,

12. GSMA Intelligence Database, 2014.
13. Refer to Figure 4.
14. The poverty line is defined as the minimum level of income regarded as adequate to secure access to basic necessities. This can be defined as the national poverty line based on the cost of a basket of essential resources that an average individual consumes in one year in a particular country. Under this definition, the proportion of people living in poverty in Bangladesh was 31.5%. Alternatively, the common international poverty line, as defined by the World Bank, is US$1.25 at 2005 Purchasing Power Parity (PPP). Under the latter convention, around 43% of people are estimated to live in poverty in Bangladesh. Percentage of people below the poverty line is sourced from World Bank Development Indicators and latest year available is 2010.
15. World Bank Development Indicators, 2013. This compares to US$1,115 at current prices estimated by Bangladesh Bureau of Statistics for the year 2013/2014.
16. International Bureau of Fiscal Documentation, Bangladesh Telecommunications Authority and operator data.
17. This is equivalent to around US$3.84.
18. International Labor Organization and Deloitte analysis, 2011. ILO reports the average monthly wage to be 5460 in 2010.
19. FDI in Bangladesh, Survey Report, January to June 2014.
20. World Bank's Doing Business Index, 2014.

and often the highest rate is applied to essential network equipment[21]. In 2013, mobile operators paid an estimated US$116 million in custom duties on imported network equipment[22]. This has a significant negative impact on the incentive for mobile operators to invest and could have long-run implications for network coverage and 3G rollout.

- **Annual regulatory fees:** Mobile operators pay a number of regulatory fees, including annual fees such as the Social Obligation Fund and annual licence fees, all of which amounted to approximately US$72 million in 2013[23]. This is in addition to one-off payments for spectrum and licences.

- **Spectrum acquisition costs:** Overall, mobile operators paid over US$500 million in relation to 3G spectrum acquisition through an auction held in 2013[24], plus about US$116 million in non-recurring licence fees. Since 2014, a 10% withholding tax has also been introduced on all tax payments made by mobile operators to the Bangladesh Telecommunications Regulatory Authority (BTRC). High spectrum and licence costs can limit scope for investment, as can regulatory uncertainty.

These mobile-specific taxes and fees negatively impact affordability of mobile services and may deter both local and foreign investment which could be directed towards next generation technologies and improvements in quality of service. The mobile industry in Bangladesh is taxed more than other sectors, effectively discouraging consumption of mobile services and potentially resulting in foregone positive spillovers provided by the sector.

An agenda for mobile taxation reform: Digital inclusion, economic growth and fiscal stability

The mobile sector recognises its role in contributing to public revenues in Bangladesh. However, the current focus on short-term tax revenue collection needs to be balanced with the cost in terms of long-run economic growth. The Bangladeshi government has already seen some of the benefits of reforming mobile-specific taxes, by reducing the SIM card sales tax from BDT 800 to BDT 600 in 2011 and again to BDT 300 in 2013. During the same period, mobile penetration increased substantially, achieving a total of 46 million additional connections in three years.

By transitioning to a taxation structure where the mobile industry is treated equally to other sectors, the Bangladeshi government can increase digital and financial inclusion and economic growth and, potentially, generate higher tax revenues through more efficient and broader-based taxation. Reforming mobile taxation has the potential to further increase and enable the investment required to further expand mobile broadband network infrastructure.

A model of the Bangladeshi mobile sector and its macroeconomic impacts was used to estimate the impacts of changes to taxation on mobile penetration, economic growth and tax revenues. The quantitative impacts of the following potential reforms are estimated in this report.

21. The highest rate of customs duty is 25% and is applied to finished products. However a number of items are subject to lower rates of 2-12%.
22. Deloitte analysis based on operator and GSMA Intelligence Database.
23. Ibid.
24. Ibid.

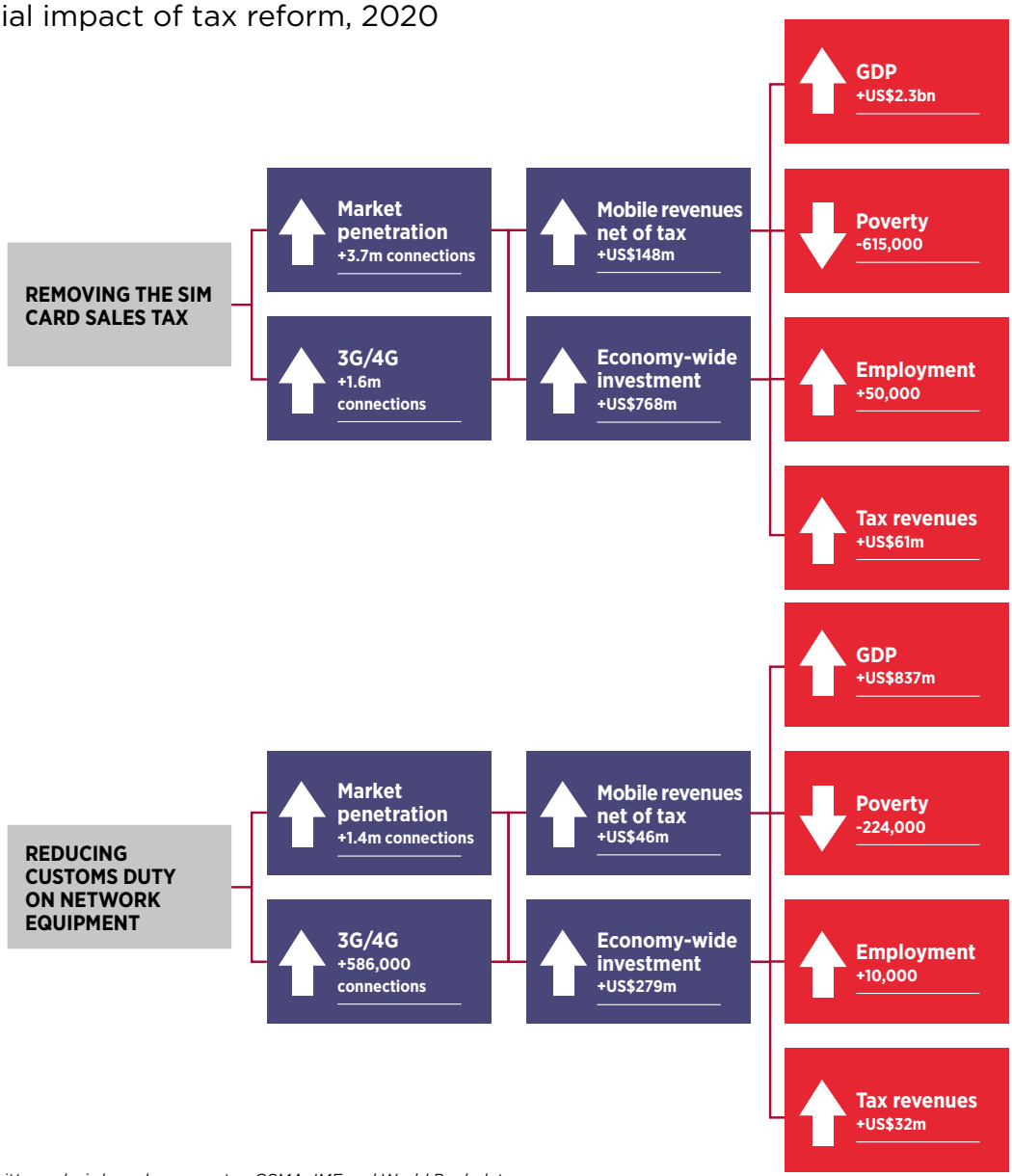
1. Removing the SIM card sales tax promotes affordability and access to mobile services.

Removing the tax has the potential to increase the number of mobile connections by 3.7 million. It is estimated that 1.6 million would be 3G/4G connections. The productivity increase induced by the expanding mobile sector could produce an increase of US$2.3 billion in GDP, lifting 615,000 Bangladeshis out of poverty. While tax revenues could be lower in the short term due to reduced taxation on the mobile sector, higher GDP growth means that the government could gain revenues from more broad-based taxation; over time, the net impact on government revenues of this scenario would be an increase of up to US$61 million in 2020[25].

2. Reducing customs duties on imported network equipment supports greater investment in networks.

By reducing the cost of essential electronic network equipment, this measure could improve the business case for new infrastructure investment in unconnected areas and positively impact future mobile broadband coverage and quality. It is estimated that as a result of the tax change, mobile operators' revenues could increase annually, reaching an additional US$46 million in 2020. The impact of this scenario would be an overall economic impact of US$837 million of additional GDP and increased investment by over US$279 million across the Bangladeshi economy.

Potential impact of tax reform, 2020



Source: Deloitte analysis based on operator, GSMA, IMF and World Bank data

Figure 1

25. Please see Appendix A.3 for further details.

In addition to the wide economic benefits that they can deliver to Bangladesh, these proposals have the potential to increase government tax revenues in the long term. While government revenues could decrease in the short term as a result of these policies, the positive spillovers generated by mobile have the potential to result in a revenue neutral impact by 2017 and make an even greater contribution to the government's budget in subsequent years. In a similar manner to the above scenarios, the following tax reforms also have the potential to promote access to mobile services, contributing to Bangladesh's economic development and to government tax revenues:

3. Reducing the corporation tax rate in line with other sectors

Reducing the corporation tax rate in line with other sectors has the potential to increase investment and enable mobile operators to pass on decreases in price to consumers, which would allow more of the Bangladeshi population to benefit from 2G and 3G technologies, promoting affordability and digital inclusion.

4. Removing the withholding tax on regulatory payments

Removing the withholding tax on regulatory payments has the potential to incentivise investment in spectrum acquisition and network roll-out. Appropriate pricing of spectrum appears a key issue if Bangladesh is to enjoy the benefits of further uptake of mobile broadband services.

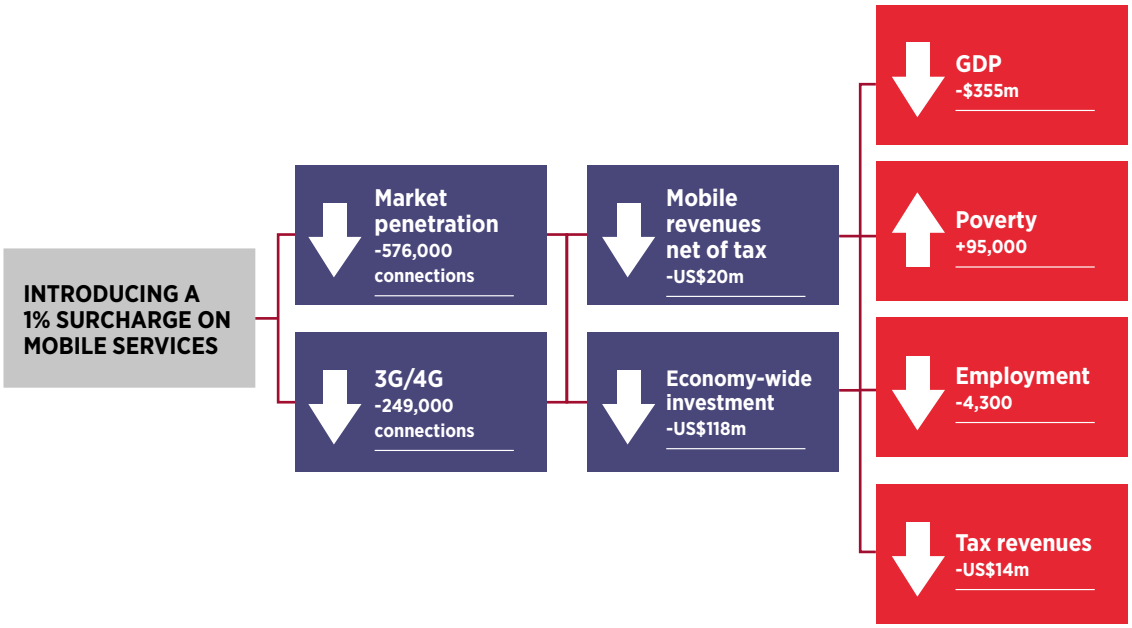
5. Promoting a coherent tax policy

Promoting a coherent tax policy facilitates investment and has the potential to promote transparency and incentivise investment both domestically and internationally. Importantly, it could reduce administrative burdens and uncertainty that can result frequent policy changes, thus delivering efficiencies and cost savings for mobile operators.

On the other hand, increasing mobile-specific taxation may signal that the government wishes to discourage consumption of ICT services and in the medium-term may lead to lower economic development and tax revenues. This principle is illustrated by modelling the potential economic impact of the planned introduction of a 1% surcharge on mobile services.

Introducing a surcharge on mobile services may harm mobile development and hinder economic growth. This tax has the potential to decrease consumption of mobile services and result in 2.9 million fewer mobile connections over six years, of which 835,000 would be 3G connections. This could result in lower than expected GDP growth and potentially lower GDP by US$355 million in 2020, as well as lower tax revenues by US$14 million.

Potential impact of introducing a 1% surcharge on mobile services, 2020



Source: Deloitte analysis based on operator, GSMA, IMF and World Bank data

Figure 2

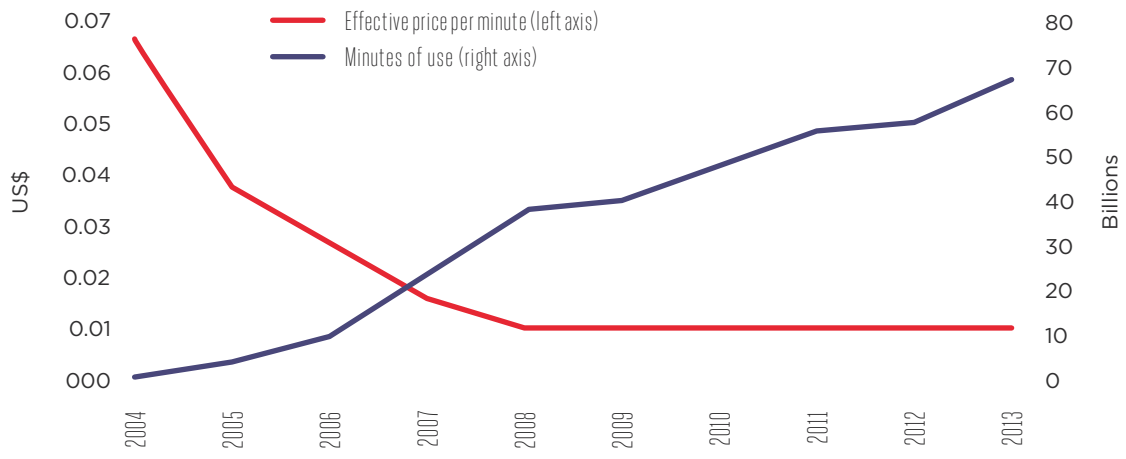
1 The mobile sector in Bangladesh

1.1 Overview of the mobile sector

Since the introduction of mobile telephony in Bangladesh in late 1989[26], the sector has experienced massive expansion, and the number of connections has grown at a Compounded Annual Growth Rate (CAGR) of 42% over the period 2003-2014[27]. Today, approximately 99% of the population is covered by mobile networks, and there are 122 million mobile connections in total[28].

With six national mobile operators, competition in the market has led to a significant fall in the price paid for mobile services by Bangladeshi consumers. The ITU has found Bangladesh to be one of the countries with the cheapest prepaid mobile prices globally, with US$1.41 paid monthly for a prepaid service in 2014[29]. This has enabled millions of Bangladeshis to enjoy the benefits of mobile services.

Effective price per minute[30] and minutes of use



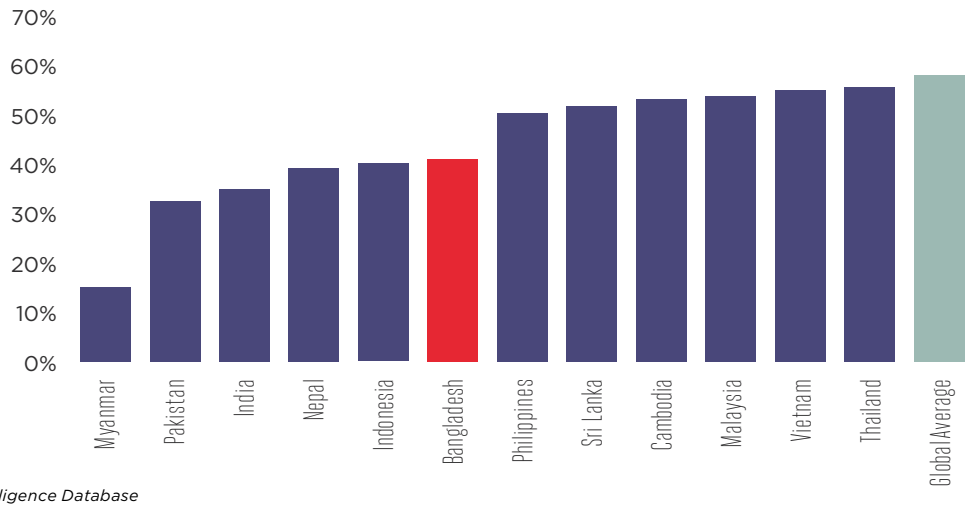
Source: GSMA Intelligence Database

Figure 3

26. First license was issued to Bangladesh Telecom (Pvt.) Limited and Sheba Telecom: GSMA, 2014, Country overview: Bangladesh.
27. Deloitte analysis based on GSMA Intelligence Database.
28. GSMA Intelligence Database, 2014; Market penetration is based on total active connections.
29. ITU, Measuring the Information Society, 2014. The price measures a basket of mobile services per user, including calls, SMS, data and handset costs.
30. Blended APRU divided by minutes of use per connection.

However, total mobile penetration along with the number of unique subscribers in Bangladesh remains low compared to other countries in the region. The number of subscribers has grown less rapidly over recent years. Although there were approximately 66 million unique subscribers in Bangladesh at the end of 2014, mobile services remain unavailable to more than 92 million Bangladeshis, or 42% of the population.

Proportion of the population with at least one mobile connection (unique subscriber penetration), regional comparison

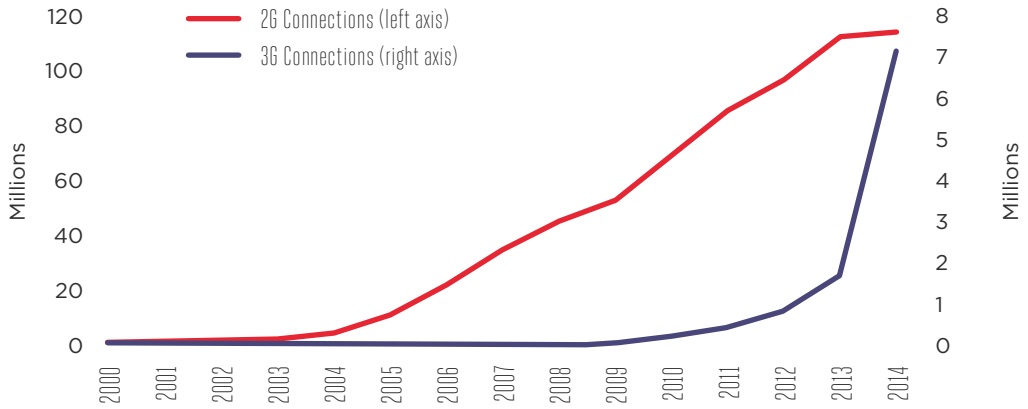


Source: GSMA Intelligence Database

Figure 4

While 2G penetration has been improved, the roll-out and take up of 3G services is particularly low in Bangladesh, currently reaching only 4.5% of the population. There are currently around 7.1 million 3G connections[31].

2G and 3G connections



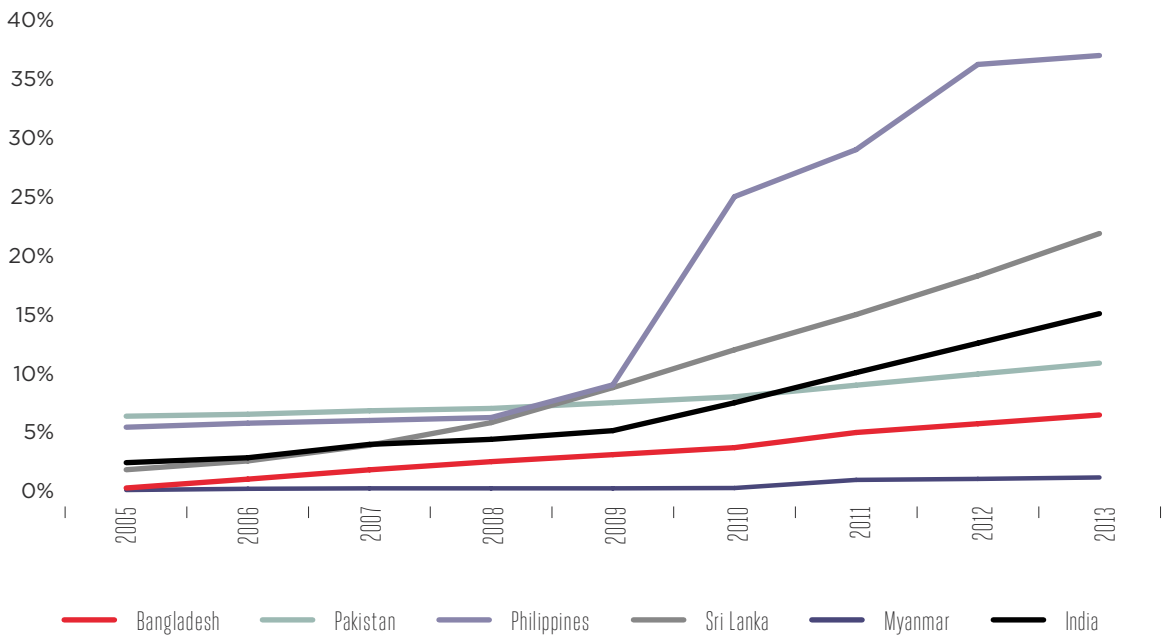
Source: GSMA Intelligence Database

Figure 5

31. GSMA Intelligence Database, 2014.

At 6.3% in 2013, the proportion of the population with internet access (whether from a fixed or mobile network) is low[32] in comparison with other countries in the region and has displayed moderate growth over recent years. Over 90% of people with access to the internet use it via a mobile connection over the 2G network, via feature-phones or low-end smartphones[33].

Internet penetration across the region[34]



Source: World Bank Development Indicators Database

Figure 6

32. World Bank Data Catalogue, 2014.
33. http://www.basis.org.bd/resource/Bangladesh-Telecoms-Tiger.pdf
34 Based on the World Bank statistic 'internet users per 100 people' where internet users are people with access to the worldwide network.

1.2 Mobile supports the government's growth objectives

The development of mobile services has brought an extensive range of benefits to both consumers and businesses in Bangladesh. Mobile has the potential to make an even greater contribution with the growth of 3G and 4G mobile broadband and supporting the development of the "knowledge economy" that lies at the centre of the government's "Digital Bangladesh" Vision 2021[35].

Specifically, mobile services provide widespread benefits across a country's economy and society in the following ways:

1. Mobile services promote digital inclusion and the growth of a knowledge-based economy

Digital inclusion means that the benefits of Information and Communication Technology (ICT) should be available to all, regardless of location or socioeconomic status. Mobile services provide the most cost-effective way of achieving broader digital inclusion and, by facilitating the exchange of ideas and information, can support a move towards a knowledge-based economy. Mobile can also enable more effective delivery of public services. In particular, mobile and broadband communications offer an effective means of bringing healthcare and education services to remote and under-served areas, through m-Government initiatives and mobile applications.

Mobile technology can help support and advance the education system by providing access and personalisation of the learning experience. In India, for example, primary schools used mobile tools to help students from rural, low-income households learn English. Researchers devised an application to improve listening, sentence construction and spelling. Test scores of students using the mobile tool improved by nearly 60%[36]. Similarly, there exists a wealth of mobile applications, such as m-Agriculture, m-Women and m-Health, which have the potential to bring significant socio-economic benefits to Bangladesh, by delivering access to knowledge and skills across a variety of sectors.

Through mobile money (m-Money), mobile access contributes to greater financial inclusion, enabling consumers and businesses to manage their savings, insure themselves against uncertainty and reduce the cost of business transactions. This is particularly relevant in Bangladesh, where many do not have access to traditional financial services.

The World Bank[37] has stated that the movement towards a knowledge-based economy should be the aim of all governments, as knowledge becomes increasingly crucial to preserving national competitiveness. It identifies four pillars of knowledge-based economies, one of which is information infrastructure, with technology such as mobile phones required to facilitate effective communication and the dissemination and processing of information.

2. Mobile services enhance productivity, innovation and economic growth

By enabling businesses and government to deliver their services faster and at a lower cost, mobile services increase productivity across the Bangladeshi economy. Mobile services can reduce transaction costs, making it less costly for Bangladeshis to communicate and conduct everyday business operations, supporting the expansion of businesses and enterprises. Through wider effects on the economy, this helps to increase living standards in Bangladesh and improve Bangladesh's international competitiveness.

35. Vision 2025 Policy document. One Nation, One Vision. Bangladesh Ministry for Economy and Planning, 2014, available at http://www.drrgateway.net/sites/default/files/Bangladesh%20Vision_2021_English.pdf
36. GSMA, Transforming learning through m-Education, 2013.
37. World Bank, The four pillars of a knowledge-based economy, 2009.

Mobile services also create opportunities for investment, innovation and employment in the mobile sector and in a variety of other jobs that form part of the mobile ecosystem, such as equipment providers, workers in the network engineering and maintenance industry, and providers of related business services. Other opportunities enabled by mobile services include the development of mobile applications in healthcare, education and agriculture, and the creation of local content. This has an additional impact on economic growth, and supports the diversification of the Bangladeshi economy.

As a result of these positive impacts, the mobile industry makes a sizeable contribution to the country's GDP. The GSMA estimated that across Asia-Pacific, mobile contributed 4.7% of the region's GDP in 2013[38], while the total contribution of mobile in Bangladesh was estimated to be over 6% of GDP in 2011[39].

3. Mobile services could promote long-run economic growth and fiscal stability

The mobile sector also makes an important contribution to the revenues of the Bangladeshi government. This includes the direct contribution made by mobile operators, which is estimated at 6.6%[40] of Bangladesh's total tax revenues in 2013, and also the tax revenues generated by the wider ecosystem of industries supported by mobile services, which in turn supports fiscal stability and long-run economic growth.

Moreover, a number of studies have already recognised the economic growth potential of mobile, in particular:

- Studies by the GSMA and the Word Bank have estimated that a 1% increase in mobile penetration could lead to an increase in the GDP growth rate of 0.28%, while a 1% increase in internet user penetration in high-income countries can lead to an increase of up to 0.077% in the GDP growth rate[41].

- The World Bank has found that in low to middle-income countries, such as Bangladesh, every 10% increase in broadband subscriber penetration[42] accelerates economic growth by 1.38%[43].

- Other research suggests that for every new job created in the Bangladeshi mobile sector, 11 are generated in the wider economy[44].

Through these positive impacts, the mobile industry can support many of the government's objectives outlined in Bangladesh Vision 2021, including accelerated economic growth[45]. According to a World Bank report, Bangladesh needs to accelerate GDP growth to 7.5%-8% in order to achieve middle-income country status by 2021[46]. The research identifies the increase in the investment rate to at least 33% of GDP, the increase in labour force participation and education, and improvements in infrastructure, as the main efforts required to achieve this target - all of which can be supported by mobile.

The key role of mobile technologies, which can be deployed quickly and at relatively low cost, has been recognised by the Broadband Commission, which has found that typically mobile is more effective than fixed line in enabling countries to achieve their national broadband goals. Specifically, the adoption of a broadband plan can lead to 2.5% higher fixed broadband penetration but 7.4% higher mobile broadband penetration on average[47].

Launched in 2008, Bangladesh's Vision 2021 sets out a range of challenging aspirations for the country's future development. The Vision encompasses eight key pillars, which are aligned with the United Nation's Millennium Development and Sustainable Development Goals. Under those eight pillars, a number of challenging targets have been set out which the country aims to complete by 2021.

38. TGSMA, The Mobile Economy Asia Pacific, 2014.
39. GSMA/Deloitte, Mobile telephony and taxation in Bangladesh, 2011.
40. Deloitte analysis based operator and World Bank data.
41. This is based on a study of 40 economies over the period 1996-2011; for full details of the methodology, see http://www.gsma.com/publicpolicy/wp-content/uploads/2012/11/gsma-deloitte-impact-mobile-telephony-economic-growth.pdf; Qiang, C. Z. W., Rossotto, C.M., 2009. Economic Impacts of Broadband, in Information and Communications for Development 2009: Extending Reach and Increasing Impact, World Bank, Washington D.C., 35-50.
42. The distinction between users and subscribers of telecommunications services should be noted. Users refer to individuals who do not necessarily own or pay for telecommunications services, but who have access to such services through work, family etc. Subscribers, on the other hand, are individuals who pay for subscriptions to such services, to which a number of individuals may have access. Based on ITU, 2014. Manual for measuring ICT Access and Use by Households and Individuals.
43. Qiang, C. Z. W., Rossotto, C.M., 2009.
44. This figure was based on a number of studies conducted in developing and developed countries; see, for example, Moretti, 2010, O2 for ONS, 2002, Ovum, 2010; Zain, Ericsson, 2009,Kaliba et al, 2006.
45. Vision 2025 Policy document. One Nation, One Vision. Bangladesh Ministry for Economy and Planning, 2014.
46. http://www.worldbank.org/en/news/feature/2012/11/13/towards-accelerated-inclusive-and-sustainable-growth-in-bangladesh
47. ITU/Broadband Commission/Cisco, Planning for progress: Why national broadband plans matter, 2013.

The role of mobile in achieving Bangladesh Vision 2021 objectives

	The Pillars of Vision 2021	Key objectives
1.	To become a participatory democracy	• Develop strong democratic institutions, accountability and effectiveness of governance • Strengthen judiciary systems to enhance law enforcement
2.	To have an efficient, accountable, transparent and decentralised system of governance	• Develop programmes with local self-government institutions to be established at grass root levels • Improve revenue generation by simplifying tax policy • Ensure effective property rights
3.	To become a poverty-free middle income country	• Reduce poverty rate to 15% of population by 2021 • Increase investment rate from 24.7% to 33% of GDP
4.	To have a nation of healthy citizens	• Invest in health to achieve a minimum daily intake of 2,122 kilo calories per person, eliminate contagious diseases • Bring primary health care and sanitation for all • Increase average longevity to seventy years, and reduce child and maternal mortality
5.	To develop a skilled and creative human resource	• Invest in knowledge and skills to achieve 100% enrolment at the primary level • Eradicate illiteracy by improving the quality of education and creating a generation educated in science and technology • Institute free graduation degree level education
6.	To become a globally integrated regional economic and commercial hub	• Double the contribution of the industrial sector to national GDP • Support the information technology sector • Improve business and regulatory environment • Achieve urbanisation which balances scale and density – well connected, liveable and inovative urban centres
7.	To be environmentally sustainable	• Protect Bangladesh from the adverse effects of climate change and global warming • Provide energy and water security • Move towards climate resilient sectors and diversify from agriculture
8.	To be a more inclusive and equitable society	• Achieve employment of at least 85% of the work force • Ensure housing for all • Create new employment in the domestic economy

How mobile can help

By providing access to learning resources and fostering information sharing, mobile access can **promote primary and secondary education and increase literacy rates.**

Increased access to information promotes **better health education and health outcomes.**

Mobile services and m-Government initiatives contribute to administration efficiency at local and national government levels, improving **ease of doing business** and making **FDI** more attractive.

Mobile operators actively contribute to **energy efficiency** by installing alternative power sources for their cell sites.

By supporting a large ecosystem of industries and small businesses, mobile services improve **labour and capital productivity,** thus contributing **to increase economic growth, decrease poverty and foster investment.**

Source: Bangladesh Vision 2021 and Deloitte analysis

Figure 7

Vision 2021 aims to leverage ICT in the key areas of human resource development, connecting citizens, digitalising government especially for services targeted to the poorest segments of the population and ICT in business. This goal has been described as the objective of a "Digital Bangladesh" by the government, which recognises that through advances in ICT and by extended access to mobile services, Bangladesh has the potential to achieve the following wider social and economic goals[48]:

- By providing access to learning resources and fostering information sharing, mobile access can **promote primary and secondary education, increase literacy rates and gender equality.**
- Increased access to information promotes **better health education and health outcomes.**
- Mobile services and m-Government initiatives contribute to administration efficiency at local and national government levels, improving **ease of doing business** and making **FDI** more attractive.
- By supporting a large ecosystem of industries and small businesses, mobile services improve **labour and capital productivity,** thus contributing to **increasing economic growth, decreasing poverty and fostering investment.**
- Mobile operators actively contribute to **energy efficiency** by installing renewable power sources for their cell sites, and provide value added services (VAS) that are able to bring **access to water and electricity.**

Many initiatives has been launched in Bangladesh and around the world that harness the potential of mobile to support social development:

SKILLS TRAINING VIA MOBILE IN BANGLADESH

BBC Janana is a large-scale mobile-based English teaching tool which has effectively transformed mobile phones into low-cost educational tools. Users can dial a short code and access bi-lingual audio-lessons and also test their English language skills through their mobile phones. The service is easily accessible on any handset, across all networks and costs as low as US$0.004 per lesson. In Bangladesh and much of South East Asia, English language proficiency is considered critical to improve employment and income opportunities, and this tool could therefore have a transformative impact on the lives of many[49].

MOBILE-ENABLED PAY-AS-YOU-GO ELECTRICITY

Mobile infrastructure is now reaching places not currently served by the national electricity grid. In India, a quality home solar system retails for US$200-400, including a solar panel, battery, charge controller, three or four lighting points and a phone charger port. Without external financial support, a majority of the population living off-grid cannot afford this amount upfront. Simpa Networks operates with a unique lease-to-hold scheme which allows the user to progressively purchase energy in small, user-defined increments. Simpa's customers make an initial down payment of 10-30% for installation of a solar home system (SHS) and they can then purchase energy credit or 'top-up' through SMS on a mobile phone. A part of the customer's energy 'top-up' goes towards repayment of the SHS itself, enabling eventual full ownership of the SHS. Repayment typically takes two to three years. Simpa has run pilots in Karnataka and expects to have sold 20,000 SHS's in six states by the end of 2014. By 2015, the company expects to reach 63,000 rural households as well as small and medium enterprises in India[50].

COMMUNITY POWER FOR RURAL BANGLADESH

In many rural and remote villages that are not connected to the national electricity grid, mobile operators have installed networks of base stations running on renewable energy sources such as wind turbines and solar panels. These are being used to provide power to off-grid homes and businesses through the excess electricity produced by base stations.

48. Ibid.
49. GSMA, The Mobile Economy Asia Pacific, 2014.
50. GSMA, The Mobile Economy Asia Pacific, 2014.

This opportunity is being piloted by Grameenphone with a project in the village of Hobigonj, Sylhet, where no grid connection is available and the only access is by boat. Approximately 140 households are now getting light from 5pm to 12am every day, and the system provides power for running PCs during daytime. One PC is equipped with a software running DHIS (District Helath Information System) based on data collected using mobile phones[51].

1.3 Barriers to digital inclusion in Bangladesh

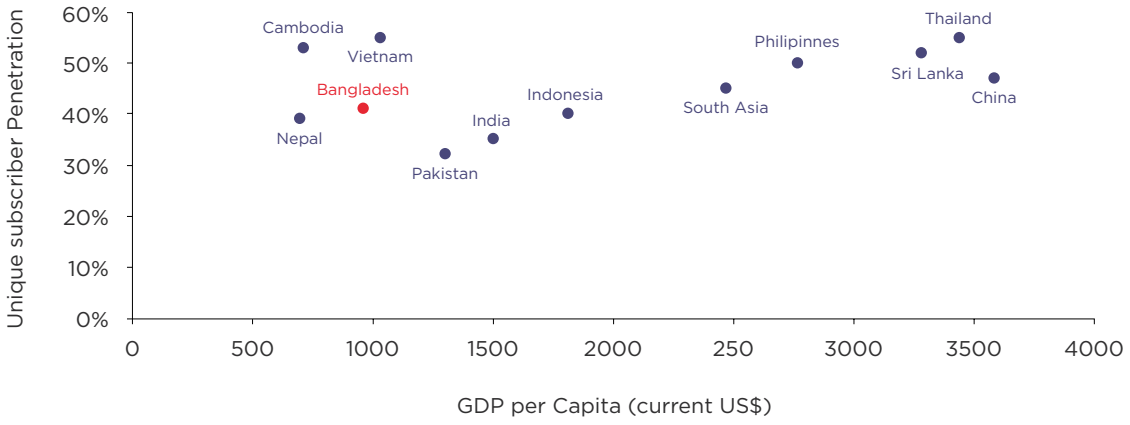
Today, a number of barriers to mobile access are preventing the full benefits of mobile services to be realised by all Bangladeshis; key challenges include affordability of basic mobile and 3G services for all consumers, 3G availability and the quality of service for mobile customers, which in turn depend on the incentives that mobile operators have to maintain appropriate investment levels. Each of these is exacerbated by high taxation and an uncertain policy environment in the country.

There are a number of barriers to digital inclusion in Bangladesh which affect both affordability and investment.

BARRIERS TO AFFORDABILITY

- **Low income levels:** Despite close to 100% network coverage, only 42% of the population subscribes to a mobile service,[52] and affordability remains one of the biggest barriers to mobile adoption in the country. Bangladesh is one of the world's poorest countries, with 31.5% of the population or almost 70 million people living below the national poverty line[53] and GDP per capita was approximately US$958 in 2013[54]. As shown in Figure 8, it has higher poverty rates and lower GDP per capita than neighbouring countries. For example, India's poverty rate was 23.6% in 2012 and GDP per capita was US$1,164 in 2013[55].

Proportion of the population with at least one mobile connection (unique subscriber penetration) and GDP per capita



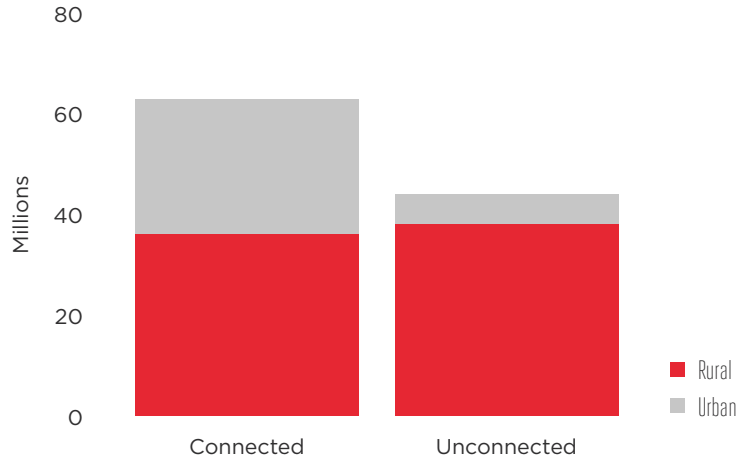
Source: GSMA Intelligence Database and World Bank

Figure 8

51. http://morten.ifi.uio.no/?p=4375
52. GSMA Intelligence Database, 2014.
53. Deloitte analysis based on World Bank data, 2013. The poverty line is defined as the minimum level of income regarded as adequate to secure access to basic necessities. This can be defined as the national poverty line based on the cost of a basket of essential resources that an average individual consumes in one year in a particular country. Under this definition, the proportion of people living in poverty in Bangladesh was 31.5%. Alternatively, the common international poverty line, as defined by the World Bank, is US$1.25 at 2005 Purchasing Power Parity (PPP). Under the latter convention, around 43% of people are estimated to live in poverty in Bangladesh. Percentage of people below the poverty line is sourced from World Bank Development Indicators and latest year available is 2010.
54. World Bank Development Indicators, 2013. This compares to US$1,115 at current prices estimated by Bangladesh Bureau of Statistics for the year 2013/2014.
55. World Bank Development Indicators, 2012 and 2013.

- **Income disparities in Bangladesh:** 85% of the poor live in rural areas, where mobile penetration is lower than in urban areas and around 50%[56]. However, there is also a significant unconnected population in urban areas as 6 million people in urban centres do not own a mobile device. This untapped audience is largely caused by lack of affordability to access given that 2G network coverage is high in both urban and rural areas.

Connected and unconnected adults in rural and urban areas



Source: GSMA Intelligence, Country Overview: Bangladesh, 2014

Figure 9

- **Consumer taxation:** Taxation on mobile services in Bangladesh accounts for a significant proportion of the total cost of utilising mobile services. In 2014, taxes in Bangladesh were found to represent 17.6% of the cost of purchasing and using a mobile phone, equivalent to US$8.5[57]. This is particularly significant when compared, for example, to the average cost of low-end smartphones in the country, which is around US$63 to US$90[58].

As a result, mobile consumers in Bangladesh are very sensitive to price: when mobile prices fell by 67% between 2004 and 2008, usage doubled[59].

For those living under the poverty line, the cost of buying and using a mobile phone represents more than 11% of income[60]. Thus, taxation represents a significant burden to affordability of mobile services.

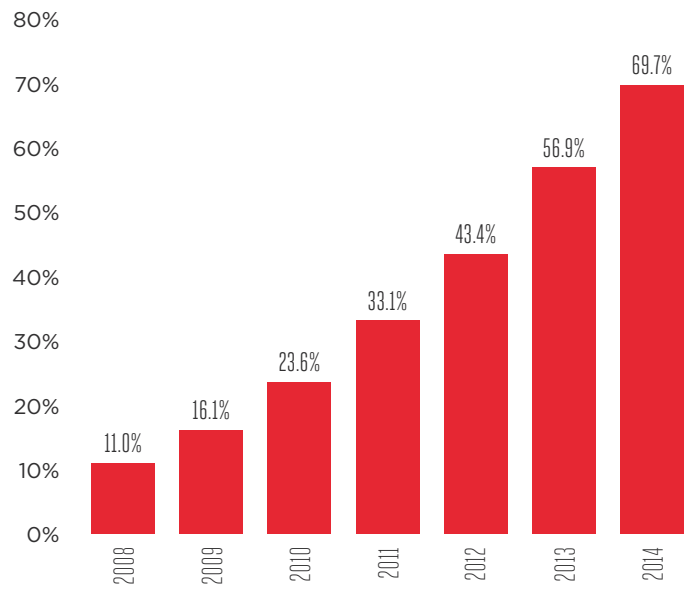
BARRIERS TO INVESTMENT

- **Regulatory and tax policy uncertainty:** Mobile operators have reported a number of unpredictable policies and interpretations by the tax authorities which increase the difficultly of operating in Bangladesh[61]. There have been several changes to the tax regime, as well as repeated delays to 3G licence auctions, which eventually took place in September 2013. As a result of the auction, Grameenphone and Teletalk acquired 10MHz and other operators acquired 5MHz each[62]. The auction realised US$525 million in revenue for the government; however, this was considered to be less than what was expected[63].

56. GSMA Intelligence, Country Overview: Bangladesh, 2014.
57. GSMA/Deloitte, Global Mobile Tax Review, 2014. The TCMO was estimated at US$48.5 in GSMA/Deloitte, Global Mobile Tax Review, 2011. Since tax represents 17.6% of this value, it is equivalent to US$17.6%*US$48.5 = US$8.5.
58. http://www.thedailystar.net/smartphone-sales-soar-on-low-cost-brands-55910
59. Deloitte analysis based on GSMA Intelligence Database and operator data.
60. Deloitte analysis based on GSMA Intelligence Database and World Bank data using US$1.25 poverty line.
61. Deloitte and GSMA, 2012, Mobile telephony and taxation in Bangladesh.
62. ITU and GSMA, 2013, http://www.itu.int/ITU-D/ict/newslog/Bangladesh+Raises+US$+735+Mln+In+3G+Auction.aspx
63. http://www.reuters.com/article/2013/09/08/bangladesh-3g-auction-idUSL3N0H405W20130908; http://4g360.com/profiles/blogs/a-tale-of-two-very-different-spectrum-auctions-bangladesh-and

- **Low 3G roll-out:** Although 2G networks cover almost the entire population in Bangladesh, 3G licences were only awarded at the end of 2013[64] and 3G coverage stands at 69.7%[65]. In order to support the development and take-up of mobile broadband and quality of service improvements, mobile operators need to receive a sufficient return on investment. Mobile operators also face challenging general infrastructure conditions in Bangladesh due to the limited complementary infrastructures, such as energy and transportation, which further raise network investment costs, particularly in rural areas.

3G mobile network coverage as a percent of population



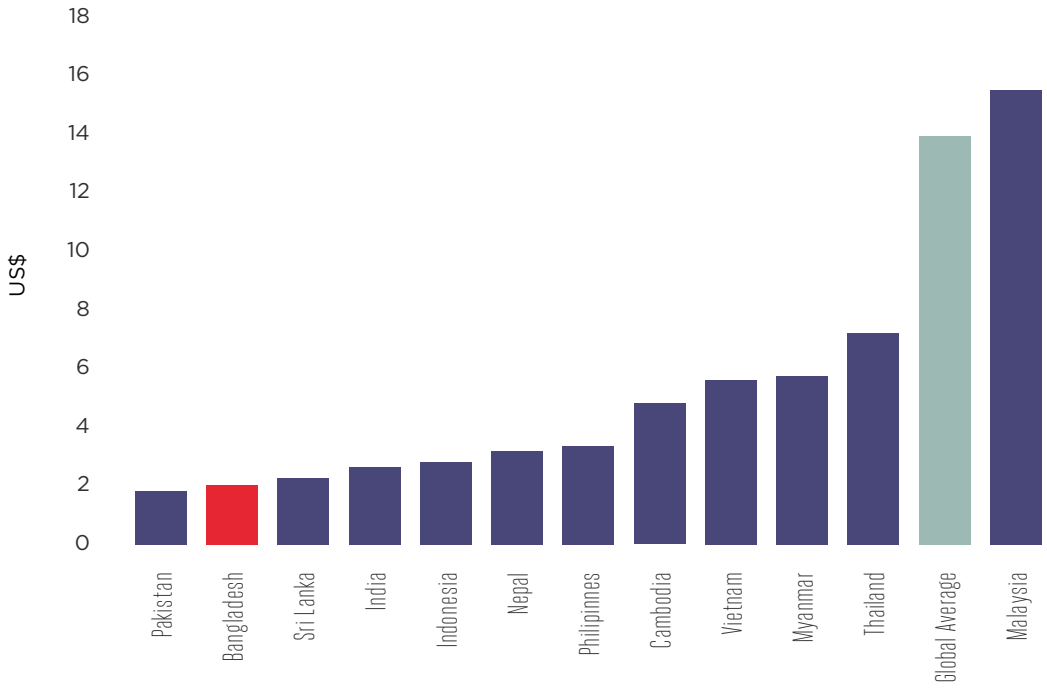
Source: GSMA Intelligence Database

Figure 10

- **Pressure on revenues:** Bangladesh has one of the lowest levels of revenue per user in the world, and while consumers have benefitted from lower prices and increased usage, mobile operators have experienced a decline in average revenue per user (ARPU) which implies Bangladesh's mobile market offers limited incentives for investment. While part of this pressure comes from greater competition within the market, it is aggravated by mobile-specific taxes levied on the sector, with total tax payments from mobile accounting for over 45% of mobile operators' revenues[66]. This makes it more difficult to maintain the levels of investment needed to enhance service availability and quality, and for the roll-out of 3G and 4G services.

64. GSMA, Country overview: Bangladesh, 2014.
65. GSMA Intelligence Database, 2014.
66. Deloitte analysis based on GSMA Intelligence Database and operator data.

ARPU regional comparison



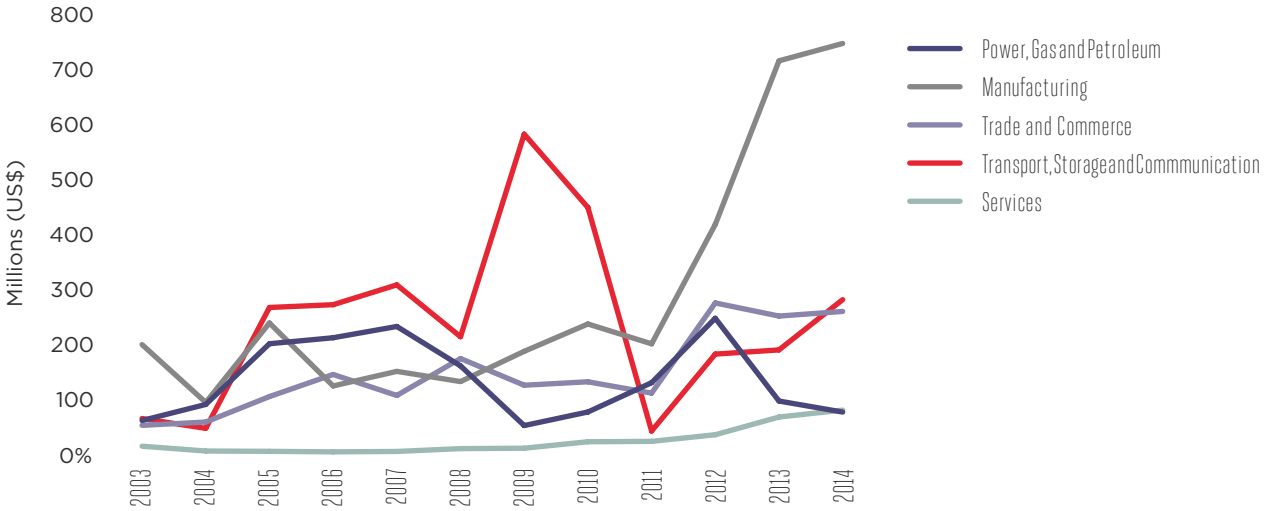
Source: GSMA Intelligence Database

Figure 11

- **Volatile foreign investment in telecoms:** The combination of high taxes on the mobile sector, pressure on revenues, as well as uncertainty in the regulatory and policy environment, may discourage investment, especially in new 3G and 4G technologies. This is reflected in Bangladesh's Ease of Doing Business Index rank of 170 in 2014, a decline relative to its position at 129 in 2013[67]. At the same time, in recent years Bangladesh has experienced a fall in Foreign Direct Investment (FDI) in the telecoms sector, from a peak of US$580 million in 2008/2009. Grameenphone's private placement at the end of 2008 where the company sold US$70.4 million in shares to over 50 local institutions and Initial Public Offering in 2009 partially contributed to this surge in investment[68]. However, FDI in telecoms compared to other sectors has also been falling from a peak of 60% of total FDI in 2009 to just 18% of total FDI in 2014.

67. Ease of Doing Business ranks economies from 1 to 189, with first place being the best. A high ranking (a low numerical rank) means that the regulatory environment is conducive to business operation. The index averages the country's percentile rankings on 10 topics covered in the World Bank's Doing Business. The ranking on each topic is the simple average of the percentile rankings on its component indicators.
68. http://www.financeasia.com/News/157618,grameenphone-starts-public-subscription-for-70-million-ipo.aspx

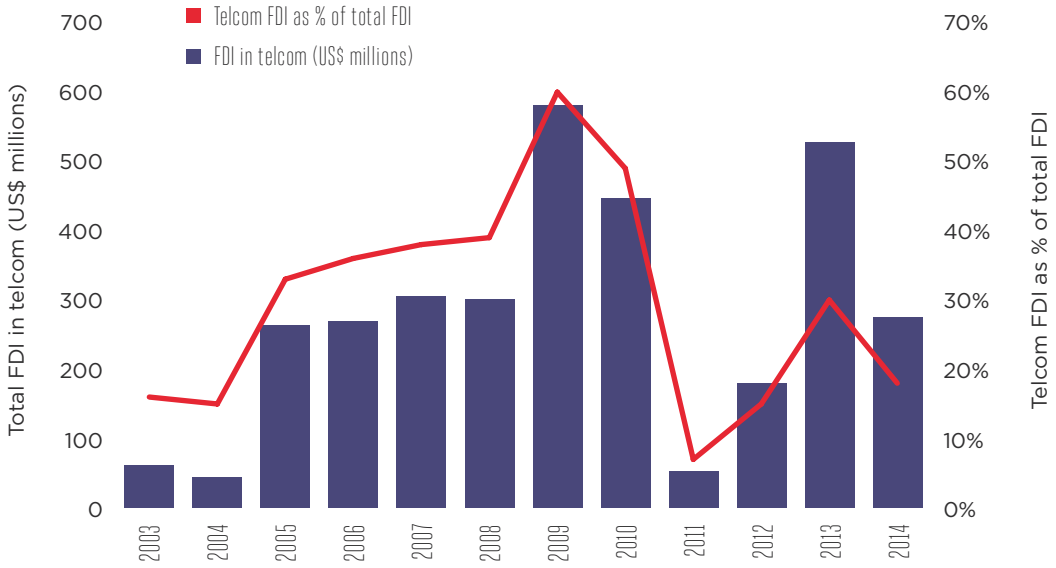
Sector distribution of FDI in Bangladesh



Source: Bangladesh Bank, 2012

Figure 12

FDI in the Bangladesh telecoms sector



Source: Bangladesh Bank, 2012

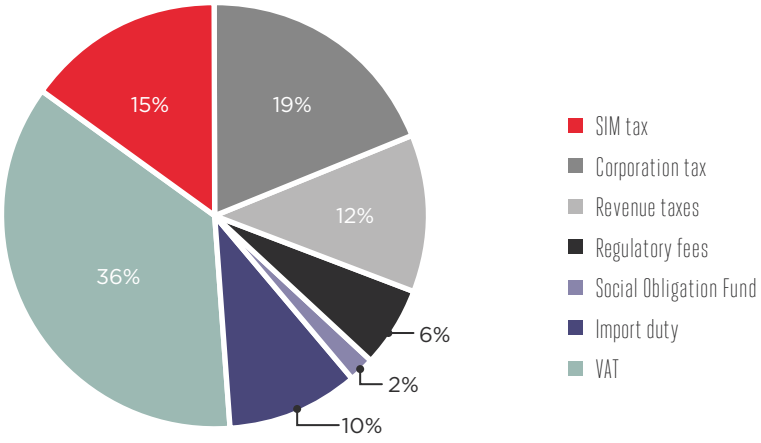
Figure 13

92 million Bangladeshis remain unconnected, and only 4.5% have access to 3G networks. Realising mobile's full development potential requires greater network access and investment.

2 Mobile taxation in Bangladesh

The mobile sector in Bangladesh is subject to numerous taxes levied both on mobile operators and consumers. The figure below illustrates the main components of the total tax and fee payments from the mobile sector by type of payments.

Composition of total tax and fee payments from the mobile sector



Source: Deloitte analysis based on operator data

Figure 14

The extent to which these charges ultimately fall on mobile operators or consumers depends on the type of tax and market conditions. Some taxes and fees may be absorbed by mobile operators in the form of lower profits, whilst others may be passed through in terms of higher prices for consumers, or a combination of the two.

This section reviews the taxes applied to mobile consumers and operators in Bangladesh, focusing on those that are mobile-specific. It also compares the mobile taxation system with similar countries and with other Bangladeshi industries.

2.1 Taxes on mobile consumers in Bangladesh

Consumer taxes in Bangladesh apply to ownership of devices, to usage of services such as SMS and calls, and to the activation of connections. Table 1 summarises the taxes that are applicable to each component.

Consumer taxes on mobile devices and services in Bangladesh

TAX BASE	TAX TYPE	TAX RATE	
Devices	VAT on import value	15%	
	☆ Custom duty on import value	15%	
	★ Surcharge on handset sales	1%	
SIM cards and airtime vouchers	☆ Custom duty	$0.55 (32KB), $0.65 (64KB native), $0.75 (64KB java), $0.95 for a 128KB +25% on this value	
	Regulatory duty	5%	
	Supplementary duty	15%	
	VAT	15% Recoverable on airtime vouchers	
	Advance trade VAT	4%	Recoverable
	Advance income tax	5%	
SIM Cards	★ SIM card tax	BDT 300 for new SIM cards. BDT 100 for replacement SIM cards	
Services	☆ VAT on mobile services, usage, airtime data	15%	

★ Mobile specific ☆ Higher rate for mobile

Source: International Bureau of Fiscal Documentation, Association of Mobile Telephone Operators of Bangladesh, and operator data

Table 1

2.1.1 Taxes on devices and SIM card activation

TAXES ON HANDSETS AND OTHER DEVICES

Imported devices and handsets are subject to standard VAT at 15% plus an additional BDT 300 surcharge, plus a 15% customs duty. However, other sectors and services are taxed at lower rates. In addition, a special 1% surcharge is also levied on all handsets.

TAXES ON SIM CARDS AND AIRTIME VOUCHERS

Imported SIM cards are subject to a number of additional taxes. These include a fixed charge of US$0.55, US$0.65, US$0.75 or US$0.95 per unit depending on the type and storage capacity of the SIM card. They are taxed at a higher customs duty rate of 25% on top of this capacity charge. In addition, imported SIM cards are also subject to a 5% regulatory duty and 15% supplementary duty. This effectively becomes the equivalent of a higher customs duty on SIM cards.

Similarly, airtime vouchers are also subject to the standard 15% VAT. If they are imported, they are subject to a higher customs duty of 25%, regulatory duty of 5% and supplementary duty of 15%.

In addition to standard VAT and import taxes, mobile operators are required to pay an advance tax on the imported value of SIM cards and airtime vouchers at 4%. This is referred to as advance trade VAT and is applicable on certain imports[69]. The advanced trade VAT is intended to be a proxy for the net value added by the importer[70] and it is recoverable.

THE SIM CARD SALES TAX

A special BDT 300 tax is applied to the activation of new SIM cards and a BDT 100 tax to replacement SIM cards. The latter was introduced in June 2014[71]. Mobile operators have indicated that a large part of the cost of this tax is passed on to consumers through higher retail prices, therefore impacting the cost of mobile for first-time users, with a particularly adverse effect on the poorest consumers.

Bangladesh is one of the few countries worldwide that applies a connection or activation tax on SIM cards. In a survey of mobile taxation in 110 countries globally[72] only 10 apply an activation tax, and among these, Bangladesh charges one of the highest rates. The table below lists the countries that apply this type of taxes, with the corresponding tax rate.

Countries that impose a connection tax on SIM cards, 2014

Country	Connection tax	Unit
Turkey	23.3	US$
Brazil	11.6	US$
Chad	4.1	US$
Bangladesh	3.8	US$
Egypt	3.5	US$
Pakistan	2.5	US$
Montenegro	1.3	US$
Niger	0.5	US$
Nigeria	1.0	%
Jamaica	0.8	%

Source: Deloitte analysis

Note: For Nigeria and Jamaica taxes are expressed as a proportion of the connection value.

Table 2

69. http://www.nbr.gov.bd/Publications_page.php?lan=eng&id=15
70. Smith, Moniruzzaman, 2011, Consumption taxes in developing countries.
71. http://www.dhakatribune.com/technology/2014/jun/19/operators-start-raising-sim-price
72. GSMA/Deloitte, "Digital Inclusion and Mobile Sector Taxation", forthcoming.

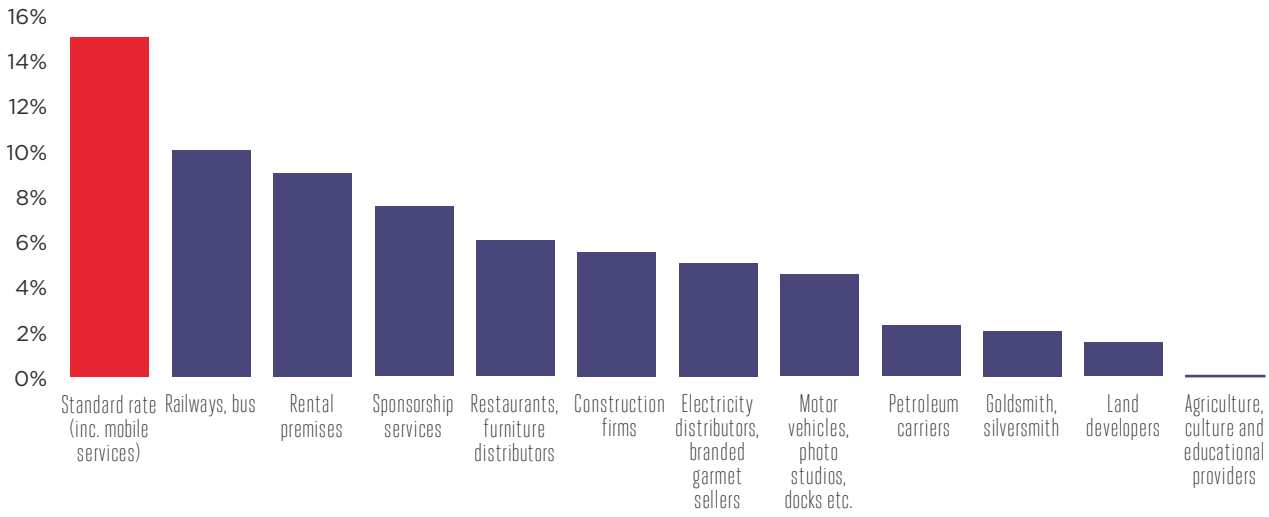
2.1.2 Taxes on usage

TAXES ON MOBILE BROADBAND, SMS, CALLS, SMS AND VALUE ADDED SERVICES

Usage of mobile services such as calls, SMS, and broadband are subject to the standard VAT of 15%. This is a higher VAT rate than several other services and sectors including construction firms, restaurants, railways, rental premises and sponsorship services, which are subject to rates ranging between 0 to 10%.

The same rate is applied on all mobile services, including value added services such as mobile money, mobile education tools and other innovative services such as Mobile Enabled Pay-As-You-Go Electricity.

VAT rates across different sectors and services



Source: KPMG indirect tax database; IBFD Tax Database

Figure 15

In addition, a recent government proposal suggested a 1% surcharge on mobile services is introduced in order to raise funds for development activities in the country's health and education sectors. The National Board of Revenue assessed that an additional BDT 1.4 billion could be raised per year by imposing this surcharge[73]. This surcharge has been approved by the Cabinet in September 2014[74] but has not received the approval from Parliament and thus has not yet come into effect.

73. https://www.telegeography.com/products/commsupdate/articles/2014/09/16/cabinet-approves-1-surcharge-on-cellphone-use/
74. http://www.dhakatribune.com/regulation/2014/jul/09/nbr-impose-1-surcharge-mobile-phone-uses

2.2 Taxes on mobile operators in Bangladesh

Mobile operators in Bangladesh are subject to general taxes which apply to companies in all sectors, such as corporation tax, as well as numerous mobile-specific taxes. The latter include various regulatory fees and significant taxes on imports of equipment, which is vital for network roll-out and improvements in the quality of service, as illustrated in Table 3 below.

Mobile operator taxes on mobile devices and services in Bangladesh

PAYMENT TYPE AND BASE		TAX TYPE	TAX RATE
Imported network equipment		VAT	15%
		Custom duty	2-25%
		Regulatory duty (applies to approximately 25% of imported equipment)	5%
Commercial premises (offices and tower spaces)		VAT	9%
Taxes	Profits	☆ Corporation tax, or minimum turnover tax if loss making	40-45%, a 0.3% turnover tax applicable if company is loss making
Annual regulatory fees	Revenues	Revenue share tax	5.5%, plus 30% on international and roaming calls
		Social Obligation Fund	1%
	Fixed amounts	★ Licence fee	2G:BDT 50m +15%VAT 3G: BDT 50m +5% VAT
		★ Spectrum fee	BDT 70 per MHz per square km adjusted by subscrbers and bandwidth +15%VAT
		★ Vehicle tracking system fee	BDT 200k +15%VAT
one-off regulatory fees	Fixed amounts	★ Licence fees	Based on MHz and market share 2G: +15%VAT 3G: +5% VAT
		★ Spectrum fee	Determined by auction
All regulatory fees		★ Spectrum fee	10%

★ Mobile specific ☆ Higher rate for mobile

Source: International Bureau of Fiscal Documentation, Association of Mobile Telephone Operators of Bangladesh, and operator data

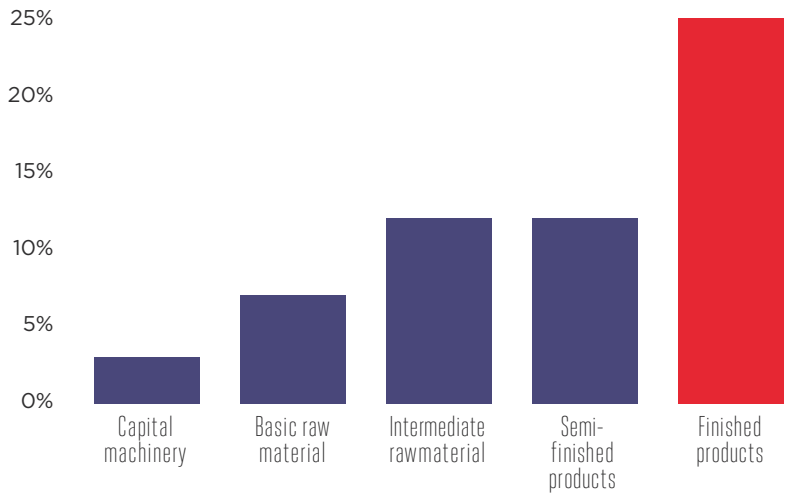
Table 3

2.2.1 Duties and surcharges on imported network equipment

Mobile operators pay four different taxes on imported equipment, which includes antennas and base stations. Firstly, they pay VAT, then customs duty ranging between 2 to 25%, and finally a regulatory duty of 5%.

Customs duties have a complex structure with different rates depending on the type of good. Customs duties on imported network equipment ranges from 2% and 25%. For example, software and computer servers are being charged at 2% while equipment such as antennas and charging systems are being charged at the higher rate of 25%[75] as they are classified as finished products. Based on a breakdown of customs duties applied to different network equipment provided by mobile operators, the average rate across all equipment is 17.4%[76].

Customs duty rates in Bangladesh



Source: National Board of Revenue Bangladesh; IBFD Tax Database

Figure 16

Mobile operators pay an additional regulatory duty of 5% on imported network equipment which applies to approximately 25% of all items[77].

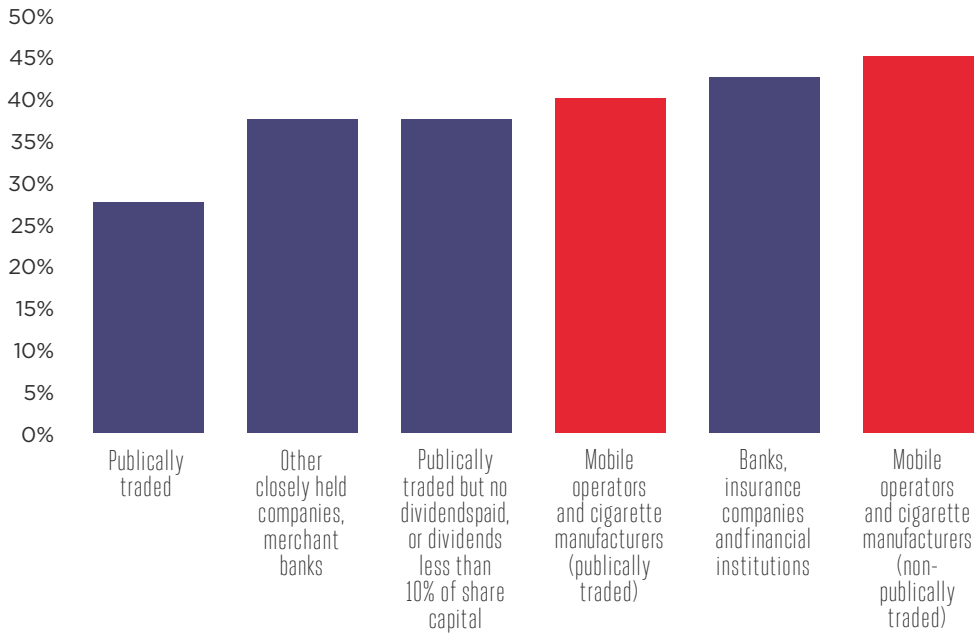
75. Operator data returns.
76. Deloitte analysis based on operator data returns.
77. As indicated in discussions with operators.

2.2.2 Taxes on mobile operators' profits

The corporation tax in Bangladesh is 10% higher than the global average[78] and for mobile operators it stands at between 40% and 45%[79].

The standard rate for publically traded companies is 27.5%. The rate increases to 37.5% if no dividends are declared or the dividends declared are less than 10% share of capital. Textile industries are subject to a 15% rate. Banks, insurance companies and financial institutions are taxed at 42.5%. Mobile operators, and cigarette manufacturing companies have to pay a 45% rate (40% if publically traded).

Corporation tax rates across sectors



Source: KPMG corporation tax database

Figure 17

Mobile operators also pay VAT on commercial premises such as offices and tower space, which is also applicable on other sectors and is imposed at a reduced rate of 9%.

78. Deloitte Tax Database and analysis.
79. Publically traded companies are taxed at 40% while private companies are taxed at 45%.

2.2.3 Regulatory fees

Mobile operators pay a number of different regulatory fees and taxes to the Bangladesh Telecommunications Regulatory Authority (BTRC). These include annual fees such as the Social Obligation Fund (SOF), a revenue share tax, the annual numbering and licence fees, as well as fixed amounts that are paid by mobile operators in order to acquire and provide for the administration of spectrum frequencies. As of July 2014, the government has also introduced a 10% withholding tax, which is applied to all payments from the mobile operators to BTRC.

REVENUE TAXES

Mobile operators in Bangladesh are subject to a 5.5% revenue share tax that is used by the government to pay for the lease of Bangladesh Railways fibre optic network[80]. This is a tax which is specific to the mobile sector. In 2013, mobile operators paid an estimated US$140 million of revenue share tax.

RECURRING SPECTRUM AND LICENCE FEES

Mobile operators are also subject to recurring spectrum and licence fees, which represent a large part of their overall tax burden. The annual license fee amounts to US$50 million, plus a 15% VAT for 2G licences and 5% VAT for 3G. The spectrum fee is charged at BDT 70 per MHz per square kilometre of spectrum and adjusted based on the number of subscribers of each mobile operator and the bandwidth – a 15% VAT is then applied on this value. A BDT 200,000 vehicle tracking fee is also paid annually and is subject to a 15% VAT.

NON-RECURRING SPECTRUM AND LICENCE FEES

In addition to annual fees, mobile operators pay non-recurring fees in order to be licenced to provide telecoms services and to acquire spectrum. The value of spectrum payments is determined by auction and, recently, a total of US$525 million[81], excluding a 15% VAT, was paid for 3G spectrum in 2013. The licence payments are determined based on each mobile operator's market share and its respective quantity of spectrum holdings, plus a 15% VAT for 2G licences and 5% VAT for 3G. These amounted to US$116 million in 2013.

SOCIAL OBLIGATION FUND

Another important component of regulatory fees on mobile operators is the 1% contribution of revenues to the Social Obligation Fund (SOF). This fund is intended to finance local content development in order to boost local internet traffic and the services market[82].

80. Deloitte and GSMA, "Mobile Telephony and Taxation in Bangladesh", 2012.
81. http://www.reuters.com/article/2013/09/08/bangladesh-3g-auction-idUSL3N0H405W20130908
82. http://lirneasia.net/wp-content/uploads/2010/07/TRE_Bangladesh_FH_D20.pdf

2.3 Best practice in taxation policy

An effective tax policy regime has to balance a number of potentially competing factors. These include the government's revenue needs, supporting key sectors and the practicalities of enforcement and collection, as well as the desire to minimise any detrimental impact on the wider economy. Consequently, tax policy frequently must strike a balance between the theoretically correct response and one that recognises the practicalities of taxation in a market[83].

There are however a number of principles that are generally recognised as contributing to an effective tax system and if applied in Bangladesh, these principles have the potential to expand investment in the mobile sector and lead to significant economic growth and increased tax revenues for the government. The following principles have been outlined by organisations such as the IMF:

1. In general, taxation should be broad-based:

Taxation alters incentives for production and consumption. Economic distortions will generally be minimised where the burden of taxation is spread evenly across the economy. In practice this equates to adopting broadly defined bases for taxation, limiting rate variations and effectively enforcing tax compliance.

2. Taxes should account for sector and product externalities:

The case for taxation to address negative externalities[84] (such as those arising from tobacco consumption) is generally recognised. The same logic also applies to sectors and products with positive externalities. Taxation policy should encourage sectors, such as mobile, that create positive externalities in the wider economy. Higher taxation on mobile may discourage consumption of mobile services and prevent the realisation of the positive spillovers from the sector.

3. The tax and regulatory system should be simple, easily understandable and enforceable:

Uncertain and complex taxation systems and liabilities may deter investors and are also likely to increase enforcement costs for government.

4. Dynamic incentives for the mobile operators should be unaffected:

Taxation should not disincentivise efficient investment or competition in the ICT sector. In situations where the tax system does provide disincentives, tax revenue could be significantly reduced in the long run.

5. In addition, it is widely accepted that taxes should be equitable, and that the burden of taxation should not fall disproportionately on the poorer members of society.

These principles are intended to minimise the inefficiencies associated with taxation and the distortive impacts that taxes may have on the wider economy.

83. IMF, 2001, Tax policy for developing countries.
84. An externality refers to an impact on the wider economy that is not accounted for by the consumer purchasing the good. For example, consumers of tobacco create an additional cost for others through second-hand smoke, but do not take into account this impact when choosing whether to smoke.

Table 4 below summarises how the taxes levied in Bangladesh align with these principles.

Alignment of taxes on the mobile sector in Bangladesh with the principles of taxation

Tax	Broad-based	Accounts for externalities	Transparent and enforceable	Incentives for competition and investment	Equitable (not regressive)
Corporation Tax	✓	✗	✓	✓	✓
VAT	✓	✗	✓	✓	✓
SIM card tax	✗	✗	✓	✗	✗
Customs duty	✗	✗	✗	✗	✗
Regulatory duty	✗	✗	✗	✗	✗
Supplementary duty	✗	✗	✗	✗	✗
Social Obligation Fund	✗	✓	✓	✗	✓
Annual Licence fee	✗	✗	✓	✗	✓
Numbering Fee	✗	✗	✓	✗	✓
Spectrum Administration Fee	✗	✗	✗	✗	✓

Source: Deloitte analysis

Table 4

As shown in Table 2, many of the taxes levied on the mobile sector in Bangladesh fail to align with the key principles of efficient taxation, which has ramifications for the development of the sector and the wider economy. In particular, those taxes that are mobile-specific have the highest negative impact and lack of alignment with the established principles of taxation.

MOBILE-SPECIFIC TAXES SUCH AS THE SIM CARD TAX INCREASE THE BARRIERS TO ACCESS AND HIT THE POOREST CONSUMERS HARDEST:
These taxes are not broad-based, as they are specific to mobile services and as such may create distortions. By increasing the final price of mobile they create a barrier to affordability and to mobile access. This barrier is greater for low income consumers and therefore risks excluding them from the benefits of mobile and the internet.

ADDITIONAL AD VALOREM TAXES SUCH AS SURCHARGES ON MOBILE SERVICES FAIL TO ACCOUNT FOR POSITIVE EXTERNALITIES AND DISCOURAGE CONSUMPTION:
Mobile has positive impacts in the wider economy through network effects and facilitation of innovation and productivity in other sectors such as agriculture, healthcare and education through the use of mobile applications and services. Taxing mobile in a disproportionate manner could be taken as a signal that the government wishes to discourage rather than encourage consumption.

HIGHER CORPORATION TAX RATES FOR MOBILE, REGULATORY FEES AND OTHER REVENUE-BASED CONTRIBUTIONS REDUCE INCENTIVES FOR DOMESTIC AND FOREIGN INVESTMENT:
Higher rates of corporation tax and special taxes applied solely to mobile could distort investment decisions by mobile operators as well as FDI in Bangladesh.

MOBILE-SPECIFIC TAXES ON IMPORTS OF NETWORK EQUIPMENT REDUCE INCENTIVES FOR INVESTMENT IN INFRASTRUCTURE AND QUALITY OF SERVICE IMPROVEMENTS:
Higher import rates on essential network equipment may result in under-investment in the mobile sector. The fact that many of these taxes, for example customs duties, are charged at different rates across different items or services can also create further competitive distortions, across, for example, types of devices imported.

COMPLEXITY OF THE TAX SYSTEM INCREASES UNCERTAINTY AND DETERS INVESTMENT:
A complex taxation and regulatory structure subject to frequent changes, increases uncertainty and discourages investment both domestically and internationally. It may also impose a significant administrative burden on mobile operators.

The inefficiencies created by these various mobile-specific taxes not only limit the development of the mobile sector, but also hinder economic growth and the realisation of the positive externalities created by mobile services, specifically mobile broadband. In the medium term, the Bangladeshi government could generate more tax revenue by transitioning towards a more equitable and balanced taxation structure that treats mobile in an equivalent manner to other industries. Phased reductions of mobile-specific taxes on mobile operators' revenues and on usage offer governments the opportunity to benefit from the economic contribution from mobile whilst limiting short-term fiscal costs.

Investment in 3G and 4G networks will allow more Bangladeshis to connect to mobile broadband. Mobile-specific taxes and fees disincentivise network investment.

3 Economic impacts of reforming mobile taxation in Bangladesh

Many of the taxes applied to the mobile sector in Bangladesh are mobile-specific, such as the SIM card sales tax, or are applied at higher rates in the mobile sector, such as corporation tax. This puts the mobile industry at a competitive disadvantage with respect to other industries, reduces investment and fails to recognise the positive spillovers of mobile.

3.1 How mobile taxation in Bangladesh impacts the economy

The Bangladeshi government has already seen some of the benefits of reforming mobile-specific taxes. The SIM card sales tax was introduced in 2005 at BDT 800. The SIM card sales tax was reduced from BDT 800 to BDT 600 in 2011, then again to BDT 300 in 2013. During the same period, mobile penetration increased notably, from 56.1% 2011 to 76.8% in 2014. This is equivalent to an additional 46 million connections and 18 million unique subscribers from 2011 to 2013.

Both consumer and operator taxes in the mobile sector in Bangladesh may impact the affordability of services and investment and could hinder the development and take-up of mobile broadband. In Bangladesh, 17.6% of the cost of purchasing and using a mobile phone is due to taxation[85], equivalent to US$8.5 in taxes yearly,[86] while the average wage is only US$97 per month[87]. When taking into account total taxation on mobile (including direct taxes both on consumers and operators), the total tax payments from the mobile sector in Bangladesh are about 45% as a proportion of mobile revenues[88].

By reforming mobile taxation and transitioning to a more balanced taxation system, the government of Bangladesh can further its 'Digital Bangladesh' aspirations and the Vision 2021 agenda of promoting digital inclusion and increasing access to ICT, while benefitting from increased tax revenues in the medium term as a result of GDP growth.

This section discusses the impacts of reforming taxation through illustrative tax policy scenarios, using a combination of qualitative evidence and a quantitative model of the mobile sector and its impact on the wider economy. Specifically, the quantitative impacts for the following two alternatives of tax reformation are estimated:

- Abolition of the SIM card tax of BDT 300 on new SIM cards and BDT 100 on replacement SIM cards.
- Reduction of customs duties on imported network equipment.

85. GSMA, Digital Inclusion and Mobile Sector Taxation, forthcoming.
86. Deloitte analysis based on GSMA Intelligence Database and operator data.
87. International Labour Organization, Wage Statistics 2011. ILO reported an average monthly wage of BDT 5460 in 2010.
88. Deloitte analysis based on operator data and GSMA Intelligence Database.

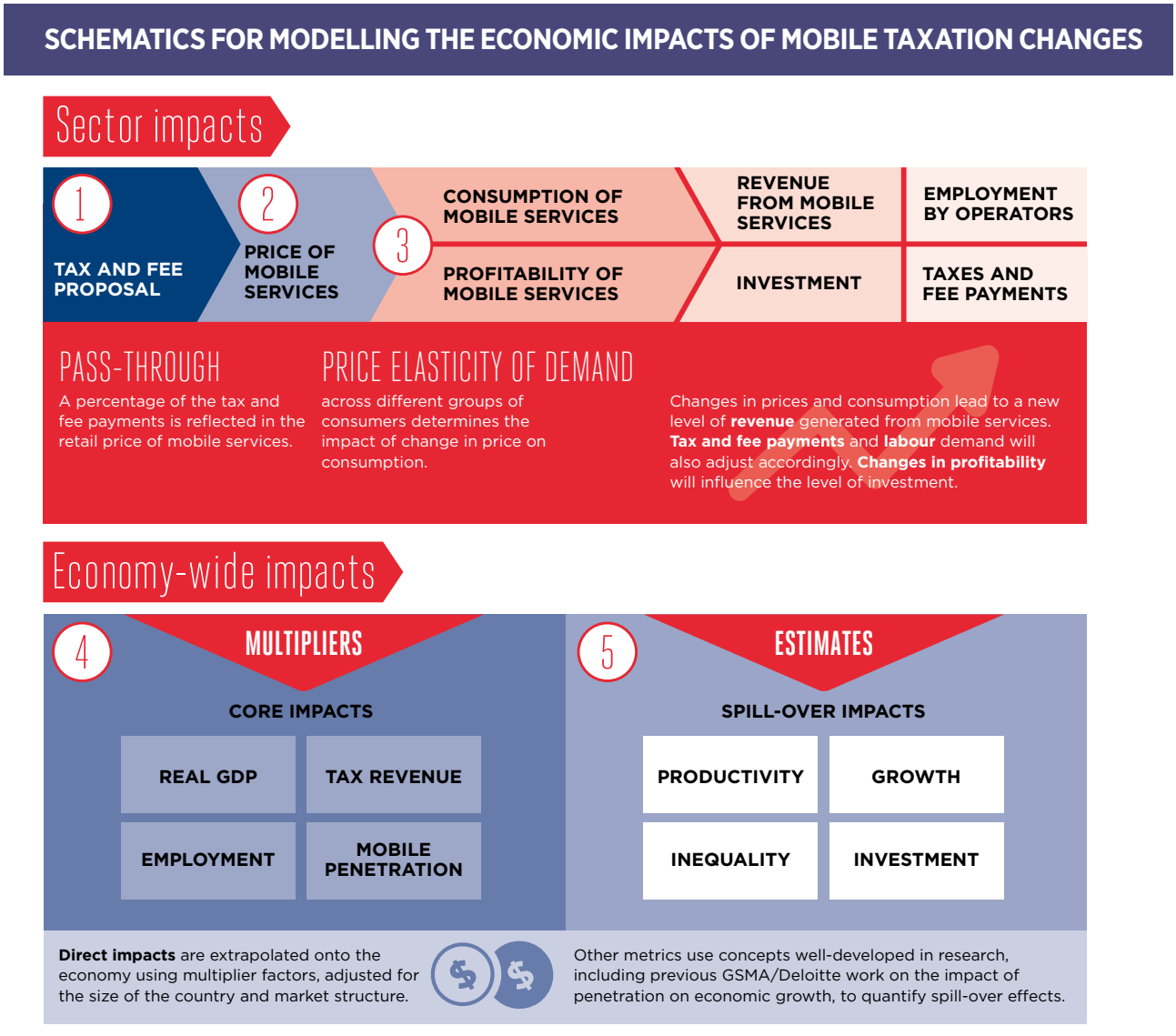
Additionally, the potential adverse impacts of the introduction of a 1% surcharge on all mobile services including on mobile, broadband, calls, and mobile money are modelled.

The following policies are discussed qualitatively:

- Reducing the rate of corporation tax on mobile, in line with the standard rate.
- Reducing regulatory fees particularly the 10% withholding tax on all BTRC payments.
- Reducing regulatory and tax policy uncertainty.

To estimate the quantitative impacts of tax reformation, an economic model of the Bangladeshi economy and mobile sector was constructed, using sector-specific data from both the GSMA and the largest mobile operators in Bangladesh, together with macroeconomic data from the IMF and World Bank. This allows the model to represent both the mobile sector and its impacts on the economy as a whole.

The figure below illustrates the impacts of tax reform on key economic and sector variables.



Source: Deloitte analysis

Figure 18

The modelling involves several steps which encompass the impacts outlined in the figure above and described in detail in Appendix A:

1. The level of taxation and fees applied to the mobile sector are reflected in the retail prices mobile operators charge for using their services. Therefore, a change in taxation or fees will lead to a change in the retail price of mobile services. A pass-through rate represents the percentage of the tax and fee payments which is reflected in the retail price of mobile services.

2. The price of mobile services determines the demand and therefore the aggregate consumption of mobile services. The price elasticity of demand describes the responsiveness of demand to a change in the price, and is defined as the percentage change in demand resulting from a given percentage change in price.

3. Changes in the level of consumption of mobile services lead to a new level of revenue generated by mobile operators, which changes the level of taxes and fee payments and labour demand accordingly.

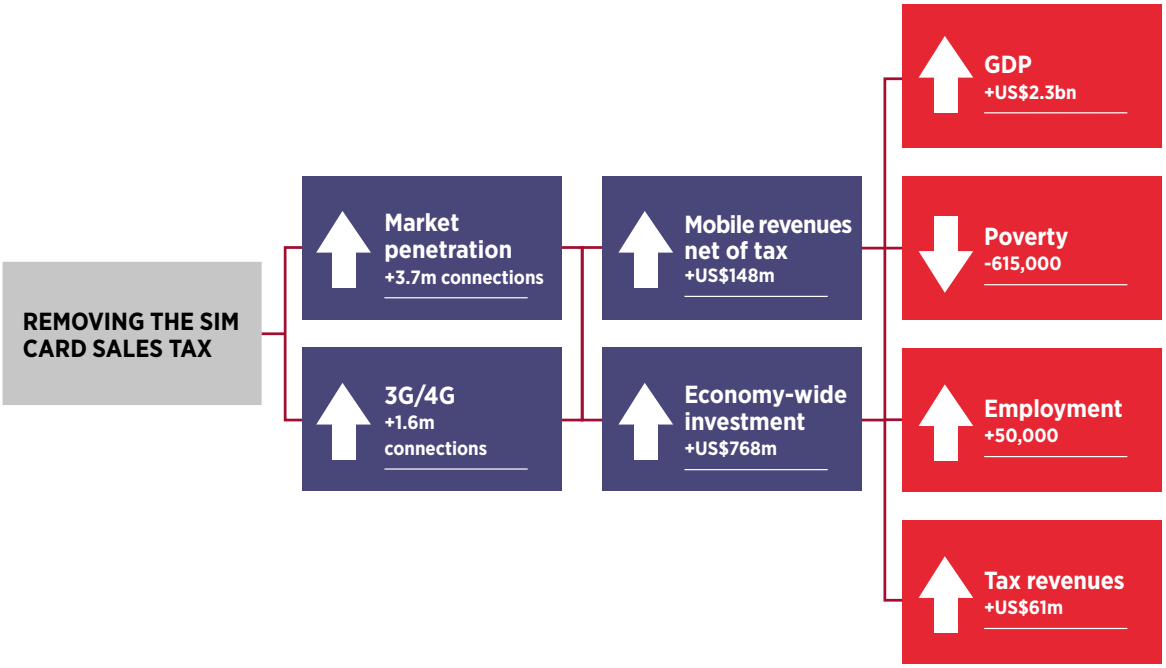
4. There are direct impacts on the wider economy, in particular on real GDP, tax revenues, employment and investment. Multipliers are assumed which allow changes in the mobile sector to affect the wider Bangladeshi economy.

5. These direct impacts lead to spillover effects; changes in Bangladesh's GDP and employment determine productivity and economic growth. An elasticity determines the impact of a change in mobile penetration on GDP growth. Productivity is calculated using the total factor productivity impact, described in the appendix.

3.2 Removing the SIM card sale tax promotes digital inclusion and economic growth

The special tax of BDT 300 on new and BDT 100 on replacement SIM cards results in an increase in the cost of accessing mobile services and a constraint on the overall mobile penetration and the range of uses.

Potential impact of removing the SIM card sales tax, 2020



Source: Deloitte analysis based on operator, GSMA, IMF and World Bank data

Figure 19

It is estimated that eliminating the tax on the sale of new and replacement SIM cards could potentially drive the following impacts:

By 2020, increased demand for mobile broadband has the potential to add an extra 3.7 million connections annually, including 1.6 million 3G connections, and increase usage of mobile services by 2.30%. From the period 2015 to 2020 a cumulative 19 million connections could be added. This compares to the 46 million that were added from 2011 to 2013 when the previous two reductions in SIM card sales tax were enacted.

This uptake in mobile penetration could increase mobile revenues by up to an additional US$148 million in 2020 and the productivity of Bangladeshi workers and businesses, potentially leading to the Bangladeshi economy being 0.68% more productive. Between 2015 and 2020, additional cumulative revenues of UD$985 million could be realised by the mobile sector due to the tax reduction.

Through the direct impacts of the mobile operators, and the indirect impacts that their activities enable, increased mobile usage could lead to additional GDP growth, delivering up to an additional US$2.3 billion in 2020 and potentially providing employment for an additional 50,000 Bangladeshis. Over the period 2015-2020, a total of US$9.2 billion could be added to the economy, and employment could be provided to an additional 145,000 Bangladeshis.

Moreover, following a short term reduction in revenue, the government could potentially achieve tax neutrality within three years and by 2020 the increase in GDP growth has the potential to enable up to an additional US$61 million in tax revenues annually to be collected through more broad-based taxation such as VAT and corporation tax on mobile and other industries.

Eliminating the sales tax on SIM cards has the potential to increase access to mobile and improve affordability, thus promoting higher mobile penetration in Bangladesh. This could have large positive impacts in terms of digital inclusion and adoption of new 3G technologies, while at the same time increasing GDP per capita and lifting 615,000 people out of poverty.

Case study:

REDUCTION OF SIM CARD TAXES ON M2M SERVICES IN TURKEY AND BRAZIL

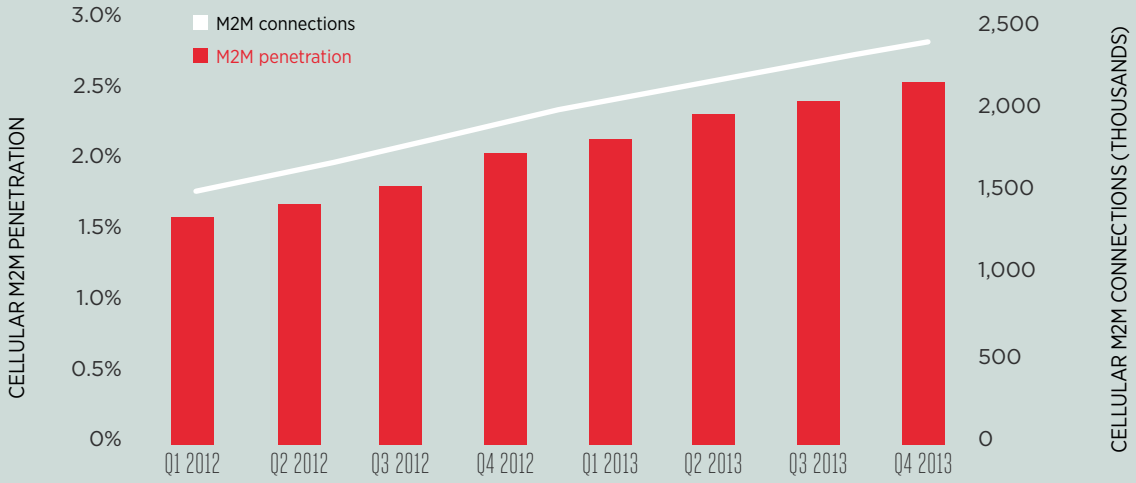
Turkey is one of the countries with the highest taxation on mobile. In July 2012, M2M SIM cards were exempted from the TRY37 connections tax that applies to standard SIM cards.[I] Prior to the tax exemption, mobile operators in Turkey had cited the connection tax as one of the biggest obstacles to growth in the M2M market.[II] Due to the low ARPU of M2M SIM cards, eliminating the subscriber tax on M2M is likely to stimulate market growth and increase tax revenues.[III]

The number of M2M connections in Turkey increased considerably, from 1.53 million in March 2012 before the tax exemption to 2.1 million connections in December 2013. This represents an overall increase of 25% in M2M connections.[IV] Similarly, M2M services in Brazil have been severely pressured by the tax burden on M2M SIM cards, due to the low ARPU.[VI]

As a result of this, the Brazilian government decided to introduce tax reductions on M2M SIM cards over the time period 2012-2014. In 2012, the Brazilian government passed regulation on such tax reductions,[VII] which came into effect in April 2014.[VIII] The SIM card tax for new connections was reduced from BRL26.83 (US$12.1) to BRL8.94 (US$4) for M2M SIM cards and the annual tax was lowered from BRL 8.94 (US$4) to BRL1.89 (US$0.85).[XI] This equates to a combined reduction of 80%.[X]

The tax cut is likely to have a significant positive impact on the development of the Brazilian M2M market, providing a positive stimulus for mobile operators to develop these services. Shortly after the tax cut was enacted, mobile operators invested BRL 13 billion (US$6 billion).[XI] The Brazilian Communications Minister estimates that as a result of the tax cut the number of M2M devices in Brazil will increase by 33%, from 17.5m to 23.3m in 2016.[XII]

M2M market growth in Turkey



Source: GSMA data and Deloitte analysis

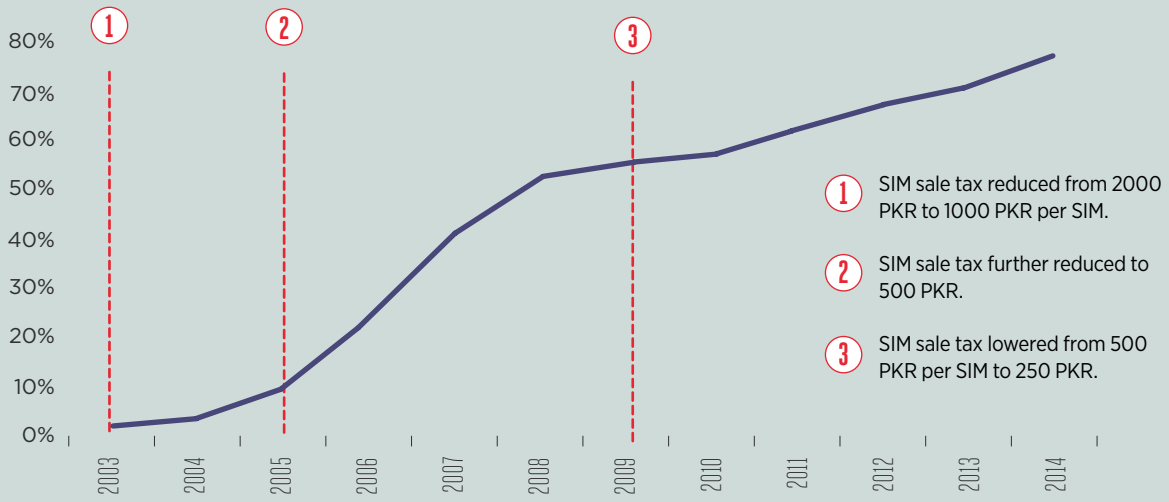
I Mobile Marketing Magazine, July 16th 2012, "Turkey lifts SIM tax".
II Wall Street Journal, March 21st 2011, "Turkcell targets smartphones as key to growth".
II Ibid.
IV GSMA Intelligence.
VI TechPolis, July 23rd 2013, "The take-off of M2M in Brazil".
VII Ibid.
VIII GSMA, May 9th 2014, "GSMA welcomes Brazilian government decision to reduce machine-to-machine taxation".
IX Telecommunication Insight, June 2014, 2Industry Trend Analysis - Tax cuts will see M2M enter high growth period".
X GSMA, May 9th 2014, "GSMA welcomes Brazilian government decision to reduce machine-to-machine taxation".
XI TelecomEngine, May 7th 2014, "Brazilian operators invest US$6 billion in M2M".
XII Telefonica, June 4th 2014,"Brazil tax reductions: A movement to the leadership".

Case study:

REDUCTION OF SIM CARD TAXES IN PAKISTAN

In Pakistan, the SIM tax was reduced from PKR 2000 to PKR 1000 per SIM in 2004, PKR 500 in 2005, and to the current level of PKR 250 in 2009.[I] Over this period, market penetration has increased rapidly, from 3% in 2004, to 56% in 2009, reaching 71% in 2013.

Total market penetration and SIM card taxes over time in Pakistan



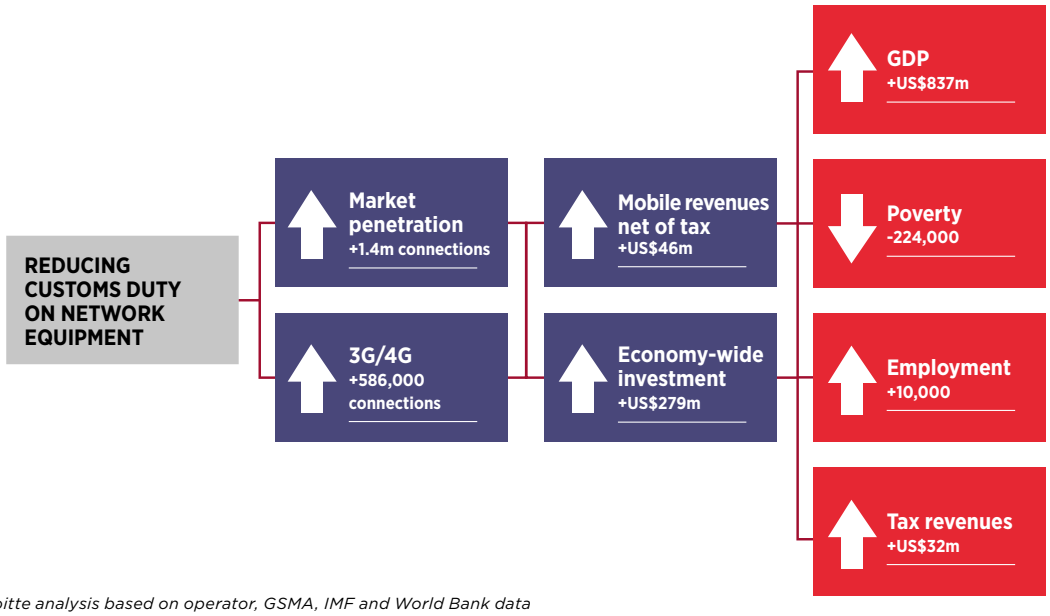
Source: GSMA Intelligence Database and Deloitte analysis

I Some operators have indicated that there exists an additional PKR 250 tax on activation, but its application is in dispute.

3.3 Reducing the customs duty on network equipment stimulates investment and growth

For mobile operators, it is essential to import telecom equipment in order to provide mobile services, increase network coverage and maintain or improve service quality. Applying the standard rate of 12% to various pieces of network equipment which are currently taxed at 25%, such as antennas and computer servers, would reduce the effective average tax rate across network equipment to circa 8.8% and has the potential to have significant positive impacts on the economy.

Potential impact of reducing the customs duty on imported network equipment, 2020



Source: Deloitte analysis based on operator, GSMA, IMF and World Bank data

Figure 20

It is estimated that if customs duties on network equipment were reduced from 17.4% to 8.8% on average:

- Investment (particularly in network infrastructure) could potentially increase by up to US$279 million and mobile revenues by US$46 million in 2020. Over 2015 to 2020, investment could potentially increase by US$1.1 billion cumulatively.

- By 2020, increased demand for mobile broadband could add an extra 1.4 million connections annually, including 586,000 3G connections. Over 2015 to 2020, cumulative 6.9 million connections could be added.

- This uptake in broadband penetration has the potential to increase the productivity of Bangladeshi workers and businesses, leading to the Bangladeshi economy being up to 0.25% more productive in 2020.

- Through the direct impacts of mobile operators, and the indirect impacts that their activities generate, increased mobile usage could lead to additional GDP growth, potentially delivering up to an additional US$837 million in 2020 and providing employment for up to an additional 10,000 Bangladeshis in 2020 alone. Total job creation over 2015 to 2020 could lead to employment for an additional 28,000 Bangladeshis.

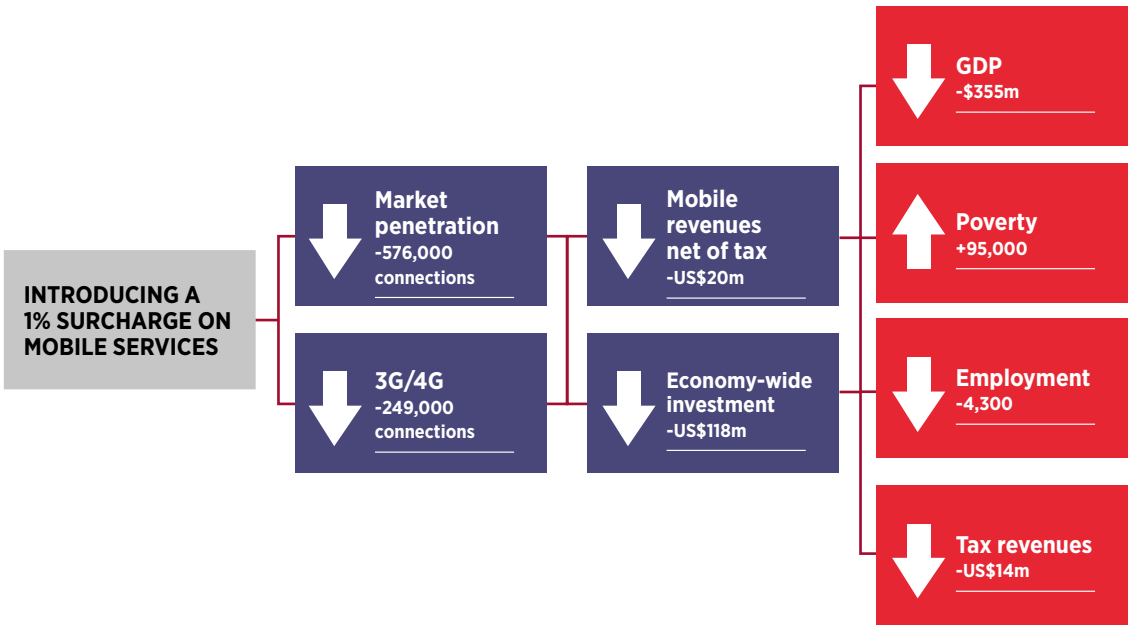
- Moreover, despite an initial fall in revenue, the government could potentially achieve tax neutrality within three years, and by 2020 the increase in GDP growth could enable up to an additional US$32 million in tax revenues annually to be collected through more broad-based taxation such as VAT and corporation tax on mobile and other industries.

Reducing the customs duty has the potential to increase investment in ICT, enhance Bangladesh's competitiveness and support Bangladesh's the transition to a knowledge based economy. It could ensure investment levels are maintained to expand network coverage, especially in new 3G and 4G technologies, and service quality is maintained and improved. In the long term, this could lead to higher economic growth and wider access to ICT services in Bangladesh.

3.4 Introducing a 1% surcharge on all mobile services could harm the development of mobile and hinder economic growth

The potential introduction of a 1% surcharge on mobile, broadband, calls and VAS could discourage consumption of mobile services and could have a negative impact on affordability, digital inclusion, and economic growth and limit access to innovative services such as VAS.

Potential impact of introducing a 1% surcharge on mobile services, 2020



Source: Deloitte analysis based on operator, GSMA, IMF and World Bank data

Figure 21

In particular, increasing the surcharge on mobile services by 1% has the potential to generate the following impacts compared to estimates based on current trends:

- By 2020, decreased demand for mobile broadband has the potential to reduce connections by 576,000 annually, including 249,000 3G connections, and decrease usage of mobile services by 0.36%. Over 2015 to 2020, connections could be reduced by 2.9 million, including an 835,000 reduction in 3G connections.

- This reduction in mobile penetration could decrease revenues by up to an additional US$20 million in 2020. The productivity of Bangladeshi workers and businesses could also be affected, potentially leading to the Bangladeshi economy being 0.11% less productive in 2020.

- Through a reduction in the direct impacts of the mobile operators and, in parallel, a reduction in the indirect impacts that operators' activities generate, decreased mobile usage could lead to reduced GDP growth, reducing GDP by US$355 million in 2020 and potentially reducing employment for 4,300 Bangladeshis. Over 2015 to 2020 this could reduce GDP by US$1.4 billion and employment by 12,000 people.

- Moreover, despite an initial gain in tax revenues after the increase in tax, the government could potentially start losing tax revenues within three years and by 2020 the decrease in GDP growth has the potential to reduce up to US$14 million in tax revenues annually that would have been collected through more broader-based taxation approach.

Introducing a 1% surcharge on mobile services has the potential to discourage consumption of mobile services and hamper penetration, ultimately leading to slower economic growth in Bangladesh. It could also be taken as a signal that the government wishes to disincentivise consumption and investment in ICT compared to other sectors.

Case study:

INCREASED MOBILE-SPECIFIC TAXATION REDUCED INVESTMENT AND USAGE IN CROATIA

After years of growth, Croatia suffered from a recession in 2009 following the global financial crisis. In addition to the direct impact of the recessionary environment on the mobile industry, in June 2009 the Government introduced a 6% tax on mobile operators' gross revenue from mobile calls and SMS.

Following the introduction of this tax, the tax pressure on mobile increased to 28% of the cost of mobile ownership, the highest at the time in Europe.[I] At the same time:

- Volumes of mobile calls and SMS decreased in 2010 by 4% and 14% respectively.
- Mobile-specific taxation as a proportion of mobile operators' revenue increased significantly after 2008. The total tax burden on mobile grew by 2% in 2009 and by 10% in 2010.
- Reductions in operator revenues led to decreases in mobile operator capital expenditure.[II]

The Croatian government removed the 6% tax on calls and SMS in 2012. Mobile operator capital expenditure increased by 5% between 2012 and 2013.

I Deloitte/GSMA, Mobile Taxes and Fees: A toolkit of principles and evidence, 2014.
II GSMA Intelligence Database.

3.5 Other tax reform alternatives

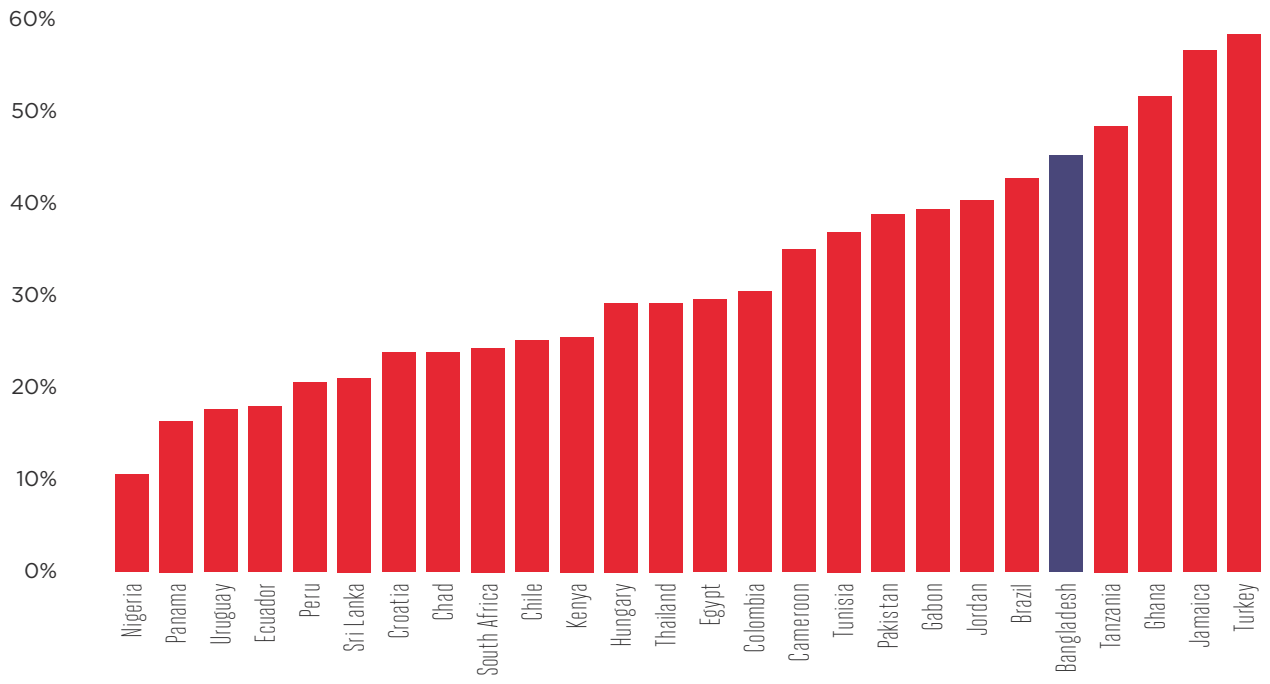
3.5.1 Reducing the corporation tax in line with taxation on other sectors

The higher corporation tax rates on mobile operators compared to other sectors in Bangladesh creates a significant disincentive to investment in infrastructure and innovation. This causes distortions both within the ICT sector and across other industries, making FDI in mobile less attractive. The fact that mobile operators are subject to a higher tax rate of corporation tax, along with cigarette manufacturers, fails to recognise the positive externalities of the sector and discourages consumption and investment.

Lower profitability of the mobile sector also limits the ability of mobile operators to pass on reductions in prices to consumers, negatively affecting affordability and penetration rates.

Total recurring tax payments from the mobile industry, including mobile operator and consumer taxation, are estimated to represent over 45% of industry revenues in Bangladesh, which was found to be the fifth highest value in a panel of 26 countries, as shown in Figure 22 below. Of the total tax payments, about 20% were due to corporation tax in Bangladesh[89].

Total tax and fee payments as a proportion of mobile revenues in selected countries, 2013



Source: GSMA/Deloitte, Digital Inclusion and Mobile Taxation – A review of taxation in the mobile sector, forthcoming

Figure 22

89. This excludes one-off spectrum and licence fees. GSMA/Deloitte, Digital Inclusion and Mobile Sector Taxation, forthcoming.

Transitioning to a corporation tax regime where mobile is treated equally to other sectors has the potential to stimulate investment and extend access to mobile services, allowing more of the Bangladeshi population to benefit from digital inclusion. The mobile industry is not an 'economic bad' in the way that, for example, the tobacco industry is. In fact, the mobile industry provides positive externalities which would be recognised in a more equitable and balanced taxation structure.

3.5.2 Reducing regulatory fees

Regulatory fees represent a significant part of mobile operators' tax payments. They include both recurring fees, such as annual licence fees and The SOF as well as non-recurring payments, such as the prices paid to acquire spectrum at auction.

These payments are made by mobile operators to BTRC, which applies a further 10% withholding tax on all payments. This withholding tax is significant and negatively impacts mobile operators' cash flow. Its recent introduction is likely to lead to increased investment uncertainty.

In general, regulatory taxes and fees may negatively affect the roll-out of network infrastructure[90], through:

- Reducing incentives to invest due to lower returns on the capital employed.
- Increasing uncertainty on future tax liability, which is also likely to impact investment decisions.
- Causing distortions across industries and within ICT sector due to higher costs for mobile operators, further driving (local and foreign) investment away from mobile.
- Being subject to frequent changes that increase uncertainty and discourage investment both domestically and internationally.

Additionally, these taxes are usually levied as a percentage of revenues, as in the case of the SOF and the 'revenue share' tax, which causes further distortions to investment compared to profit taxes.

Removing the 10% withholding tax on regulatory payments has the potential to increase spending on new technologies and incentivise mobile operators to invest in new spectrum. Appropriate pricing of spectrum appears a key issue if Bangladesh is to embrace further uptake of mobile broadband services.

3.5.3 Reducing regulatory and tax policy uncertainty

Investment in infrastructure is particularly sensitive to policy uncertainty. A number of studies have indicated that the wider regulatory environment in Bangladesh is disincentivising much needed investment in the telecommunications sector. These studies have highlighted that the possibility of arbitrary regulatory intervention[91] and the tax framework may be ongoing investment inhibitors[92].

In addition, mobile operators have reported a number of unpredictable tax authority policies which increase the difficulty of operating in Bangladesh such as bona fide business expenses often being disallowed on an arbitrary basis[93]. These practices lead to unnecessary administrative burdens, increase uncertainty and deter investment, especially from foreign countries. Further, the recently introduced SIM card replacement tax of BDT 100 has been subject to legal dispute for some time, and the SIM tax on new SIM cards of BDT 300 was implemented following the initial licensing of mobile operators[94].

A more stable and equitable taxation policy has the potential to incentivise domestic investment and attract FDI.

90. Gorecki, Hennessy, Lyons, How impact fees and local planning regulation can influence deployment of telecoms infrastructure, 2011.
91. AT Capital, The Bangladesh Telecoms Sector: Challenges And Opportunities, 2010.
92. GSMA, Bangladesh: Asia's untapped mobile broadband opportunity, 2013.
93. Deloitte and GSMA, 2012, Mobile telephony and taxation in Bangladesh.
94. http://newagebd.net/82368/govt-gives-four-mobile-cos-tk-542cr-impunity/#sthash.2KnXhjaH.PWbKOmJV.dpbs

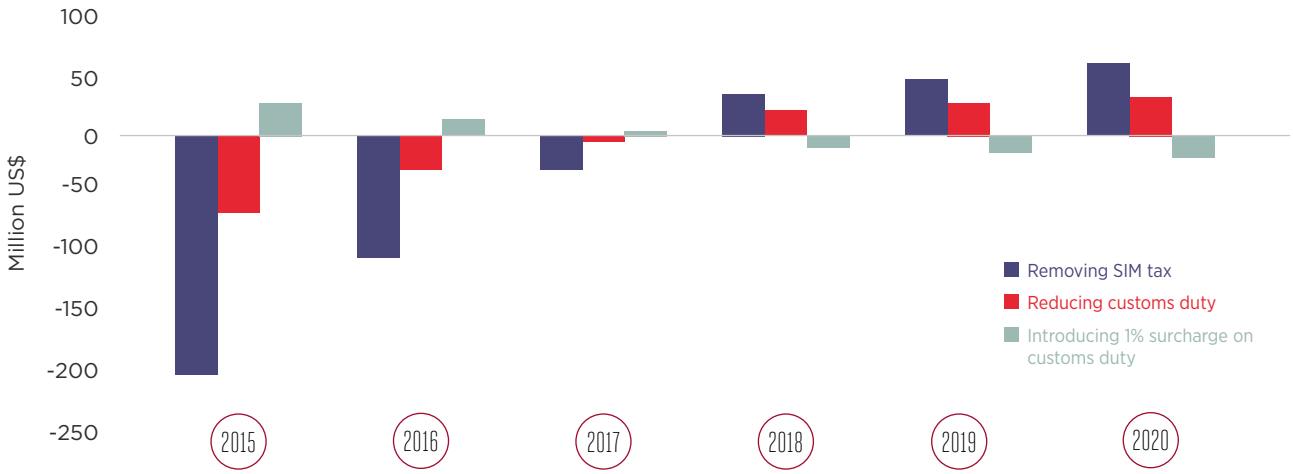
4 Mobile taxation in Bangladesh: an agenda for reform

4.1 Contribution to fiscal stability

Reducing the level of taxation on the mobile sector may impact government revenue in the short term. However, by increasing mobile penetration and promoting economic growth, reducing the tax burden on mobile could also increase the tax base, presenting the potential for the government to recover revenue that may be lost in the short term.

The additional economic growth arising from the abolition of the SIM card sales tax and reduction of customs duties on network equipment could create more revenue for the government and potentially enable the government to reach tax neutrality within three years. However, the opposite could occur after an increase in taxation, as illustrated by the analysis of the impacts of the introduction of a 1% surcharge on mobile services.

Potential tax revenues compared to the base case under tax policy alternatives



Source: Deloitte analysis based on operator, GSMA, IMF and World Bank data

Figure 23

4.2 Options to align mobile taxation to standard goods taxation

By transitioning to a taxation structure where mobile is taxed equally to other goods and sectors, the government of Bangladesh can promote digital inclusion, increase productivity and generate economic growth, whilst also benefitting from increased tax revenues. This could produce positive spillovers throughout the Bangladeshi economy and society. The government, mobile operators, consumers and the economy as a whole could all benefit. Moreover, the subsequent spread of mobile services could contribute to the economic and social objectives of Bangladesh, improving access to life-enhancing services such as education and health applications and facilitating the country's transition to a knowledge-based economy.

By working in partnership with the mobile operators to minimise the distortions and inefficiencies created by sector-specific taxation, the Bangladeshi government has the opportunity to make progress on its key ICT and development ambitions.

- **Development of ICT usage across sectors:** By reducing mobile-specific taxation, the government could increase the number of mobile broadband connections, thereby promoting digital inclusion. This has the potential to enable the widespread use of ICT across areas such as healthcare, education and the provision of government services. Moreover, this could provide new opportunities for innovation and the development of new applications and content, fostering further growth within the sector.

- **Increased economic development:** Based on the modelling described above, removing the SIM card tax and reducing customs duties on network equipment have the potential to increase the usage of mobile services and mobile broadband, as well as generate up to US$768 million in additional investment. GDP could be increased by up to US$2.3 billion for Bangladesh if the SIM card sales tax was abolished. On the other hand, the introduction of a 1% surcharge could reduce investment by US$118 million and GDP by US$353 million.

- **Poverty reduction and support of the move towards a knowledge-based economy:** By increasing economic growth, reforming mobile sector taxation has the potential to lift 615,000 Bangladeshis out of poverty. The development of mobile applications for use in agriculture, healthcare and education, and the creation of local content can also promote higher-skilled jobs.

- **Improved network infrastructure:** Reforming taxation on network equipment has the potential to increase investment in the improvement of mobile broadband network infrastructure. Moreover, further international investment could allow for economies of scale for mobile operators, allowing reduced prices for consumers in the longer term and facilitating accelerated mobile broadband penetration.

- **Sustainable government revenues:** Achieving the government's ICT objectives need not result in a reduction in government revenues in the medium to long term. By increasing productivity and economic growth, a reduction in taxes on the mobile sector has the potential to generate up to almost US$61 million in additional tax revenues by 2020 through the expansion of the tax base.

Based on evidence from a series of studies[95] and the best practice principles outlined in Table 4[96], as well as on consultation with GSMA and mobile operators, a number of areas for tax reform have been identified which could support the mobile sector to further contribute to economic growth and government revenues over and above its current impact:

- **Reduce specific taxation of the mobile sector.** Higher than normal taxation on mobile operators and consumers distorts production and consumption behaviour; it may limit usage of digital services, reduce the ability of mobile operators to finance investment in digital infrastructure, and can in the long term reduce government revenues.

- **Apply phased reductions of taxes on established services.** Phased reduction of mobile specific taxes on mobile operators' revenues and on usage offers government the opportunity to benefit from the economic contribution of mobile whilst, in parallel, limiting short-term fiscal costs.

- **Reduce taxation on access.** Taxes such as the SIM card sales tax represent a significant barrier to access, and it is important that any barrier to access mobile broadband is reduced. The Bangladeshi government can benefit in the medium term from reduction in access charges as more users consume mobile services.

- **Reduce complexity and uncertainty of mobile taxation.** Any unpredicted tax change that occurs after investment in spectrum licences is made may impact negatively on mobile operators' business plans, making planned investment less viable. The risk of future tax rises can also affect current investment decisions and can therefore be expected to reduce both FDI and domestic investment in the medium-term. Complex tax systems also create compliance costs for mobile operators.

- **Facilitate the development of emerging services through supportive taxation.** The growth of mobile data and other innovative applications opens up the possibility for the sector to increase its economic value through a whole new generation of products and services ranging from health care services to education and finance.

95. GSMA/Deloitte, studies on digital inclusion and mobile taxation in Ghana, Tanzania, Pakistan; GSMA/Deloitte, Mobile taxes and Fees - A Toolkit of Principles and Evidence, 2014.
96. IMF, Tax policy for developing countries, 2001.

Appendix A: Methodology

A.1 Estimation of the economic impact of a tax change

In order to conduct the tax scenario analysis, a model was created to describe the mobile sector and the macro-economy of Bangladesh. This model is able to forecast the impacts of more than 25 sector-specific and macroeconomic variables up to 2020, which can be driven either by removing or changing current taxes and fees or by the introduction of a new tax or fee.

Firstly, a base case scenario is developed for the mobile sector and economy, where taxes and fees remain at their current level throughout the period 2015-2020. The base year for the forecast is 2013, which is the latest year for which data is available. Then, a simulation of alternative policy scenarios quantifies the economic impact of reformed mobile sector taxation. It is assumed that the tax policy is implemented in 2015 and the model estimates the effects up to 2020.

Modelling the macroeconomic impact of changes to mobile taxation in Bangladesh

As illustrated in Figure 18 in Section 3.1, the following steps are involved in the modelling process:

1. The tax or fee change affects the price of mobile services. This depends on the extent to which the tax reduction is passed on to consumers, modelled by a pass-through rate which determines the percentage of the tax and fee payments that is reflected in the retail price of mobile services. All assumptions in the model are described in more detail in the section below.

2. Changes to the price of mobile services affect their consumption. In order to estimate this, assumptions are made on the price elasticity of demand[97], which measures how much demand for mobile services will change in response to a price change.

3. Changes in prices and consumption alter the amount of revenue generated from mobile services. Increased demand generates additional employment opportunities in the sector, while increased operator revenues enable additional capital expenditure on the development of network infrastructure.

4. These sector impacts lead to economy-wide impacts, which are estimated through assumptions that describe the impact of the mobile sector on the wider Bangladeshi economy. These effects include the impact on GDP, calculated through a multiplier that links mobile and 3G penetration rates to economic growth, and the effect on employment, calculated through a multiplier which estimates the number of jobs created across the economy for every job created within the telecom sector. The proliferation of mobile services also benefits productivity, quantified through the change in Total Factor Productivity (TFP).

5. Thanks to additional GDP growth from reformed taxation on mobile, the potential short-term loss of tax revenues from the mobile industry can be offset by tax revenues from more broad-based consumer and mobile operator taxes.

The inputs for the model are provided by three of the four leading mobile operators in Bangladesh, the GSMA and publicly available statistics from the World Bank and the IMF. The outputs are derived based on estimates of the elasticity of demand for mobile services from a number of developing markets, while the impacts of mobile and broadband penetration on GDP have been derived from econometric studies of similar developing markets.

97. An elasticity describes the quantitative impact of a variable on another variable; the usual notation is that a 1% increase in a variable will lead to an x% change in another variable.

A.2 Key assumptions behind the model

The assumptions underlying the model have been researched from a review of academic literature and previous studies in this area. These are discussed in more detail below.

Pass-through rates

Taxes and fees paid by mobile operators and consumers may be completely or partly passed-through to the end-consumer prices. The level of pass-through of taxes and fees to final prices will depend on market power and the price elasticity of demand, among other factors. For this analysis, an average pass-through rate of 75% has been assumed for taxes. For the SIM card sales tax a pass-through rate of 67% is used. These assumptions were based on conversations with mobile operators and Deloitte analysis of developing markets in Asia.

Price elasticity of demand

A change in the price of mobile services leads to a change in the consumption of these services, both in terms of ownership and usage. Consumption changes depend on the price elasticity of demand, that is, the responsiveness of consumers to price changes. The assumptions regarding elasticity of demand are based on a review of studies conducted in a number of developing markets on the elasticity rates observed in recent years (countries include Sri Lanka, Turkey and Kenya). The elasticity of demand for mobile subscriptions is assumed to be -0.61[98]. For those that own mobile devices, demand for mobile services is more elastic: the elasticity of demand for mobile services is assumed to be -0.70, based on a number of studies within the field[99].

Employment multiplier

The employment multiplier is used to estimate the impact of a change in employment in the sector on total employment in the economy. The magnitude depends on the economic features of the sector, such as the degree of interconnection across the supply chain. The employment multiplier is assumed to be 11.1[100]. That is, for every additional job created within the mobile sector, an additional 11.1 jobs are generated in the wider Bangladeshi economy.

Market penetration Impact

There is substantial evidence in the literature on the impact of mobile penetration on GDP growth. Analysis conducted by the GSMA on the impact of mobile and 3G penetration on GDP growth estimated that a 1% increase in market penetration leads to an increase in GDP growth of 0.28 percentage points[101]. In terms of the impact of internet penetration, it is assumed that a 1% increase in internet penetration increases the GDP growth rate by 0.077 percentage points[102]. This model does not consider switching between 2G and 3G services and so these impacts are treated separately[103].

Total Factor Productivity Impact

The impact on TFP is calculated based on the change in GDP, employment and investment. TFP is a measure of economic productivity that accounts for changes in output over and above those expected as a result of increased employment and investment. It is defined as follows:

$$TFP = \frac{GDP}{Capital^{a} Labour^{\beta}}$$

where it is assumed that a = 0.3 and β=0.7[104].

98. Chabossou et al, 2009; UK Competition Commission, 2003.
99. See, for example: Gruber and Kontroupis, 2010, Mobile telecommunications and the impact on economic development; Wheatley, J. J., 1998, Price elasticities for telecommunication services with reference to developing countries; GSMA, 2005, Tax and the digital divide: How new approaches to mobile taxation can connect the unconnected. London: GSMA
100. This figure was based on a number of studies conducted in developing and developed countries; see, for example, Moretti, 2010; O2 for ONS, 2002; Ovum, 2010; Zain, Ericsson, 2009; Kaliba et al, 2006.
101. This is based on a study of 40 economies over the period 1996-2011; for full details of the methodology, see http://www.gsma.com/publicpolicy/wp-content/uploads/2012/11/gsma-deloitte-impact-mobile-telephony-economic-growth.pdf
102. Qiang, C. Z. W., Rossotto, C.M., 2009, Economic Impacts of Broadband, in Information and Communications for Development 2009: Extending Reach and Increasing Impact, World Bank, Washington D.C., 35-50.
103. That is, given that it is not known whether a new 3G subscriber may previously have been a mobile user, this is treated as an increase in internet penetration only, not as an increase in mobile and internet penetration.
104. Bassanini A and Scarpetta S, 2001, "The Driving Forces of Economic Growth: Panel Data Evidence for the OECD countries".

Poverty impact

The impact on poverty rates is estimated based on empirical coefficients of income elasticity to poverty[105] and on the international poverty line at US$1.25.

A.3 Scenario simulation results

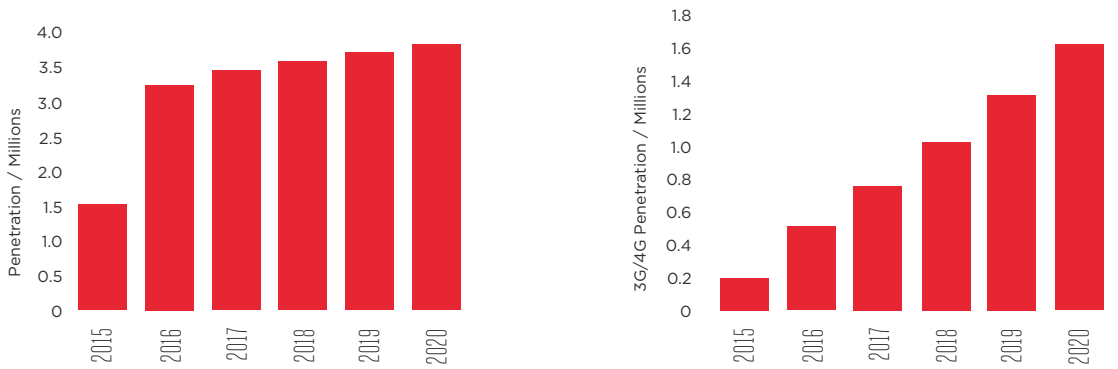
This report uses a taxation policy simulation model in order to assess the impacts of a change in taxation policy on the mobile sector and the wider economy. Three scenarios were addressed and each compared against the base case scenario, where there is no change in tax policy. The overall findings of each scenario are described in more detail in the sections below, on the assumption that the change in tax policy is implemented in 2015.

Scenario 1

Scenario 1 models the abolition of the BDT 300 tax on SIM card sale.

In particular, the reduced cost of acquiring a mobile phone following the removal of the SIM tax could stimulate an additional 3.7 million mobile connections in the region, 1.6 million of which could be mobile broadband enabled. This could raise total market penetration by 2.30% relative to the base case in 2020, extending access to mobile telephony across Bangladesh. The increased availability of mobile phones could also increase usage of mobile services, with a forecasted increase of 5.2 billion minutes of use relative to the base case in 2020.

Potential additional impact on total mobile penetration (left) and mobile broadband penetration (right) under scenario 1 relative to the base case



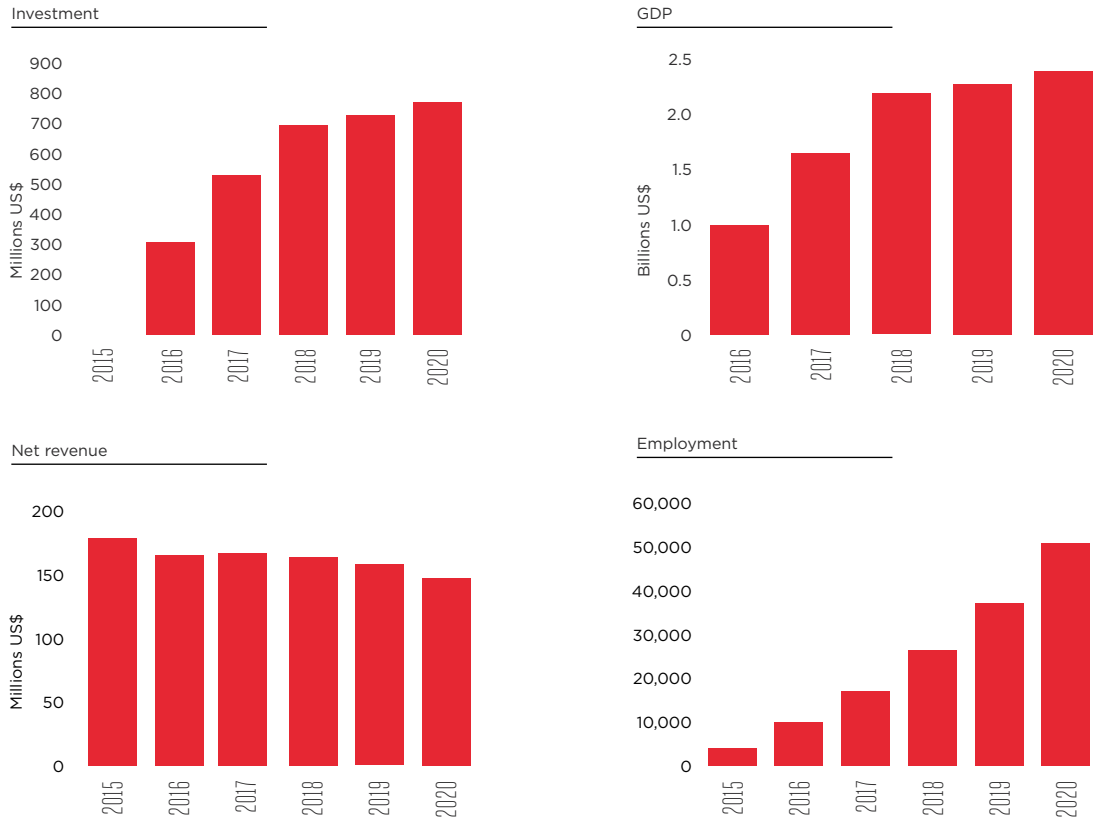
Source: Deloitte analysis based on operator, GSMA, IMF and World Bank data

Figure 24

105. Ram (2012) "Income elasticity of poverty in developing countries: updated estimates from new data", Applied Economic Letters, 2012.

The increase in connections could subsequently benefit both the mobile sector and wider economy. Increased demand for handsets and usage of mobile services could increase operator revenues by US$148 million, enabling an additional US$291 million of capital expenditure, which could be used for expanding additional sites across Bangladesh, further increasing coverage of 2G and mobile broadband services. Increased economic activity and the development of technology and innovation as a result of the growth of the mobile sector could then be reflected in an additional US$2.3 billion and US$768 million in GDP and investment respectively relative to the base case in 2020, whilst employment could also rise by over 50,000 relative to the base case. Increased access to mobile telephony, together with wider economic development, could reduce the number of people living in poverty by 615,000.

Potential additional impact on macroeconomic indicators under scenario 1 relative to the base case

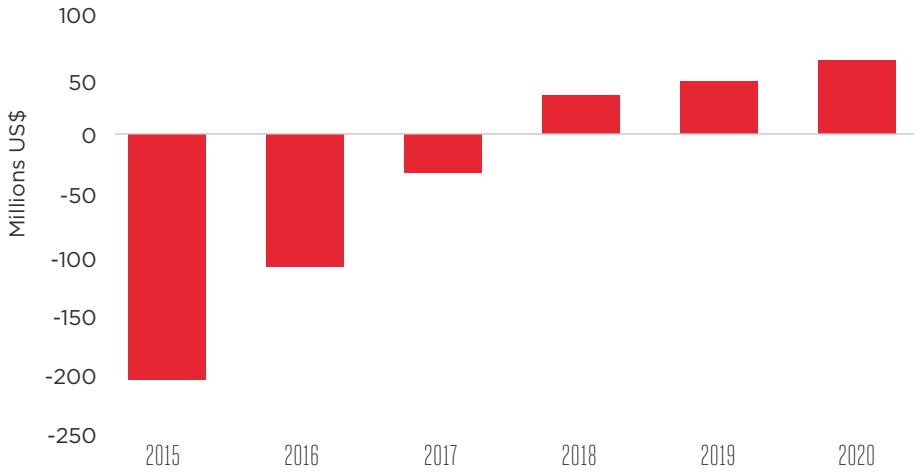


Source: Deloitte analysis based on operator, GSMA, IMF and World Bank data

Figure 25

As a consequence of wider economic growth, it is estimated that the government of Bangladesh could also benefit from increased tax revenues in 2020 relative to the base case. Although tax revenues could fall in the first years following the abolition of the SIM card tax, the expansion of the tax base following wider economic growth could allow for tax neutrality in 2017 and an increase in tax revenues of US$61 million relative to the base case in 2020.

Potential tax revenues under scenario 1 relative to the base case



Source: Deloitte analysis based on operator, GSMA, IMF and World Bank data

Figure 26

Scenario 2

Scenario 2 models the reduction of customs duties on imported network equipment. Network equipment is taxed between 2-25%. A breakdown of the tax applied across different equipment has been provided by operators. The average customs duty applied across network equipment is calculated to be 17.4% based on this data. If the standard customs duty of 12% to all pieces of network equipment which are currently subject to 25% customs duty, the average rate applied across network equipment would be 8.8%.

It is estimated that the reduction in the cost of mobile ownership could stimulate an additional 1.4 million connections in 2020 relative to the base case, with 586,000 of these mobile broadband enabled. This represents a 0.84% increase in total mobile penetration relative to the base case. Furthermore, the reduced cost of mobile usage could generate an additional 1.9 billion minutes in 2020 compared to the base case scenario where taxes and fees remain unchanged.

Potential additional impact on total mobile penetration (left) and mobile broadband penetration (right) under scenario 2 relative to the base case

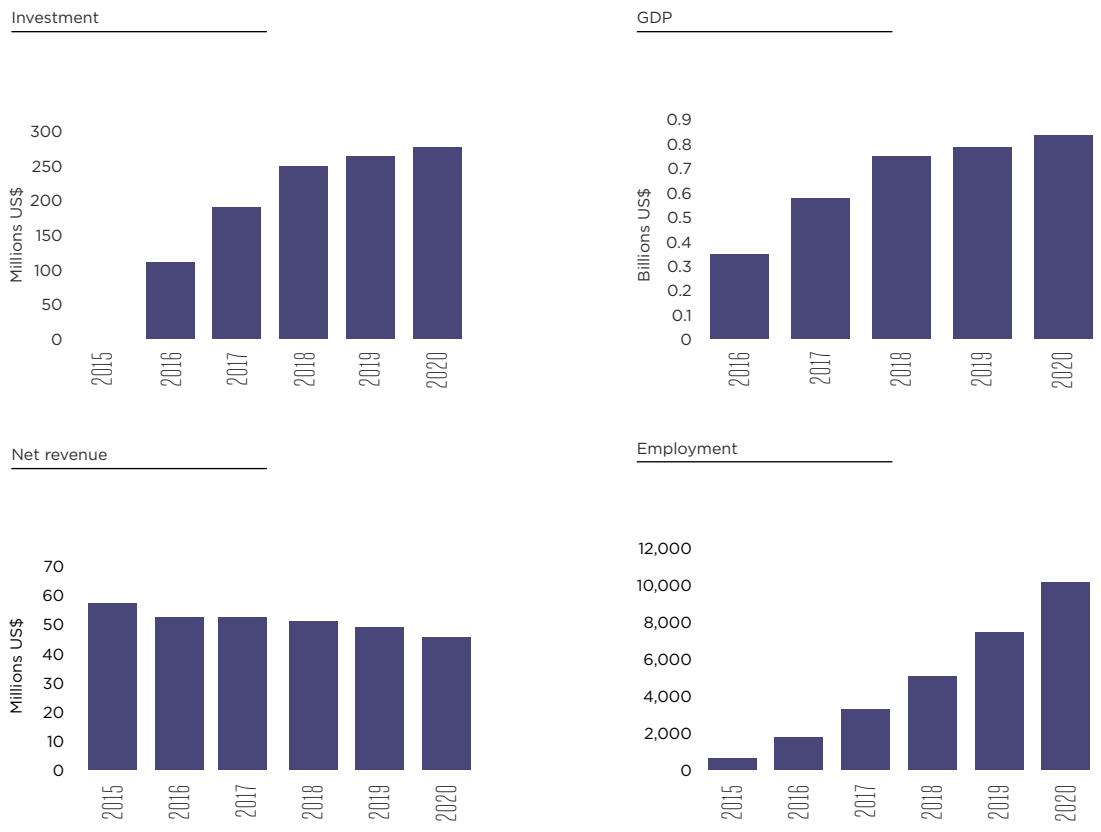
Source: Deloitte analysis based on operator, GSMA, IMF and World Bank data

Figure 27

Positive spillovers across the economy as a consequence of this growth could stimulate an additional US$837 million in GDP and US$279 million worth of investment in 2020 relative to the base case. This could create employment opportunities for nearly 10,000 Bangladeshis, whilst this workforce could also be 0.31% more productive. Furthermore, wider economic development and employment opportunities following growth within telecommunications could reduce the number of people living below US$1.25 per day by 224,000, helping the Bangladeshi government to achieve its development objectives.

The increase in demand for handsets and usage could also benefit mobile operators in the form of an additional US$46 million in total sector revenues. This could allow mobile operators to increase capital expenditure on the development of network capacity by US$60 million relative to the base case in 2020, which could deliver additional 2G and mobile broadband sites across the region.

Potential additional impact on macroeconomic indicators under scenario 2 relative to the base case

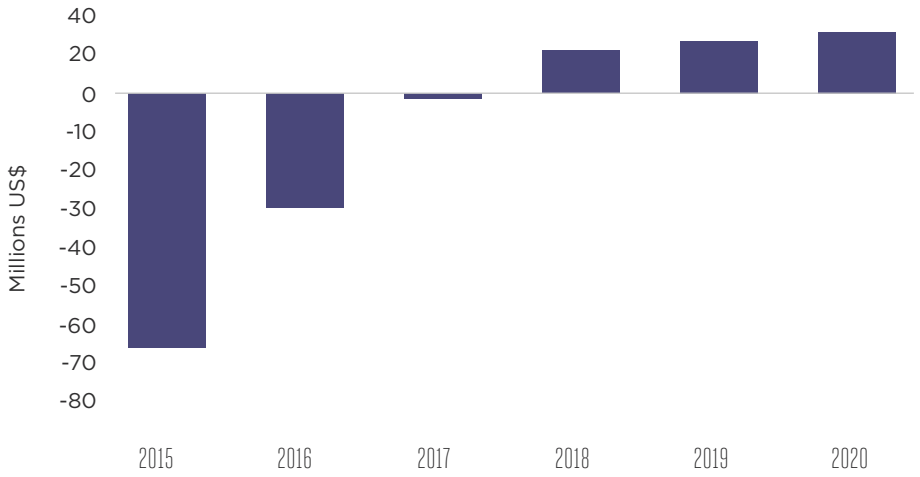


Source: Deloitte analysis based on operator, GSMA, IMF and World Bank data

Figure 28

Together with this macroeconomic improvement, the government of Bangladesh stands to benefit from increased tax revenues as a result of wider economic growth and the expansion of the tax base. It is estimated that the government could achieve revenue neutrality by 2017 with tax revenues of US$32 million in 2020.

Potential tax revenues under scenario 2 relative to the base case



Source: Deloitte analysis based on operator, GSMA, IMF and World Bank data

Figure 29

Scenario 3

The third scenario models the introduction of a 1% surcharge on mobile services. This could decrease demand for mobile services, meanwhile increasing barriers to affordability and thus further reducing penetration and economic growth.

The introduction of a 1% surcharge on mobile services could increase the cost of accessing mobile services, decreasing total connections by 576,000 of which 249,000 could be mobile broadband enabled. It is estimated that this could represent a decrease in total mobile penetration of by 293,000 unique subscribers relative to the base case in 2020.

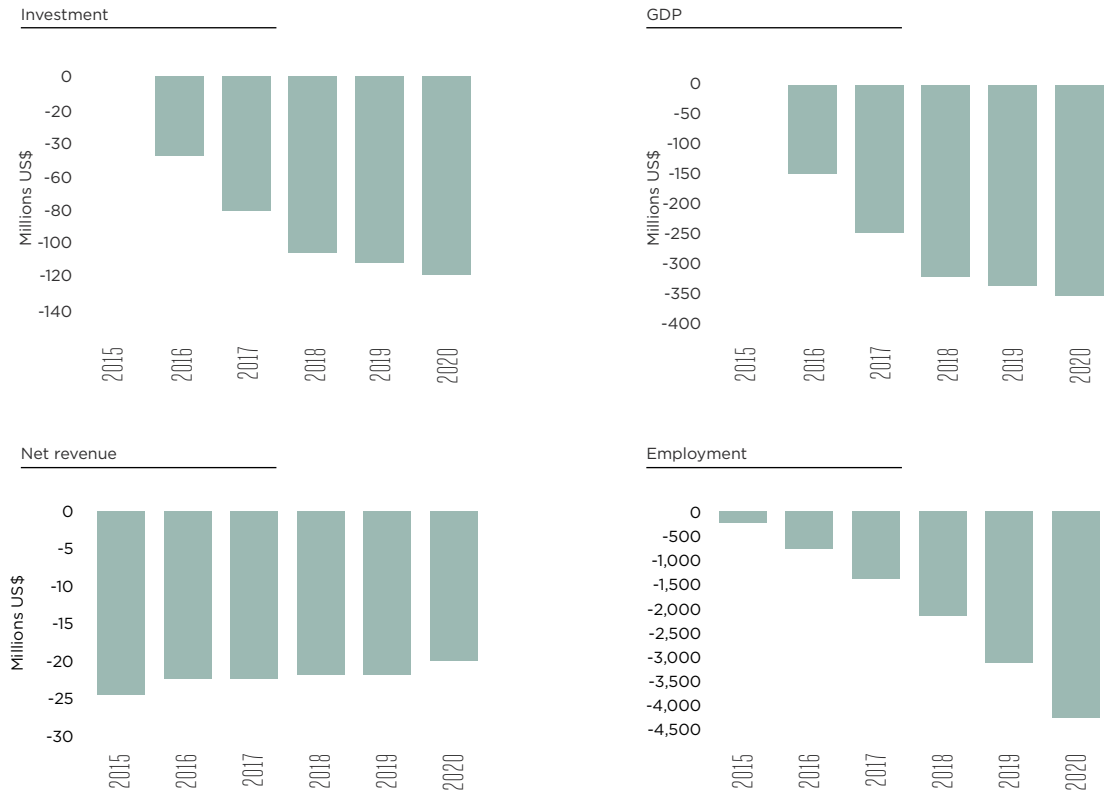
Potential additional impact on total mobile penetration (left) and mobile broadband penetration (right) under scenario 3 relative to the base case

Source: Deloitte analysis based on operator, GSMA, IMF and World Bank data

Figure 30

The decrease in usage of mobile services could reduce net operator revenues by US$20 million relative to the base case in 2020, also decreasing US$25 million of capital expenditure. The negative spillovers from the mobile sector, particularly towards the development of technology and knowledge-based sectors in Bangladesh, could decrease GDP and investment across Bangladesh by US$355 million and 118 million respectively, whilst also decreasing employment by 4,300 relative to the base case in 2020.

Potential impacts on macroeconomic indicators under scenario 3 relative to the base case

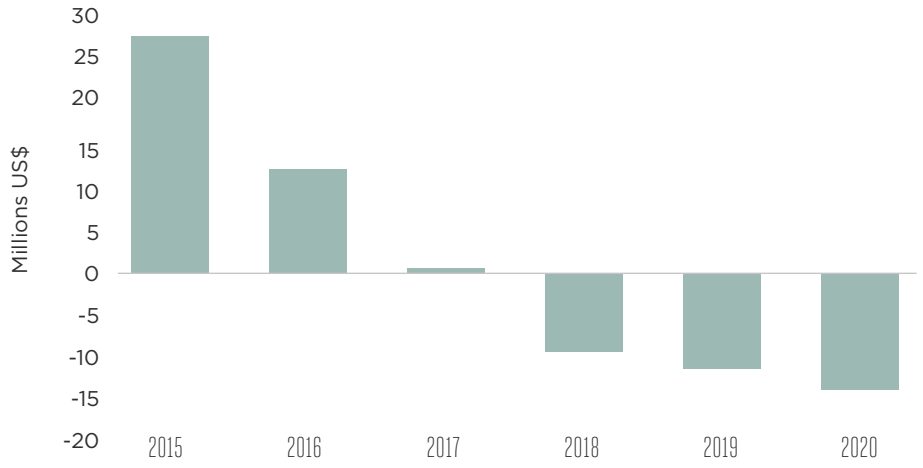


Source: Deloitte analysis based on operator, GSMA, IMF and World Bank data

Figure 31

The reduction in growth of the mobile sector and wider economy, following the introduction of a 1% surcharge on mobile services, could subsequently decrease the tax base and hence government tax revenues over time. It is estimated that by 2017 the government of Bangladesh could start losing tax revenues following an initial gain of US$28 million in 2015. Indeed by 2020, the government could potentially lose US$14 million in tax revenues, worsening the government budget position and reducing the opportunity to gain economic benefits associated with the proliferation of mobile services.

Potential tax revenues relative to the base case under scenario 3



Source: Deloitte analysis based on operator, GSMA, IMF and World Bank data

Figure 32

Glossary of Terms

Term	Description
ARPU	Average Revenue per User
BTRC	Bangladesh Telecommunications Regulatory Authority
CAGR	Compounded Annual Growth Rate
GDP	Gross Domestic Product
FDI	Foreign Direct Investment
ICT	Information and Communication Technology
IMF	International Monetary Fund
ITU	International Telecommunications Union
M2M	Machine to Machine
Mobile penetration	Mobile cellular subscribers per 100 inhabitants
PPP	Purchasing Power Parity
Revenue neutrality	Taxing practice that enables government to receive the same level of tax revenues, despite changes in tax laws
SIM	Subscriber Identity Module
SMS	Short Message Service
SOF	Social Obligation Fund
VAS	Value Add Services
VAT	Value Add Tax
TCMO	Total Cost of Mobile Ownership, includes the cost of purchasing a handset or mobile device, and the recurring cost of using it
TFP	Total Factor Productivity

GSMA Head Office
Level 2, 25 Walbrook
London, EC4N 8AF,
United Kingdom
Tel: +44 (0)207 356 0600

www.gsma.com