



Country overview: Bangladesh

Mobile industry driving growth and enabling digital inclusion



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An aerial, high-angle photograph of a busy city street, likely in South Asia. The street is filled with a mix of modern and older buildings. On the left, a tall, multi-story building with a grid-like facade of windows and balconies stands prominently. In the center, a large building is under construction, with its steel framework visible. The street below is active with various modes of transport, including rickshaws, motorcycles, and cars. A wide, paved road with lane markings runs diagonally from the bottom right towards the center. In the bottom right corner, a portion of a large, ornate structure with a dome and minaret-like features is visible. The overall scene depicts a dense, developing urban environment.

Executive summary

A burgeoning mobile industry, but significant challenges to digital inclusion remain

The mobile industry in Bangladesh has scaled rapidly over the last decade to become the fifth largest mobile market in Asia Pacific, with 85 million unique subscribers in 2017 – half the population. By helping to promote digital inclusion and support the delivery of essential services, the mobile industry makes a vital contribution to the economy of Bangladesh and plays a crucial role in supporting the achievement of the government’s Digital Bangladesh and Vision 2021 initiatives, as well as the UN’s Sustainable Development Goals (SDGs).

However, with a predominantly 2G mobile market, the country faces a significant digital divide: only one in five Bangladeshis subscribed to mobile internet services in 2017, despite 3G networks covering in excess of 90% of the population. Bangladesh has one of the lowest internet penetration levels in the region.

While network coverage remains a barrier to access, particularly in rural and remote areas of the country, coverage by itself does not guarantee access.

The enablers critical to creating the right conditions for mobile internet connectivity to flourish rank low in Bangladesh, despite the progress made in recent years. In particular, the country scores below average on infrastructure and affordability enablers relative to its regional peers. The slow transition to mobile broadband technologies in Bangladesh is also, in part, a matter of timing: the 4G/LTE spectrum auction only took place in February 2018, following similar delays to the 3G auction, making Bangladesh one of the last countries in South Asia to award licences for the technologies.

Affordability represents a major barrier to the uptake of mobile services in Bangladesh

A higher cost of mobile access will have a greater impact on the poorest consumers, as it constitutes a higher share of their monthly income. A medium consumption basket of 1 GB of data would cost an individual in the bottom 20% by income distribution approximately 11% of their monthly earnings in Bangladesh, above the “1 for 2”¹ affordability threshold recently adopted by the United Nations.² High levels of taxation and

fees applied to the mobile sector affect the total cost of mobile ownership (TCMO) by directly raising the retail prices faced by consumers, and thus represent a significant barrier to digital inclusion. For example, taxes on the use of mobile services in Bangladesh represent a higher share of tariff costs (22%) than in a number of neighbouring countries.



Owing to a sustained period of economic growth, by the time of Bangladesh’s 47th anniversary of independence in March 2018, the country had reached lower middle-income status. By the 50th anniversary in 2021, Bangladesh aims to reach middle-income status, with poverty eradicated.

1 “1 for 2” refers to 1 GB of data costing less than 2% of monthly income
 2 2025 Targets: “Connecting the Other Half”, UN Broadband Commission, 2018

Spectrum and tax barriers reduce operators' ability to invest in network coverage and expansion

To date, the limited allocation of 3G spectrum in Bangladesh and its price in previous auctions has had a significant negative impact on the quality of mobile services, hindering the uptake and use of digital services. With the February 2018 spectrum auction, Bangladesh policymakers made important steps towards introducing 4G/LTE services in the country, in support of Digital Bangladesh. However, high auction reserve prices and associated licence fees remained. When coupled with a mobile market with some of the lowest ARPU levels in the world, some of this high-priced spectrum went unsold. This highlights the importance of setting reserve prices for future spectrum auctions at levels that consider operators' needs to not only finance access to spectrum, but also to deploy infrastructure to use that spectrum. This will become even more important as mobile broadband adoption scales and increased data demand further strains networks, requiring even greater access to spectrum. Without sufficient spectrum, quality of

service for users will suffer, impeding the use of digital services. The government should ensure both the timely release of spectrum and fair prices for access to that spectrum to facilitate better quality and more affordable services.

Although taxes and fees from the mobile industry remain an important source of revenue to finance public expenditure in Bangladesh, the current tax system is not conducive to improving the affordability of mobile services. Taxes and fees on the mobile sector in Bangladesh are disproportionately high relative to other sectors in the economy and to other countries in Asia, and are often levied in ways that do not account for key investment and economic features of the industry. In 2014, the mobile industry in Bangladesh made a large contribution in taxes and fees relative to its size in the economy: tax and fee payments from the sector, as a share of total tax revenues, were 4.5x greater than the sector's revenue as a share of GDP.

A forward-looking regulatory environment will help boost the uptake of mobile internet services

As Bangladesh progresses to a more advanced digital society, promoting and extending connectivity has the potential to deliver substantial social and economic benefits to the country. It is therefore crucial for the regulatory and legal environment to recognise that mobile industry dynamics have evolved in recent years. Through review, reform and modernisation of regulation in key areas, policymakers and the regulator in Bangladesh can play a major role in expanding mobile broadband access and adoption across the country, supporting progress with Vision 2021 and the SDGs.

A long-term roadmap for spectrum at affordable prices is required

The government of Bangladesh should create a predictable roadmap for future assignments of spectrum (e.g. 700 MHz), in consultation with industry players to ensure fair and reasonable policies and regulations while also supporting effective pricing of spectrum. This will help create a stable and transparent investment environment that takes into account the long lead time required for network rollout and expansion, while also facilitating better quality and more affordable services.

Rebalance taxation in line with best-practice principles to improve affordability and foster investment

Reforming taxation applied on the mobile sector towards a more balanced and efficient structure, in line with principles established by international organisations, can increase affordability of mobile products and services, and can add further value to the economy through productivity gains and the knock-on impact on other industries. Tax rules should be clear and simple to understand, so that taxpayers can anticipate the tax consequences in advance of a transaction. Abolishing inconsistent application of tax rules will provide a better investment climate.

Allow all types of network sharing to facilitate mobile broadband expansion

Network sharing offers an opportunity to help bring mobile internet services to all Bangladeshis, particularly those in rural and remote areas. The government should allow all types of network infrastructure sharing including MORAN, MOCN and roaming. As part of this, infrastructure sharing should remain optional for mobile operators; forcing them to share infrastructure creates a disincentive to deploy new infrastructure and may negatively affect investment and coverage.

Rationalise licensing regime to support quality of service for the consumer and improve the investment climate

The current licensing regime in Bangladesh is highly fragmented and complex, with multiple licensees/entities (in addition to mobile operators) participating in the service delivery value chain. The government of Bangladesh should seek to rationalise the licensing regime and reduce the unpredictability of licensing changes to improve the investment climate and thus support the overall experience for mobile users.

Reform regulation to realise the full potential of mobile financial services

Emerging services including mobile financial services (MFS) and mobile agriculture (mAgri) services can help accelerate productivity and financial inclusion throughout the economy. The government should create an open and level MFS playing field that allows both banks and non-bank providers to offer storage and payment services – particularly operators, which are well suited to building sustainable services and extending the reach of the formal financial sector.

1

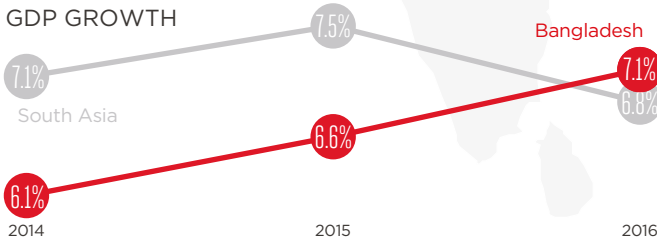
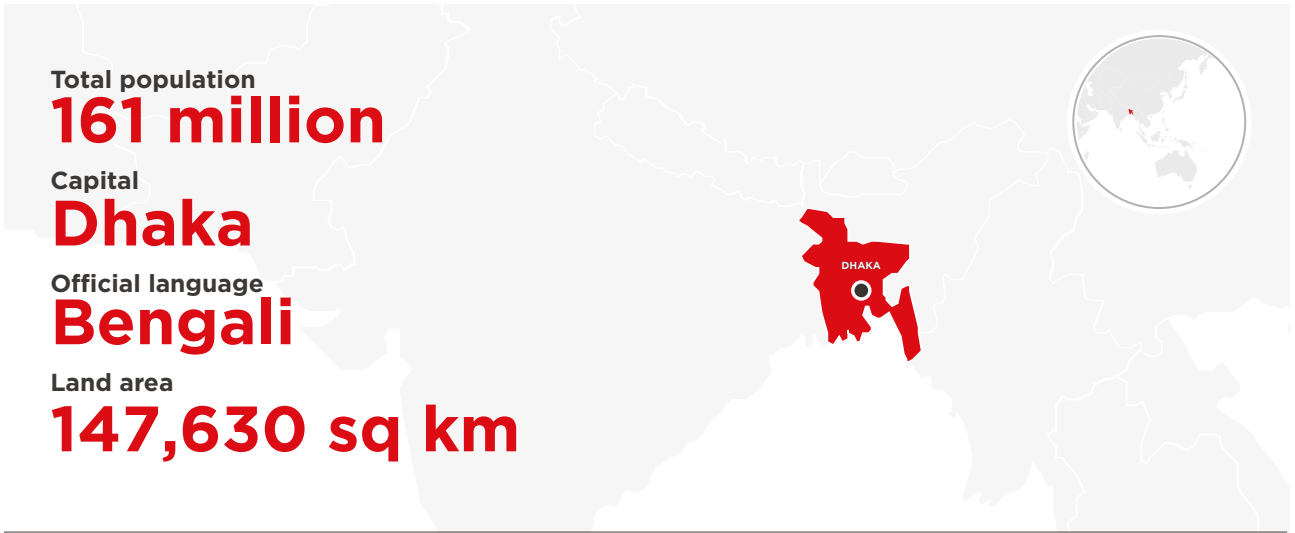
Bangladesh as a digital society



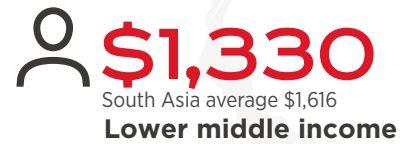
1.1 Bangladesh in numbers

Source: World Bank, UN, ILO, Bangladesh Bureau of Statistics

Bangladesh: key facts



GNI PER CAPITA (CURRENT \$)



PEOPLE

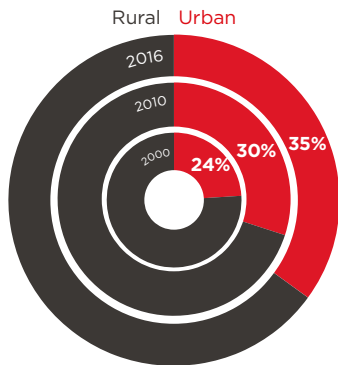
Population



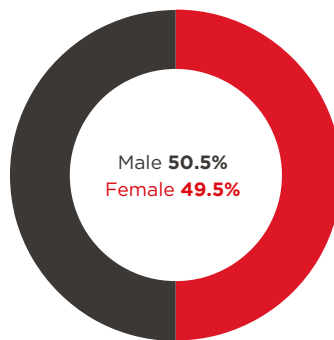
Population density

1,252 people/km²

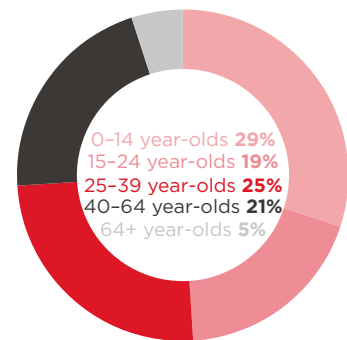
one of the highest in the world:
3× that of India and 5× that of Pakistan



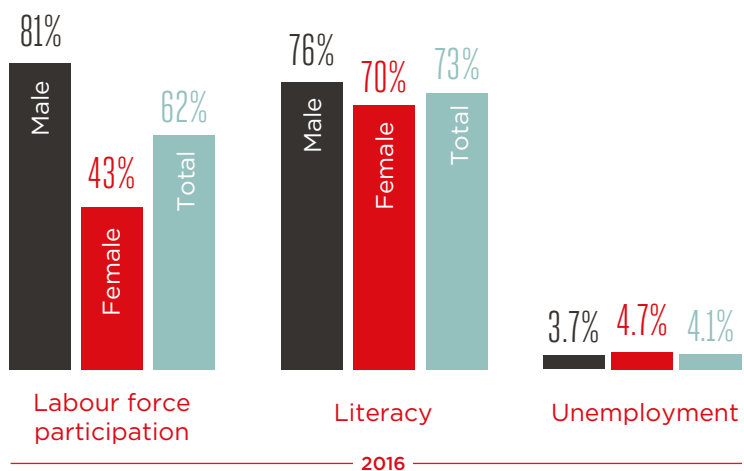
INCREASING URBANISATION



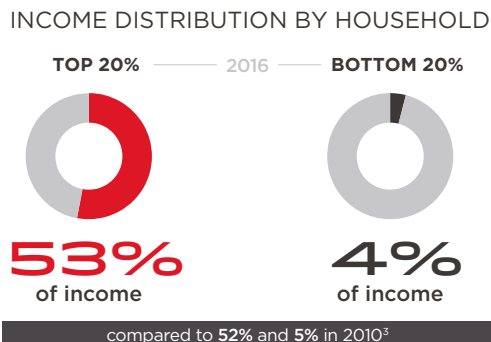
EVEN GENDER SPLIT



YOUNG POPULATION

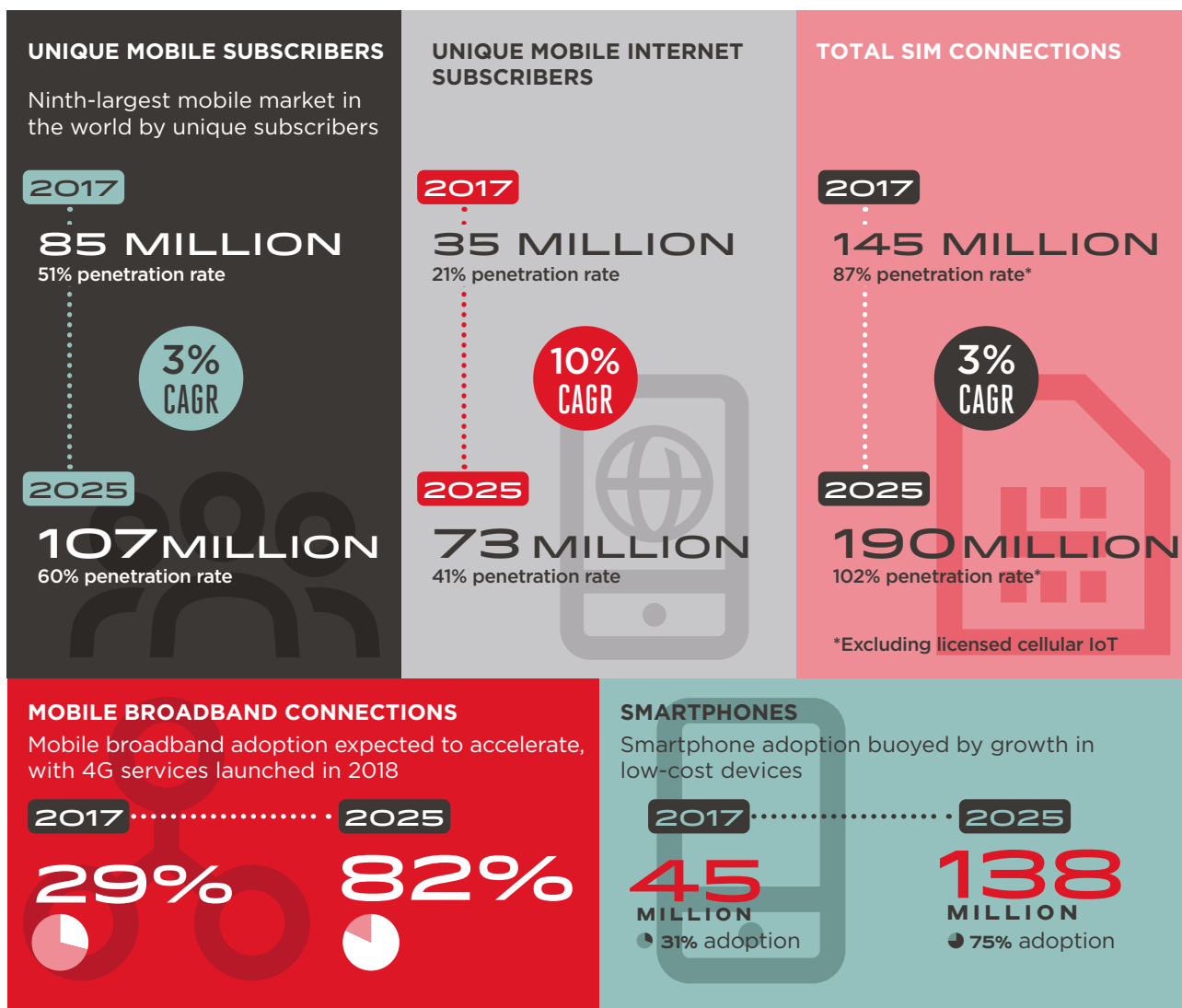


40 MILLION people still live in poverty
20 MILLION live in extreme poverty (\$1.90 per day)
compared to 48 million and 27 million respectively in 2010



Source: GSMA Intelligence

Bangladesh: mobile market snapshot



1.2 Country context, Vision 2021 and Digital Bangladesh

Since gaining its independence in 1971, Bangladesh has made considerable progress across a number of key human development indicators and has met several targets of the UN Millennium Development Goals (MDGs).^{4,5} Extreme poverty levels have more than halved since 1990, while life expectancy, primary school enrolment and literacy rates have improved significantly. This progress has been underpinned by a sustained period of economic growth, with GDP growing at 6% plus per annum over the last decade,⁶ which has resulted in Bangladesh reaching the lower middle-income country status.⁷

Yet, as Bangladesh undergoes rapid socioeconomic transformation, substantial challenges remain. With more than 161 million people, Bangladesh is the eighth most populous country in the world. It also has one of the highest population densities – three times that of India and five times that of Pakistan. As such, despite recent progress, poverty and inequality remain critical issues: 40 million people remain in poverty and 20 million in extreme poverty (\$1.90/day).⁸ There is also an increasing polarisation of wealth which has resulted in the top 20% of the population capturing more than half of income. These issues are most pertinent in rural areas, where around 65% of the population live.

Although the economy of Bangladesh is experiencing a period of industrialisation – through its ongoing shift from agriculture towards manufacturing and services – the country remains highly dependent on agriculture and faces significant food poverty and production challenges.⁹ Going forward, these may be exacerbated by continued population growth, unplanned urbanisation and natural disasters. As one of the most climate-vulnerable countries in the world, climate change will further intensify the coping and adaptive challenges in Bangladesh and will accentuate broader socioeconomic challenges.

In recognition of the need to address these challenges, the government of Bangladesh has demonstrated its progressive development agenda through Vision 2021, the political vision of where Bangladesh needs to be in 2021 – the 50th anniversary of Bangladesh's independence. The main goal is for Bangladesh to become a middle-income country, with poverty eradicated. An integral part of Vision 2021 is Digital Bangladesh, which aims to bring socioeconomic transformation through information and communications technology (ICT). The key priorities of Digital Bangladesh are:

- developing human resources ready for the 21st century
- connecting citizens in ways most meaningful to them
- taking services to citizens' doorsteps
- making the private sector and market more productive and competitive through the use of digital technology.

4 The Millennium Development Goals (MDGs) were the world's targets for addressing extreme poverty in its many dimensions (income poverty, hunger, disease, lack of adequate shelter, and exclusion) while promoting gender equality, education and environmental sustainability by 2015
<http://www.bd.undp.org/content/bangladesh/en/home/post-2015/millennium-development-goals.html>

6 World Bank

7 Lower middle-income economies are those with a GNI per capita between \$1,006 and \$3,955

8 Bangladesh Bureau of Statistics

9 See Section 3.2 for a discussion of the role of mAgri services in addressing some of these issues

Source: GSMA Intelligence

1 Government development agenda in Bangladesh

WHAT	Vision 2021	The main goal is for Bangladesh to become a middle income country, with poverty eradicated
	Digital Bangladesh	Bring socioeconomic transformation through information and communication technology (ICT)
HOW	Perspective Plan (2010–2021)	The Perspective Plan is the roadmap for achieving the targets of Vision 2021; it lays down a long-term strategy to make that happen.
	Sixth Five Year Plan	Specific strategies and the task of implementation will be articulated through the two five-year plans: the Sixth Five Year Plan (2011–2015) and the Seventh Five Year Plan (2016–2020)
	Seventh Five Year Plan	

Thus far, good progress has been made in all four areas of Digital Bangladesh, with particular advances in making government services more accessible to citizens. One of the key drivers of this is the Access to Information (a2i) programme, which aims to improve quality, widen access and decentralise delivery of public services to citizens of Bangladesh. Some of the early results include training more than 200,000 civil servants and thousands of Digital Centre Entrepreneurs to implement e-services centrally. More than 4,500 Union Digital Centres have been launched in the country to facilitate access to public services for underserved citizens.

The long-term strategy for Vision 2021 was defined in the Perspective Plan, while specific strategies and the task for implementation were articulated through two

plans: the Sixth Five Year Plan (FYP) (2011–2015) and the Seventh Five Year Plan (2016–2020). As part of its strategy, the Office for Public-Private Partnership (PPP) was established to facilitate development of core sector public infrastructure and services in Bangladesh, and support achievement of the goal to increase infrastructure investment from around 2% to 6% of GDP, which will help close the infrastructure gap.

The 7th FYP coincided with the launch of the UN Sustainable Development Goals (SDGs), in September 2015, with all 193 UN member states, including Bangladesh, adopting them. The aim of these goals is to end poverty, protect the planet and ensure prosperity for all. The Bangladesh government has embraced the SDGs and incorporated them in its Seventh FYP, as summarised in Figure 2.

Source: GSMA Intelligence

2 Seventh Five Year Plan and the SDGs

Seventh FYP category	Related SDGs
Income and poverty	 
Sector development	 
Macroeconomic development	
Urban development	
Human resource development (education, health and population)	  
Water and sanitation	 
Energy and infrastructure	  
Gender equality, income inequality and social protection	  
Environmental sustainability	   
ICT development	 

1.3 How mobile supports achievement of the SDGs and Vision 2021

“Connecting citizens in ways most meaningful to them” is one of the main goals of Digital Bangladesh. As with most emerging markets, internet connectivity in Bangladesh tends to be mobile-based, due to limited fixed-line infrastructure – just 3.8% of the Bangladeshi population subscribe to fixed broadband services,¹⁰ compared to 51% mobile penetration. By providing connectivity, mobile operators are uniquely positioned to play a critical role in the development of digital societies, with access to mobile services, devices and content helping to promote digital inclusion and to bridge the digital divide, which in turn would contribute to achieving the goal of making Bangladesh a middle-income country. Mobile technology therefore plays a critical role in supporting the achievement of the SDGs and Vision 2021 in Bangladesh.

The GSMA recently published a report – *Bangladesh: Driving mobile-enabled digital transformation*¹¹ – examining in detail the positive impact mobile technology has and will continue to have on the people of Bangladesh, and how mobile technology can accelerate Bangladesh’s progress towards attainment of the SDGs and its Vision 2021.

The report delves into the priority areas and challenges that Bangladesh faces in meeting these targets, and what mobile can do to help address them; a brief summary is provided below. Both the government of Bangladesh and the mobile industry have demonstrated strong commitment to supporting progress towards Vision 2021 (and the SDGs). By collaborating more closely on win-win opportunities that align with each stakeholder’s organisational goals, the government and industry have an exciting opportunity to unlock digital transformation for millions of Bangladeshis.

- **Closing the digital access gap:** Despite 3G networks covering 93% of the Bangladeshi population, mobile internet uptake is still low, at 21% in 2017. Prioritising efforts that target barriers to adoption – including network quality, spectrum availability at affordable prices, taxation, affordability of services, lack of usability and skills, and local relevance – will be key to closing the digital access gap.
- **Increasing basic literacy and digital literacy skills:** A limited number of education institutions currently have access to the internet or computer laboratories, and a limited number of teachers tutor basic computer skills in primary or secondary education. Government and mobile operators can work together to initiate digital education programmes for all, bring ICT into the school curriculum and partner with trusted NGOs to deliver hands-on training in digital literacy.
- **Closing the gender gap:** Efforts to help women access mobile services help to catalyse broader gender equality across the social, economic and political dimensions, benefiting not only women themselves but also their communities, businesses and the broader economy. Women face similar barriers to men in accessing the internet, such as affordability and usability/skills, but more than men face barriers related to safety and harassment issues, and underlying social norms. Government and mobile operators can work together to empower women, making them more connected, safer and able to access information, services and life-enhancing opportunities.
- **Improving health outcomes:** Mobile operators and the government can provide services for patients to help prevent and manage non-communicable diseases (which accounted for two thirds of deaths

¹⁰ World Bank

¹¹ [Bangladesh: Driving mobile-enabled digital transformation](#), GSMA, 2017

in Bangladesh in 2015),¹² develop digital solutions for patient data collection and reporting, and digitise hospitals and clinics. Meanwhile, smart vehicles connected by IoT/M2M mobile technology can reduce congestion and collisions, contributing to improved safety for motorists and pedestrians.

- **Increasing agricultural productivity:** In the coming years, Bangladesh may have to face the challenge of food insecurity due to its large and growing population. Already the country has a high prevalence of underweight and stunted children. Mobile operators can work with agri-institutions and agri-businesses to help boost productivity by providing farmers with mobile-enabled information services on agricultural inputs and nutrition, prices for crops across markets and accurate weather data, as well as supporting the digitisation of the agri value chain.
- **Increasing financial inclusion:** Bangladesh is a cash economy. Although mobile financial services have been live in Bangladesh since 2011, through a model where the bank is required to hold the licence, more than half of the adult population in the country (approximately 65 million) have access to a mobile phone but remain unbanked.¹³ Uptake and use of mobile money services can be increased by digitising more payment streams,

which would benefit consumers, businesses and the government.

- **Supporting digital innovation:** Given Bangladesh's large and relatively young population, the country presents strong opportunities for innovative start-ups and investors. The mobile industry, wider internet ecosystem and government need to work together to ensure that innovation can flourish. In particular, they can encourage the development of incubators, open up APIs to start-ups in the country to further nurture the local ecosystem, and help close the funding gap by setting up corporate venture-capital funds that invest in local start-ups at seed stage.

Although Bangladesh's IT software and services sector is now doubling every 18 months in revenue, with total employment over 70,000 people, 1,000 start-ups, and nearly ten business incubators at year-end 2016, these digital start-ups tend to target only the domestic market, and most global internet players avoid setting up operations in Bangladesh. Moreover, neighbouring India has more than five times as many software developers per equivalent size of population, and Bangladesh's e-commerce market is embryonic, at just 2% of its retail market in terms of revenue.¹⁴

The case of refugee populations

The United Nations High Commissioner for Refugees (UNHCR) estimates that, as of 2017, more than 65 million people are forcibly displaced worldwide.¹⁵ Many have been so for more than two decades.¹⁶ An additional 25.4 million people are displaced every year due to natural disasters and climate-related events.¹⁷ Forcibly displaced persons (FDPs)¹⁸ often relocate without any form of legal identification as it may have been forgotten, lost, destroyed or stolen during their journey, while those who are fleeing persecution based on some aspect of their identity (e.g. nationality, religion, ethnic group, sexual orientation, membership of a particular social group or political affiliation) may decide not to travel with documentation.¹⁹

GSMA research found that 19 of the top 20 refugee-hosting countries, including Bangladesh, have mandatory SIM registration policies in place²⁰ in addition to know your customer (KYC) identification compliance requirements for opening mobile money accounts. To the extent that refugees are unable – at least in the short term – to meet these requirements, they risk being excluded from accessing both mobile communications and mobile money services.

A recent GSMA report highlighted that enabling access to mobile services can lead to positive outcomes not just for refugees themselves, but also for humanitarian agencies, host governments and local communities.²¹

¹² World Health Organization

¹³ According to Intermedia Financial Inclusion Insights

¹⁴ Digital Entrepreneurial Ecosystem in Bangladesh, AT Kearney, 2018

¹⁵ UNHCR: <http://www.unhcr.org/uk/figures-at-a-glance.html>

¹⁶ UNHCR: Global Trends, <http://www.unhcr.org/576408cd7.pdf>

¹⁷ The role of financial services in humanitarian crises, CGAP/World Bank, 2017

¹⁸ For the purposes of this report, the term 'FDPs' includes refugees, internally displaced persons (IDPs) e.g. those fleeing a war zone and/or relocating in the aftermath of a natural disaster, asylum seekers and other persons who have had to leave their homes as a result of a natural, technological or deliberate event. (Definition adapted from <http://iasfm.org/>)

¹⁹ *Refugees and Identity*, GSMA, 2017

²⁰ *Mobile Money, Humanitarian Cash Transfers and Displaced Populations*, GSMA, 2017

²¹ *Enabling Access to Mobile Services for the Forcibly Displaced*, GSMA, 2017

The report included policy recommendations for host-country governments on how to address the identification barriers and enable FDPs to access mobile services. The emergence of new technologies

(such as blockchain) can also enable innovation in areas such as digital identification and aid in the context of international development.²²

Summary of recommended considerations for policymakers on enabling mobile access for FDPs

In an effort to promote an enabling policy and regulatory framework, host-country governments and regulators (including central banks) should consider adopting flexible and proportionate approaches towards proof-of-identity requirements for forcibly displaced persons to be able to access mobile services, particularly in emergency contexts. Such approaches may include:

- 1 providing clear guidelines on what identification is acceptable for FDPs to access mobile services, and ensuring that a critical mass of FDPs has access to an acceptable proof-of-identity
- 2 allowing the use of UNHCR-issued identification, where available, to satisfy any mandatory SIM registration or KYC requirements for opening mobile money accounts
- 3 enabling lower, 'tiered' thresholds of KYC requirements to allow FDPs to open basic mobile money accounts, particularly in emergency contexts
- 4 harmonising identity-related SIM registration requirements with the lowest tier of KYC requirements in countries where SIM registration is mandatory.
- 5 establishing proportionate risk assessment processes that take into account the diverse types of FDPs when considering 'proof-of-identity' policies
- 6 exploring the use of new digital identity technologies
- 7 promoting robust identification-validation processes while adopting consistent data protection and privacy frameworks.

1.4. Mobile makes a vital contribution to the economy of Bangladesh

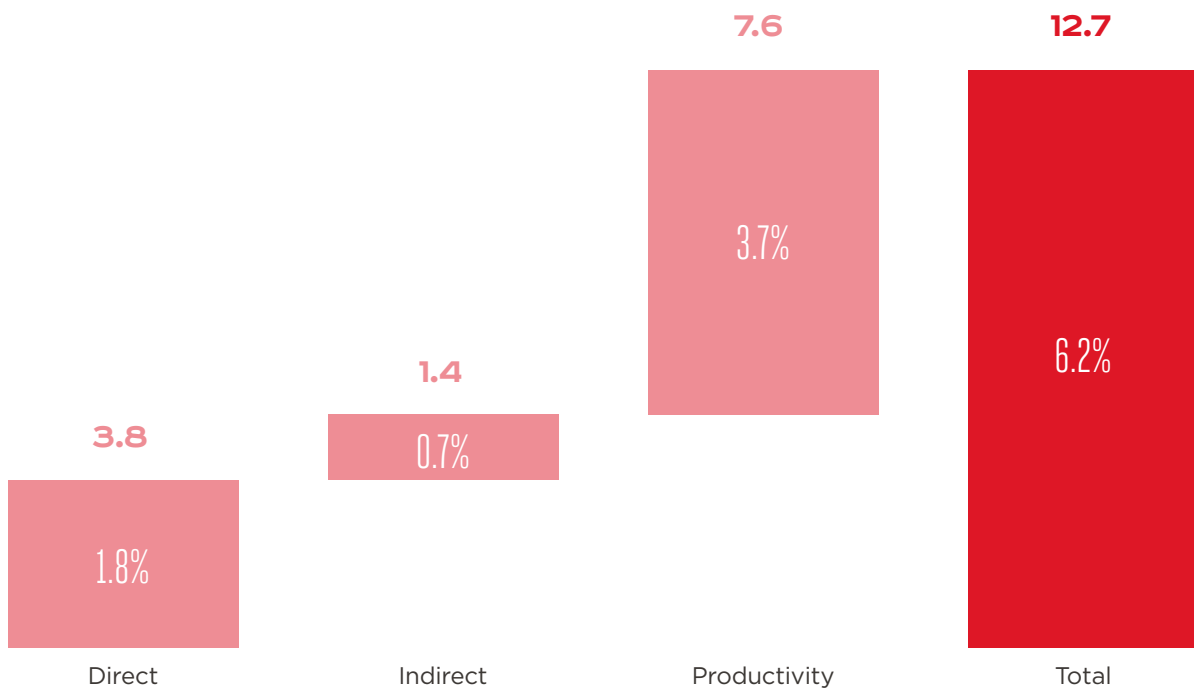
In addition to the contribution that the mobile sector will continue to make towards the attainment of Vision 2021 and the SDGs, it is important to consider how the mobile ecosystem in Bangladesh is already a vibrant contributor to the local economy. It consists of mobile network operators, infrastructure service providers, retailers and distributors of mobile products and services, handset manufacturers and mobile content, application and service providers.

In 2015, the mobile ecosystem generated 6.2% of GDP in Bangladesh, a contribution that amounted to around \$13 billion of economic value added. This figure includes the direct economic impact of mobile

operators and the broader ecosystem as well as the indirect impact and the productivity increase brought about by the use of mobile technologies.

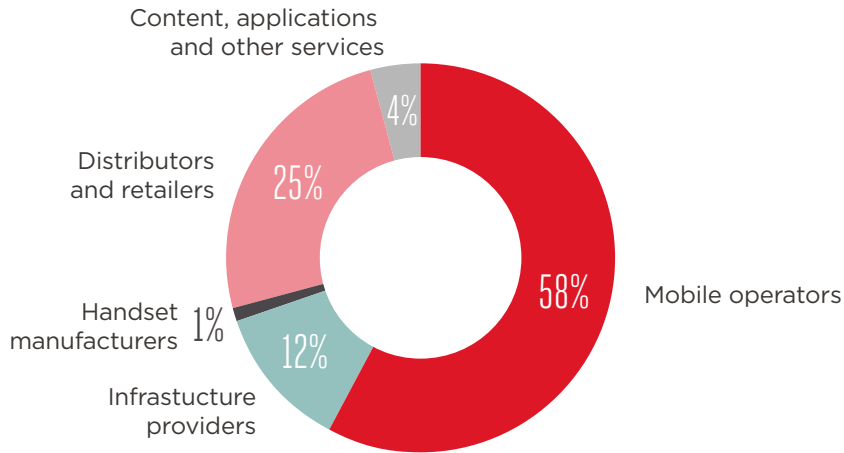
Source: GSMA Intelligence

3 Total contribution to GDP (\$ billion, % of 2015 GDP)



Source: GSMA Intelligence

4 Sector breakdown of direct impact contribution

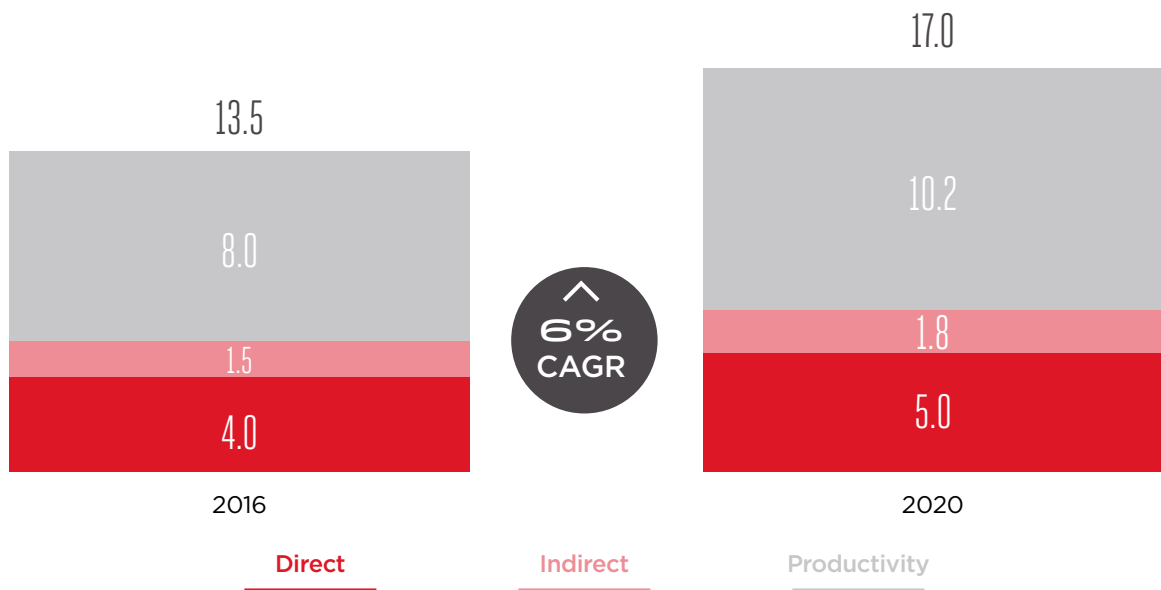


Furthermore, the mobile ecosystem provided employment to more than 760,000 people in Bangladesh (both formal and informal employment) and made a significant contribution to the funding of public sector activity, in excess of \$2 billion in 2015. A third of the jobs were created directly in the ecosystem, while the rest were generated indirectly in other sectors as a result of the consumption of inputs generated by the mobile sector. Looking ahead, total employment is expected to grow around 9% from 780,000 to 850,000 in the period from 2016 to 2020, largely driven by direct employment creation in the mobile industry.

We expect that the economic contribution of the mobile ecosystem in Bangladesh will continue to grow. In value-added terms, we estimate that the ecosystem will generate \$17 billion by 2020. This will be driven by a combination of productivity improvements brought about by continued mobile internet expansion (both in terms of coverage and uptake), as well as by the growth in content and services, which will bring Bangladesh closer to the development of the mobile ecosystem in neighbouring countries.

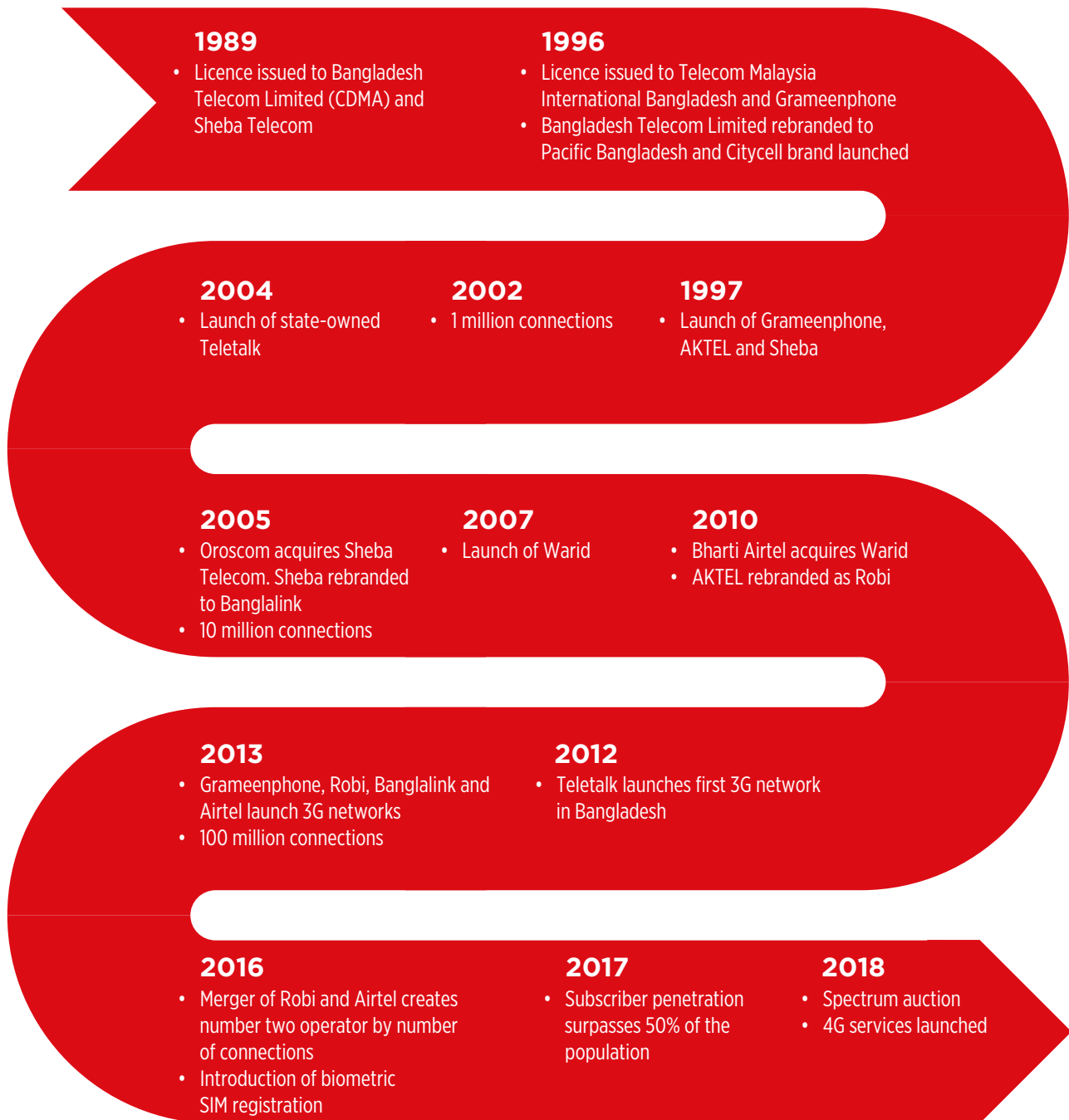
Source: GSMA Intelligence

5 Outlook to 2020, value added (\$ billion)



Source: GSMA Intelligence

6 Milestones of Bangladesh mobile market





2

Bangladesh mobile market overview

2.1 Sustained growth as mobile penetration reaches half the population

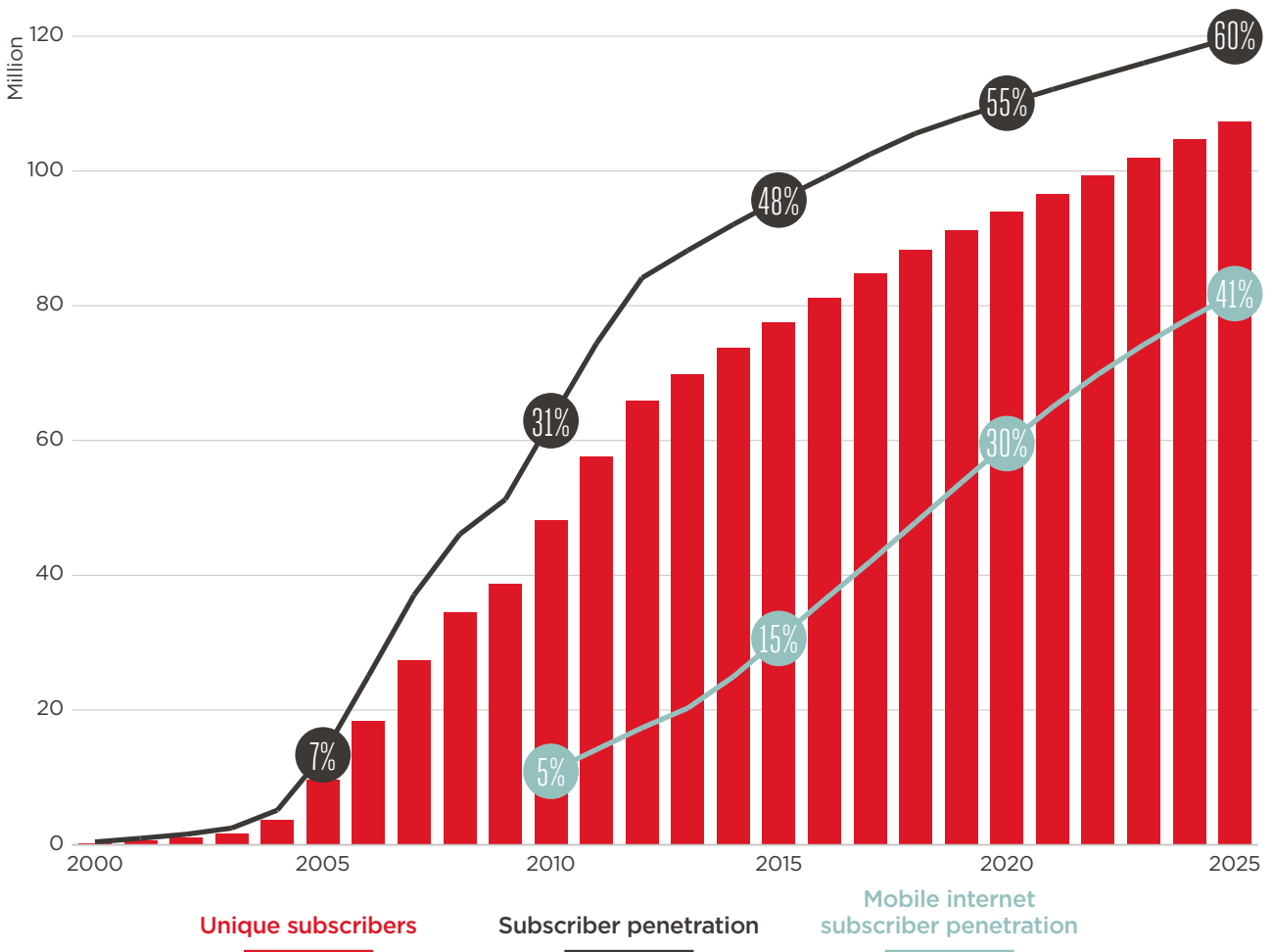
At the end of 2017, there were 85 million unique mobile subscribers in Bangladesh, making it the fifth largest mobile market in Asia Pacific and ninth largest in the world.²³ With subscribers owning on average 1.7 SIM cards, there were a total of 145 million connections in 2017, representing connections penetration of 87%.

Rapid adoption of mobile services since the turn of the century has resulted in unique subscriber penetration levels in Bangladesh rising from just over 1% in 2003 to half the population at the end of 2017. This level is forecast to reach around 60% by the end of 2025, equivalent to 107 million individuals.

While the penetration rate for adults (15+) of 71% in mid-2017 is suggestive of a more saturated market, the demographics of a relatively young population, compared to more developed countries mean that, over the next decade, there remains significant upside for subscriber growth.

Source: GSMA Intelligence

7 Mobile subscriber dynamics in Bangladesh



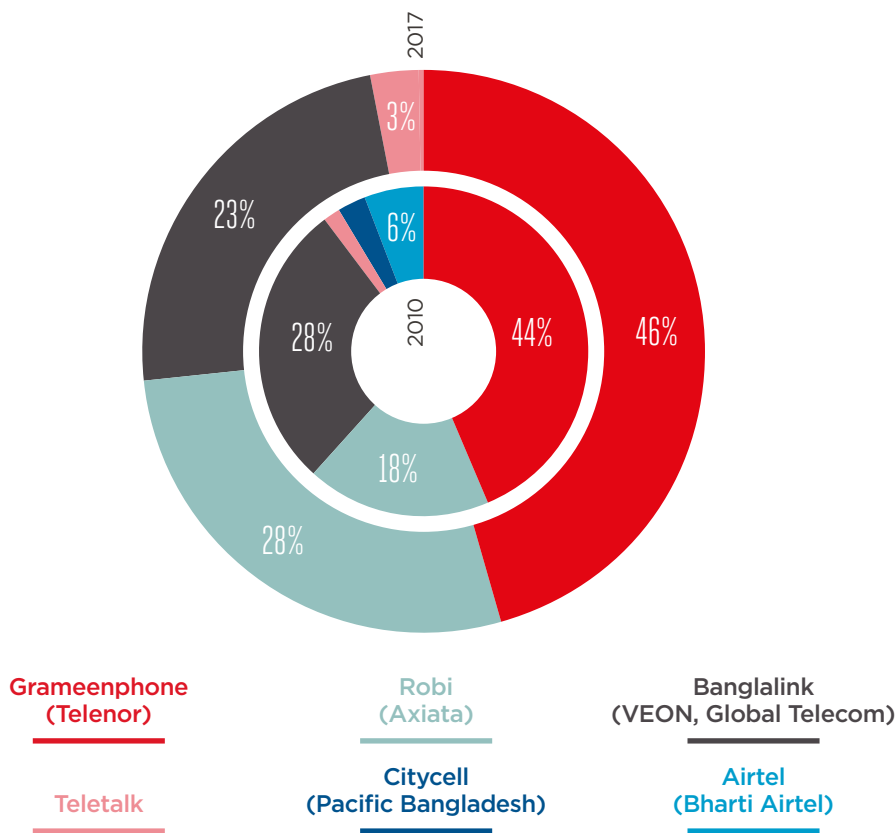
²³ By number of unique subscribers. Unique users who have subscribed to mobile services at the end of the period, excluding M2M. Subscribers differ from connections such that a unique user can have multiple connections.

The mobile market in Bangladesh comprises four licensed mobile operators: Grameenphone, Robi, Banglalink and state-owned Teletalk. There are also three broadband wireless access (BWA) licenceholders – Qubee, Banglalion Communications and Ollo – which operate as broadband service providers. While mobile virtual network operators (MVNOs) do not operate in Bangladesh, recent reports²⁴ suggest the BTRC has been assessing the feasibility of allowing them to enter the market.

In 2016, the mobile market underwent its first major in-country consolidation, following the merger of Robi (Axiata) with Airtel (Bharti Airtel), which created the second largest operator by number of connections. At the end of 2017, Grameenphone held a 46% share of total connections, followed by Robi (28%), Banglalink (23%) and Teletalk (3%). CDMA-based Citycell (Pacific Bangladesh) has effectively been closed since Q4 2016; the BTRC suspended its operating licence due to non-payment of dues.

Source: GSMA Intelligence

8 Share of connections (including cellular IoT) by mobile operator



Note: Citycell closed Q4 2016, Airtel merged Q4 2016

The total number of mobile connections declined in 2016, by 5% to 127 million, largely as a result of the introduction of mandatory biometric SIM registration by the BTRC and the government, before returning to growth in 2017 – up 14% to 145 million. The programme initially started with a test and trial phase in late 2015 before being made mandatory from 1 January 2016, with all new registrations verified against the National Identity register (NID). As part of this initiative,

operators were also required to re-register their existing subscriber base. While compliance with the SIM re-registration was a significant undertaking for both businesses and consumers, SIM registration can help support the development of a digital society; for example, it can be used to help establish a legal identity or provide access to various government or other value-added services.

24 "BTRC may allow mobile virtual network operator", thedailystar.net, August 2017

2.2 Focus shifts to mobile broadband adoption

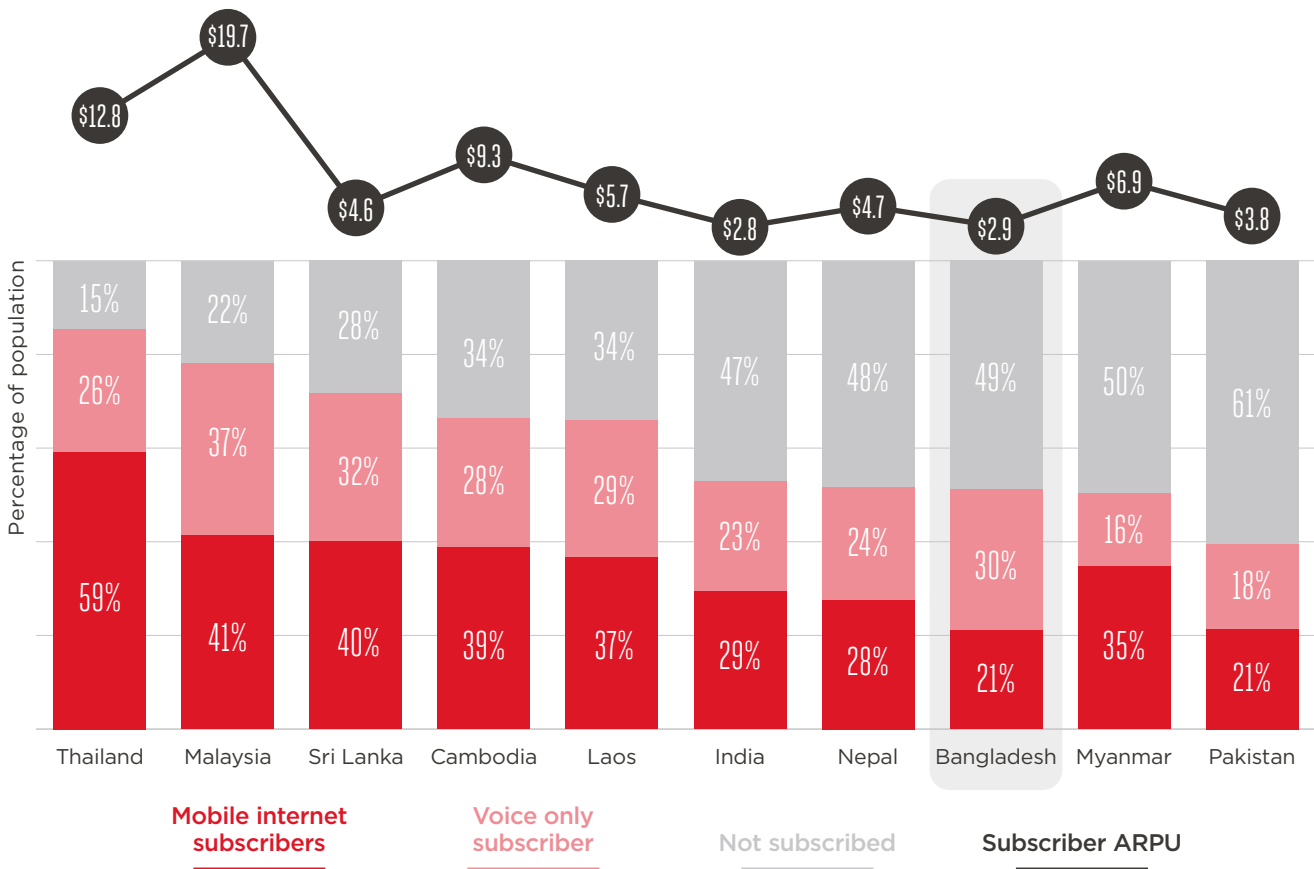
Bangladesh has a nascent digital industry, with a predominantly prepaid and 2G mobile market. At the end of 2017, just over 71% of connections were 2G, with 3G comprising the remainder. Thus, only around one-in-five Bangladeshis subscribed to mobile internet services in 2017. The country therefore has one of the lowest levels of mobile internet penetration among regional peers.

The majority of subscribers in Bangladesh primarily use their phones for basic voice and SMS services, which has implications for the attainment of the government’s goals. As a result of this low level of engagement, the country also generates one of the

lowest subscriber ARPU levels in the world, at \$2.9, considerably below the averages for Asia Pacific and the world of \$10.4 and \$14.6 respectively, limiting the ability of operators to engender the required transition to mobile broadband technologies.

Source: GSMA Intelligence

9 Mobile penetration and subscriber ARPU in select countries, Q4 2017



The slow transition to mobile broadband technologies (3G, 4G and eventually 5G) in Bangladesh is in part a matter of timing: the 3G and 4G spectrum auctions were both subject to numerous delays, taking place

in September 2013 and February 2018 respectively, making Bangladesh one of the last countries in South Asia to award licences for the technologies.

February 2018: Spectrum auction results

The much-awaited spectrum auctions in bands 900, 1800 and 2100 MHz concluded on 13 February 2018.

Spectrum on offer:

- 2x25 MHz in 2100 MHz band at a reserve price of \$27 million per MHz
- 2x18 MHz in 1800 MHz band at a reserve price of \$30 million per MHz
- 2x3.4 MHz in 900 MHz band at a reserve price of \$30 million per MHz

Licences sold:

- Banglalink (total cost \$308 million):**
- 2x5 MHz (paired) spectrum in 2100 MHz
 - 2x5.6 MHz (paired) spectrum in 1800 MHz
- Grameenphone (total cost \$155 million):**
- 2x5 MHz (paired) spectrum in 1800 MHz

Left unsold:

- 2x20 MHz (paired) spectrum in 2100 MHz
- 2x7.4 MHz (paired) spectrum in 1800 MHz
- 2x3.4 MHz (paired) spectrum in 900 MHz

What else was on offer?

Conversion of existing spectrum licences to technology-neutral licences at a cost of \$4 million per MHz. Three operators chose this option (Banglalink, Grameenphone, Robi), allowing 4G services to be deployed using their existing spectrum licences.

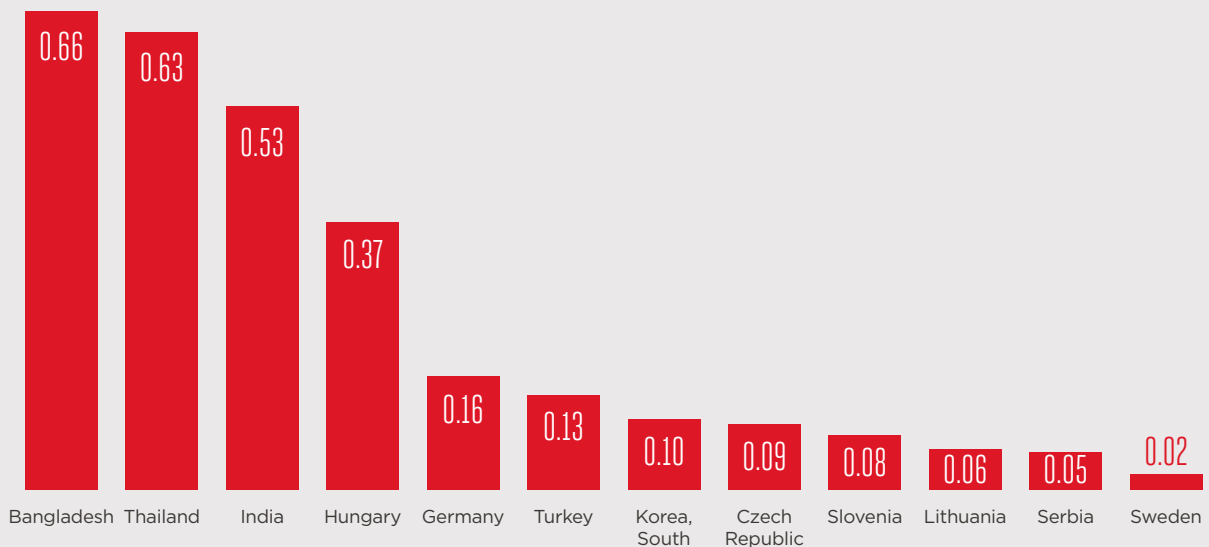
Key findings

Out of 2x46.4 MHz of spectrum on offer, only 33% of spectrum was sold. Figures 10 and 11 show final price comparisons from recent international auctions.

Source: GSMA Intelligence

10

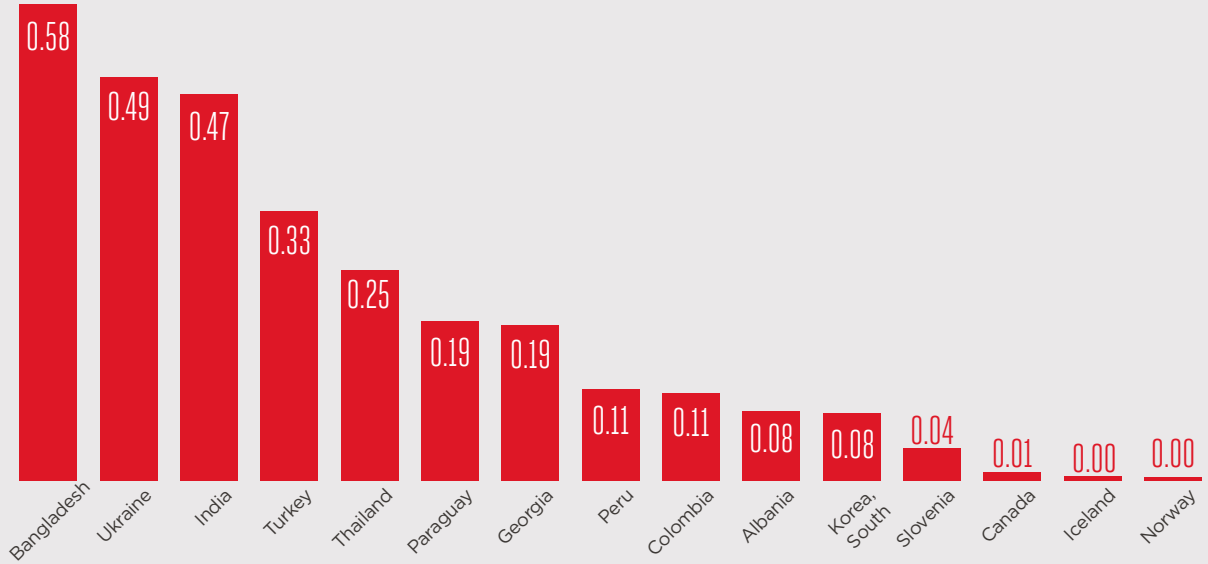
\$/MHz/Connections (ARPU) – 1800 MHz



11

Source: GSMA Intelligence

\$/MHz/Connections (ARPU) – 2100 MHz



The final auction prices are the highest in the world, based on the normalisation of prices using ARPU for each of the countries. This would effectively mean that mobile operators in Bangladesh have paid more per MHz for spectrum than any other country in the world. With the challenging ARPU environment in Bangladesh, this results in a lower return on investment for mobile operators.

25 The comparison includes many developed markets from Asia Pacific and European region that have auctioned the respective bands in recent times

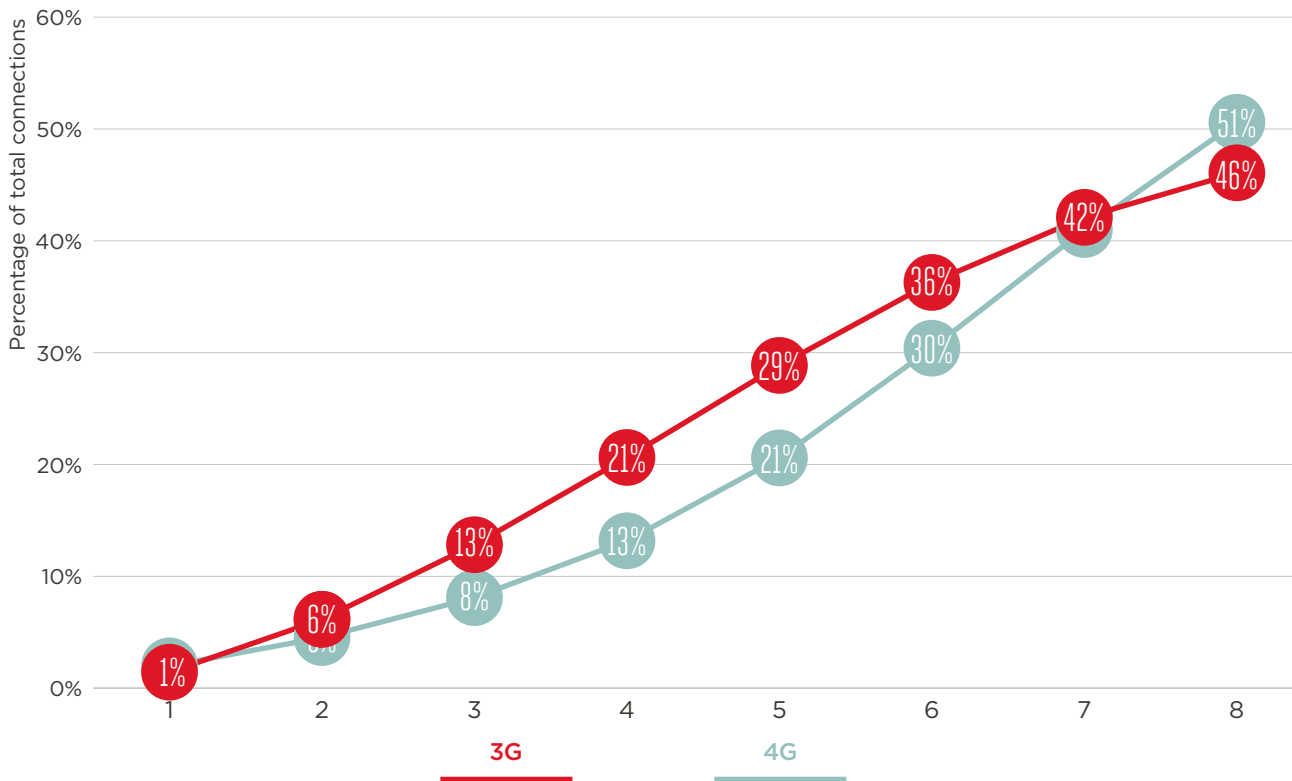
Mobile internet penetration forecast to reach 41% by 2025, with 4G accounting for half of total connections

Over the next decade, a combination of improving affordability (driven by falling smartphone prices), greater network coverage and technology advances (through the launch of 4G services) means Bangladesh's transition to mobile broadband technologies should accelerate out to 2025 (see Figure 12). However, the 3G lifecycle still has a long way to go before reaching maturity. 3G connections

are expected to surpass 2G connections in 2020, reaching 46% of total connections – and this requires continued investment and maintenance on behalf of mobile operators. 4G adoption is therefore expected to initially lag that of 3G in the years following the launch of services,²⁶ but will accelerate out to 2025, at which point 4G will represent half of total connections.

Source: GSMA Intelligence

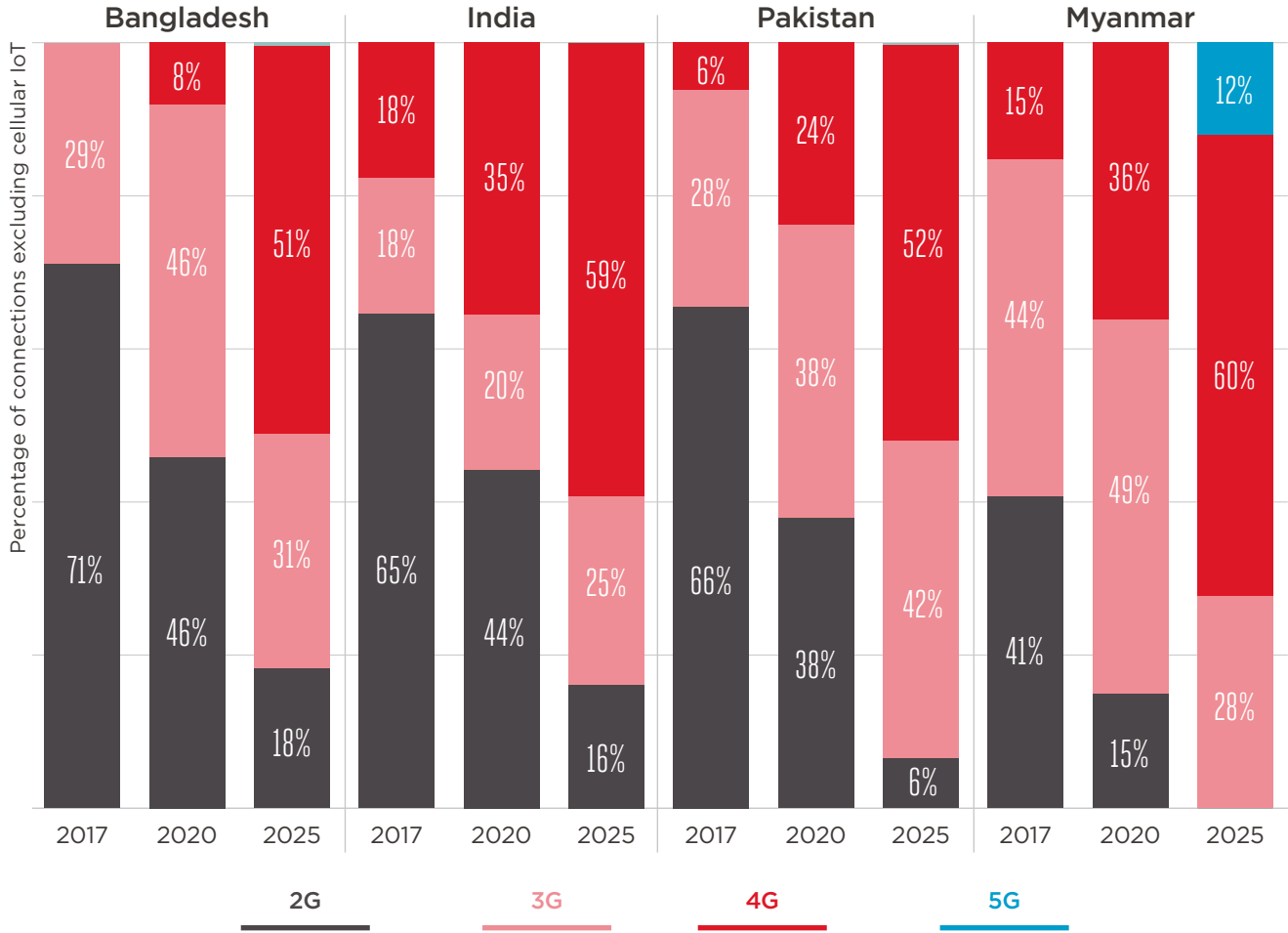
12 3G and 4G adoption, years after first launch



26 3G in 2013, 4G in 2018

Source: GSMA Intelligence

13 Bangladesh's transition to mobile broadband technology: closing the gap on regional peers



The number of mobile internet subscribers in Bangladesh is forecast to reach 73 million by the end of 2025, representing 41% of the population. However, approximately 106 million people will remain without access to the mobile internet, factoring in population

growth. While network coverage remains a barrier, particularly in rural and remote areas of Bangladesh where the costs involved in deploying and upgrading mobile networks are substantial, coverage by itself does not guarantee access.



Ultimately, the pace at which this digital divide will be reduced will depend on enabling a regulatory environment that is conducive to investment and helping to alleviate affordability barriers on the part of consumers.

3

Accelerating the impact of mobile on Vision 2021 and the SDGs



To better understand the context of Bangladesh’s digital development and ensure that mobile technology continues to help the country achieve its vision of Digital Bangladesh, Vision 2021 and the SDGs, it will be important to increase take-up of mobile services by the unconnected.

The GSMA Mobile Connectivity Index measures how the key enabling factors for mobile connectivity differ across countries, helping focus the efforts and resources of the mobile industry, governments and wider international community to achieve universal internet access. The index is built around four key enablers:

- **infrastructure** – the availability of high-performance mobile internet network coverage
- **affordability** – the availability of mobile services and devices at price points that reflect the level of income across a national population
- **consumer readiness** – citizens with the awareness and skills needed to value and use the internet, and a cultural environment that promotes gender equality
- **content** – the availability of online content and services that are accessible and relevant to the local population.

Bangladesh has an index score of 48, which is in-line with the Southern Asia regional average, though remains low relative to some of the more developed mobile markets in the region. Bangladesh is classified as belonging to the ‘Emerging’ cluster; it performs fairly well on one or two enablers but has room to improve in others.

Source: GSMA Intelligence

1 Mobile Connectivity Index – Bangladesh in relation to select Asian countries and ‘Emerging’ cluster

	Mobile Connectivity Index	Infrastructure	Affordability	Consumer	Content
Bangladesh	48	38	51	52	54
Southern Asia	48	41	59	48	46
Sri Lanka	61	49	72	70	56
India	49	40	63	45	49
Bhutan	46	50	65	44	32
Nepal	44	36	48	50	45
Pakistan	37	35	54	26	39
Select regional peers					
Malaysia	70	60	73	71	76
Thailand	68	62	68	76	67
Cambodia	50	44	58	54	45
Myanmar	50	37	61	61	46
Laos	47	40	57	56	38
Emerging cluster	42	36	50	51	36

Although Bangladesh has made good progress in improving its Index score over the last two years, the country scores below average on infrastructure and affordability enablers relative to its regional peers. Key barriers to mobile broadband adoption and

digital inclusion include network quality, technology-neutral spectrum availability at affordable prices, taxation, affordability of services (which in turn will impact smartphone adoption), as well as other factors including inequality and a significant gender gap.

3.1 Affordability represents a major barrier to uptake of mobile services in Bangladesh

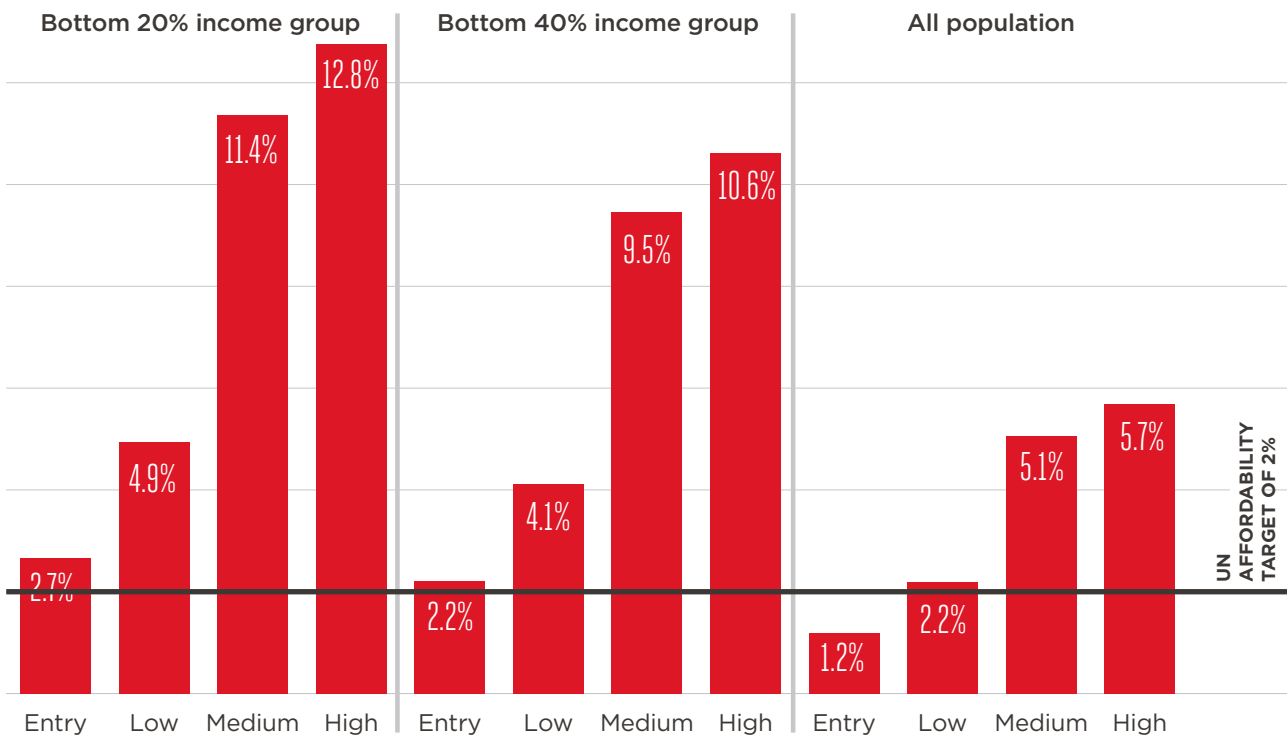
A higher cost of mobile access will have a greater impact on the poorest consumers, as it constitutes a higher share of their monthly income.

In Bangladesh, which has a mobile market characterised by extremely low levels of ARPU, the total cost of mobile ownership (TCMO)²⁷ of a Low consumption basket (500 MB of data) represents 4.9% of monthly income for those individuals within the bottom 20% income group, which is just under the affordability threshold of 5% suggested by the UN Broadband Commission (UNBC).²⁸ See Figure 14. However, at the World Economic Forum in January 2018, the UNBC adopted a new “1 for 2” affordability threshold target for 1 GB of data to cost less than 2% of monthly income by 2025.²⁹

GSMA and EY analysis³⁰ shows there is a clear lack of affordability for a Medium consumption basket (1 GB of data) in Bangladesh, costing an individual in the bottom 20% by income distribution 11.4% of their monthly earnings. Similarly, those in the bottom 40% would spend over 9.4% of their monthly income on mobile ownership. Given the increased importance of data in both social and economic settings, the lack of affordability for a Medium consumption basket in Bangladesh represents a significant barrier to mobile connectivity, especially as data usage converges to that of more developed economies in future periods.

Source: GSMA Intelligence, Tarifica

14 TCMO as a proportion of monthly income in Bangladesh, 2016



Note: Entry = 100 MB data only, Low = 500 MB data only, Medium = 1,000 MB data, High = 5,000 MB data

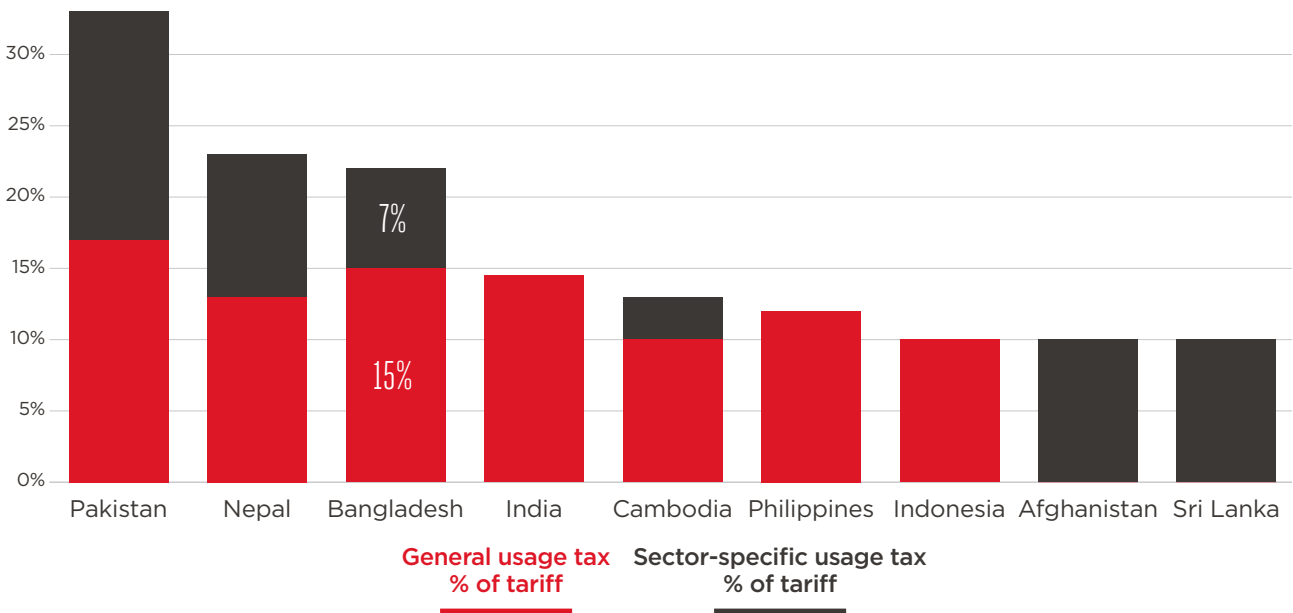
27 The total cost of mobile ownership consists of the cost of a handset, activation and usage costs (voice, data and SMS). It is typically calculated as a cost per month, and assumes a life expectancy of a device of 36 months for medium and low income countries, and 24 months for high and very high income countries
 28 For further information: http://broadbandcommission.org/Documents/ITU_discussion-paper_Davos2017.pdf
 29 2025 Targets: “Connecting the Other Half”, UN Broadband Commission, 2018
 30 Reforming mobile sector taxation in Bangladesh: Enhancing mobile connectivity across Bangladesh through a more efficient tax system, GSMA, 2018

High levels of taxation and fees applied to the mobile sector also impact the TCMO by directly raising the retail prices faced by consumers, representing a major barrier to the affordability of devices and mobile services. Taxes on the use of mobile services

in Bangladesh represent a higher share of tariff costs (22%) than a number of neighbouring countries, including India (Figure 15). Taxes also represent a relatively high proportion (30%) of device costs compared to in other countries in the region (Figure 16).

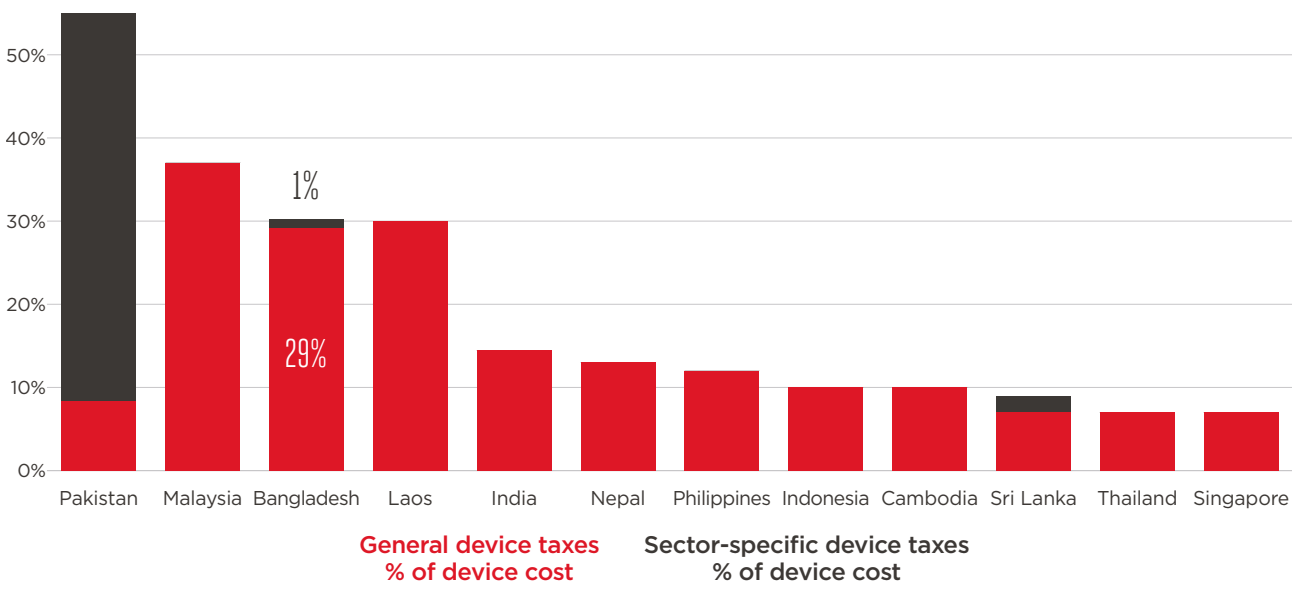
Source: GSMA Intelligence, Tarifica

15 Usage taxes as a proportion of tariff costs (500 MB data basket), 2016



Source: GSMA Intelligence, Tarifica

16 Consumer taxes as a proportion of device costs, 2016

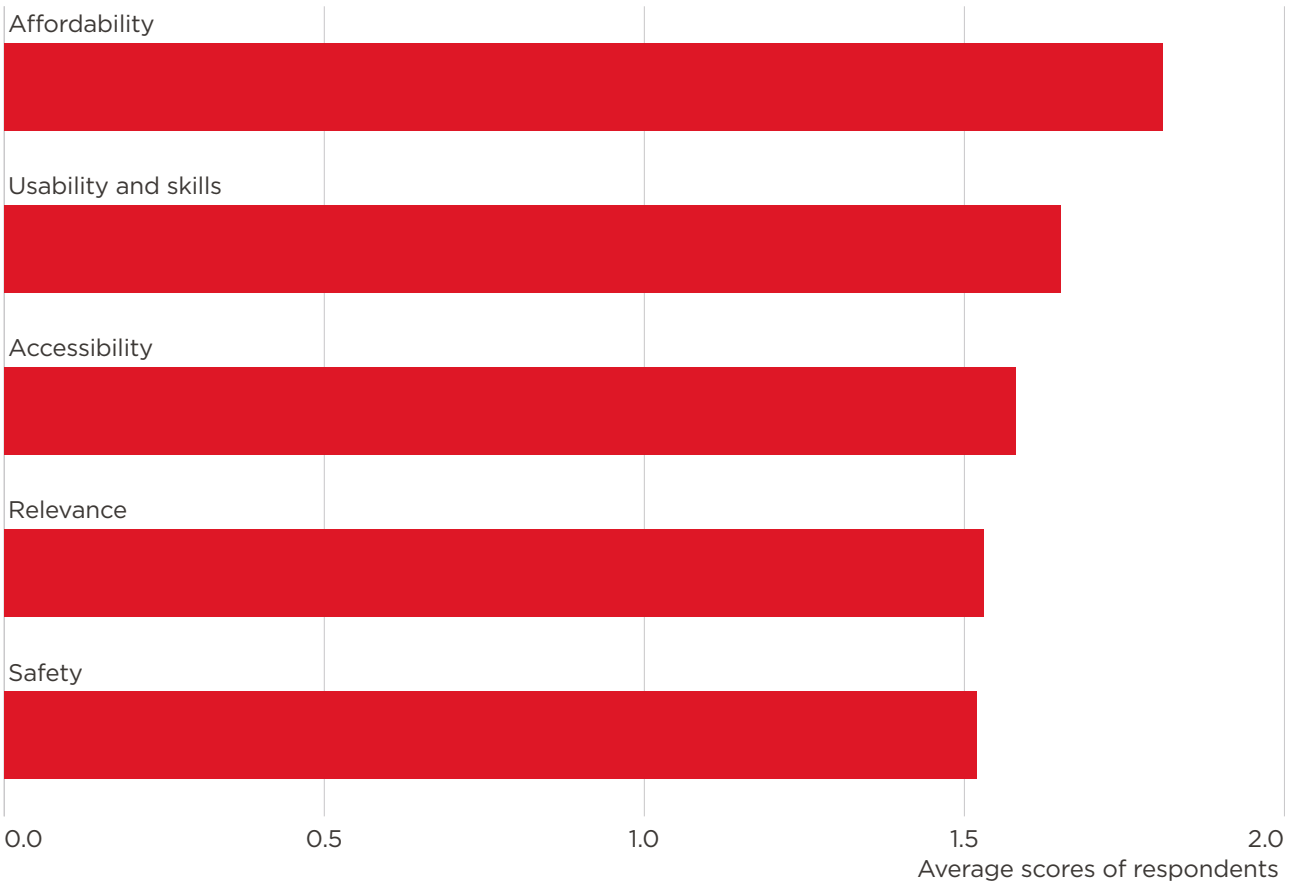


To better understand the barriers to mobile internet adoption for consumers in Bangladesh, we also analysed the results of the GSMA Intelligence Consumer Survey.³¹ As with the Mobile Connectivity Index, cost was identified as a main issue preventing the use of mobile internet services by Bangladeshis. However, the affordability barrier is often due to a limited understanding of the benefits of the internet and a misperception around smartphone cost and data charges. An example of an initiative to help alleviate this has seen operators Grameenphone and Robi partner with Facebook to launch FreeBasics in Bangladesh, which provides access to internet services where affordability is an issue.

Nevertheless, from a consumer perspective, usability and skills (digital skills and confidence in learning to use basic mobile phone functions, internet-based content and apps) are major barriers³² too (Figure 17). Perceptions that online content was mainly in English contributed to the idea that the internet is for the educated, reinforcing the idea that the internet was not for everybody.³³ In fact, local developers have made good progress in developing mobile content in Bengali and other local languages, and Bangladesh has been more successful than other South Asian countries in developing locally relevant content, particularly over the last few years.

Source: GSMA Intelligence

17 Barriers to mobile internet usage in Bangladesh



Respondents were asked to rate barriers to mobile internet adoption: 1 = not a reason/consideration; 2 = consideration but not a main barrier; 3 = one of the main barriers

31 GSMA Intelligence Consumer Survey 2017. This survey includes data from 28 low- and middle-income countries. The survey comprised face-to-face interviews with approximately 1,000 people in each country.

32 The barriers have been grouped into five categories: accessibility – to quality network coverage (as well as to electricity, handsets, agents and formal IDs); affordability – of handsets, tariffs and data (as well as the cost of charging a phone battery); usability and skills – digital skills and confidence in learning to use basic mobile phone functions, internet-based content and apps; safety – fears of using mobile and the internet due to e.g. vulnerability to phone theft, online harassment and fraud, and physical violence; relevance – lack of relevant services and content.

33 Bangladesh Mobile Internet Ecosystem Landscape, GSMA Connected Society, 2017

3.2 Improving access in Bangladesh through mobile-enabled services

Mobile continues to transform the lives of Bangladeshis. As more people come online over the next decade, the way they engage with mobile is changing as devices get smarter, services expand and societies become more connected, enabling seamless interaction between all aspects of an individual’s digital life. Beyond core connectivity, the mobile industry in Bangladesh can provide services that are vital to the progress of a digital society.

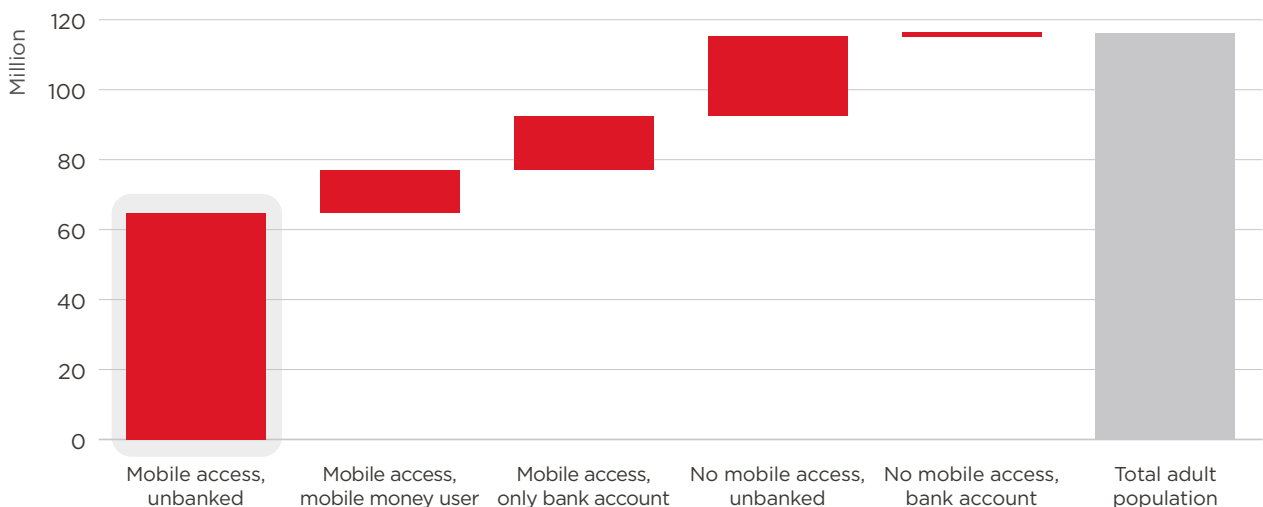
Mobile financial services

Mobile money continues to enable financial inclusion, giving people access to transparent digital transactions and expanding access to unbanked households. In Bangladesh, MFS initiatives have been live since 2011, via a model where a bank is required to hold the licence. While MFS has seen early success in Bangladesh, through providers such as bKash (which has more than 80% market share), the majority of all payments carried out in Bangladesh are still made in cash; there is significant potential to increase MFS reach.

According to Intermedia Financial Inclusion Insights, more than half the adult population in Bangladesh – approximately 65 million people – has access to a mobile phone but remains unbanked (see Figure 18). These can be efficiently reached by MFS providers. There are opportunities to digitise more payment streams such as person-to-government payments, as being pursued through the government’s a2i initiative.

Source: GSMA Intelligence based on Intermedia Financial Inclusion Insights

18 Mobile financial services opportunity



To date, mobile network operators are not permitted to offer a full mobile money service in Bangladesh. They have predominantly worked in partnership with banks, focusing on the provision of the channel: both

digital (USSD³⁴ access) and physical, with a supporting agent network – as well as offering over-the-counter (OTC) bill pay services.

34 Unstructured Supplementary Service Data

To accelerate growth of MFS in Bangladesh, it is important to improve the regulatory environment, which will have a positive impact on competition in the MFS market. Allowing operators to own the full mobile money business, including providing customer accounts, can help Bangladesh meet its financial inclusion goals, and its targets to digitise a broad set of payments such as government-to-person (G2P).

Globally operators have proven they can address the needs of the unbanked or the underbanked by building a sustainable business over time that is complementary to their core business. Recent large-scale quantitative analysis by the GSMA³⁵ shows that

operator-led mobile money deployments have been more successful in developing and delivering digital financial services than non-operator initiatives:

- In terms of active account growth: operators reach an average of almost 45,000 active accounts within a year of launch – 60% higher than for non-operators. By the fifth year of launch, the difference grows to almost four-fold. In Bangladesh, there is still room to unleash this potential.
- In terms of transaction value: by year 5, operator-led services on average have a mobile money transaction value equivalent to 15.6% of a country’s money supply, compared to 1.4% for non-operator services.

Mobile agriculture services

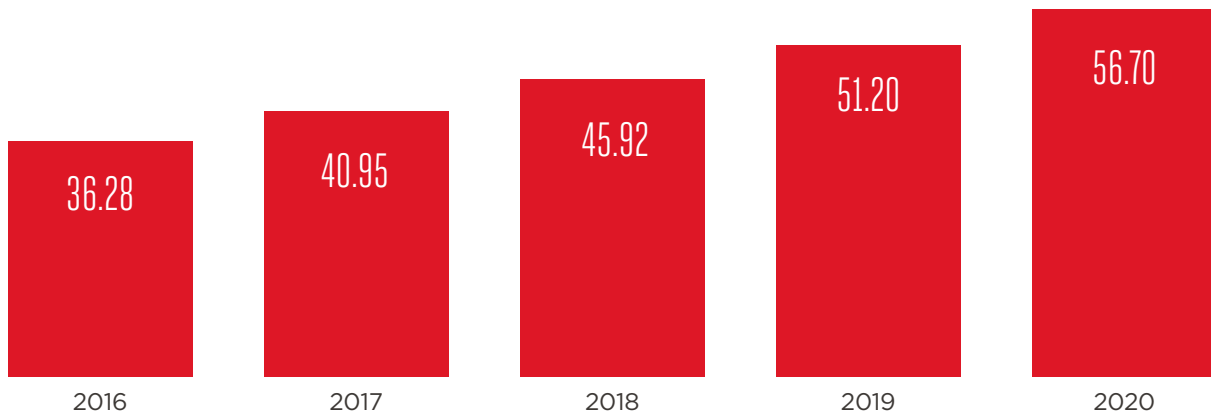
In the coming years, food insecurity and inadequate nutrition will be key challenges for Bangladesh, particularly given its large and growing population and its vulnerability to environmental shocks. Food production will need to grow fast enough to keep up with population growth. Mobile offers a strong opportunity to support agriculture in Bangladesh. mAgri information services can provide access to nutritional information and effective agricultural practices, and connect remote communities to digital agricultural marketplaces in order to increase price transparency, reduce price volatility of food commodity markets, improve price outcomes and increase the incomes of farmers. Monitoring data acquired by crop and weather sensors can also be

used to increase harvest productivity and adapt to climate change.

Alongside mAgri information services, the agricultural sector presents an opportunity to drive the adoption of MFS beyond urban areas and into rural and remote regions of Bangladesh. According to a study by GSMA Intelligence and GSMA mAgri,³⁶ on the condition that mobile money providers in Bangladesh benefit from an enabling environment (which would currently require further regulatory reform), the potential direct revenue opportunity for mobile money providers to digitise business-to-person (B2P), cash-based transactions through mobile money services is estimated at \$36 million in 2016, rising to \$57 million in 2020.

Source: GSMA Intelligence

19 Potential direct B2P revenue opportunity in Bangladesh (\$ million)



³⁵ Success factors for mobile money services: A quantitative assessment of success factors, GSMA, 2016
³⁶ Market size and opportunity in digitising payments in agricultural value chains, GSMA Intelligence, 2016

Case studies of mAgri services

Banglalink Krishi Jigyasha 7676

This is an agriculture information service that provides information related to vegetable and fruit farming, poultry, livestock and fisheries. Users dial 7676 to talk to an expert for advice on their problems. At present, the service can help address issues in areas such as harvests, pesticides, agro diseases, seeds, fertilisers, poultry and livestock feed, and fisheries techniques. The service has been helping farmers in Bangladesh since 2009.

a2i agricultural initiatives

a2i, using its Service Innovation Fund, has enabled public servants and private innovators to devise mobile-based solutions to address the needs of farmers, including production planning, input application, plant disease identification and protection. The Department of Agricultural Extension has already made three such innovations (Krishoker Janala, Krishoker Digital Thikana and Pesticide Prescriber) available to more than 15,000 field-level agricultural extension officers and around 200,000 farmers, with potential to reach another 15 million farmers.

To maximise the impact of such innovations, a2i is now working with the government to launch a portal for all agricultural extension services (including information, inputs and incentives) that will be available on both mobile and web-based platforms. The overarching objective is to empower farmers with relevant, timely and up-to-date information that can make farming both productive and profitable.

Grameenphone Krishi Sheba

This is an agricultural value-added service (Agri VAS) launched in December 2015 in partnership with VAS partner, Win Miaki and support from the GSMA mAgri programme as part of the mNutrition initiative. The service provides users with access to seasonal agricultural content from planting to post-harvest, for crops and livestock.

Robi mAgri initiatives:

Robi has two live mAgri services in Bangladesh, Krishibarta and Krishi Radio. The services combined reach approximately 3,000 customers per month.

Krishibarta is an interactive voice response (IVR) and call centre based agricultural service. Robi users can listen to pre-recorded agriculture-related content or use the call centre to talk to agricultural specialists. Different types of information are available through this service, relating to areas such as weather, production and cultivation techniques, diseases and insects, plant nutrients, water usage, prices and stock.

Krishi Radio is an IVR-based service for farmers. Users can receive IVR and outbound dialer (OBD) content related to Krishi Bishesh Buletin, Chashabader Upodesh, Abohawar Khobor, Shofol Krishok/Krishanir Shakkhatkar and Krishi Binodon. The services provide agricultural news, advice, weather updates, knowledge sharing and entertainment.

37 For an in-depth case study on Grameenphone's Krishi Sheba, see [Grameenphone Krishi Sheba: A mobile agriculture service in Bangladesh](https://www.gsma.com/mobilefordevelopment/programmes/magri/creating-scalable-mobile-solutions), GSMA, 2017. A full study of the six services supported by the GSMA mAgri programme under the mNutrition initiative is available at <https://www.gsma.com/mobilefordevelopment/programmes/magri/creating-scalable-mobile-solutions>

3.3 Falling smartphones prices will help drive smartphone adoption to three quarters of total connections by 2025

The gradual improvement in smartphone affordability, as well as the rapid expansion in the availability of mobile broadband services, has spurred adoption of smartphones in Bangladesh over the last few years. Smartphones now account for an installed base of 45 million, representing 31% of total connections. This is expected to reach 75% by the end of 2025. Local player Symphony Mobile remains the largest smartphone vendor in Bangladesh, with a 30% share of smartphone shipments in Q3 2017,³⁸ but is facing increasing competition from Chinese vendors including Huawei, itel, Xiaomi and Oppo, along with established vendors including Samsung and local player Walton.

Mobile operators and industry players in Bangladesh, including domestic handset vendors, have significantly helped lower the cost of smartphones for consumers. The average price of a smartphone in Bangladesh has fallen from \$168 in 2012 to \$130 in 2017.³⁹ However, in recognition that even at this level the cost of the handset is still unaffordable for the majority of lower income individuals, industry players are also targeting the sub-\$50 smartphone market. For example, Grameenphone recently launched co-branded smartphones⁴⁰ with Symphony and iTel, priced at BDT2,900 (\$35) and BDT3,100 (\$37) respectively.

Recent regulatory changes in Bangladesh have seen a reduction in the customs duty for importing mobile parts for local manufacturing (by 36 percentage points to 1%),⁴¹ though there was also a doubling of the customs duty on handset imports to 10%. Given the tendency for domestic players to import handsets (often from China), these changes are expected to result in the creation of local handset manufacturing and assembly plants, which could help further lower the retail price for consumers. Notwithstanding these changes, regulation on mobile handsets is still a major issue in Bangladesh (for example, mobile operators are unable to import or brand mobile handsets) and thus impedes the uptake of mobile services in the country.

38 "Chinese Smartphone Brands Grew 125% Year on Year in Bangladesh During Q3 2017", Counterpoint Research, December 2017

39 Strategy Analytics

40 "Grameenphone launches Cobranded affordable smartphones with Symphony and itel", Grameenphone, August 2017

41 "Bangladesh companies reveal device assembly plans", Mobile World Live, September 2017

3.4 Spectrum and tax barriers reduce operators’ ability to invest in network coverage and expansion

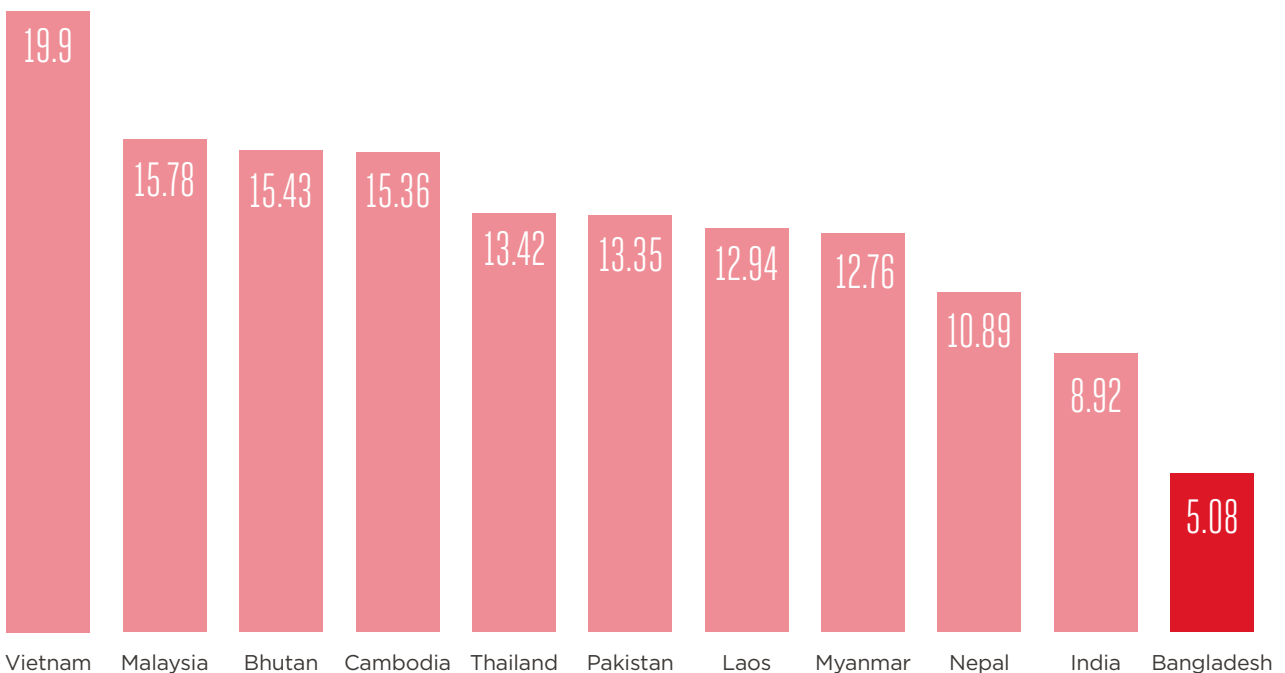
Infrastructure remains a key barrier to digital inclusion in Bangladesh, as shown by the low rating in the Mobile Connectivity Index. From a regulatory perspective there are two main challenges for the mobile industry: spectrum and taxation. Notwithstanding the recent 4G auctions (the impact of which will be reflected in next year’s Index rating), up to now the amount of spectrum assigned to operators for 3G provision in Bangladesh – just 70 MHz – is low relative to other markets and not technology neutral.

The limited allocation of 3G spectrum and its price in previous auctions has had a significant negative impact on the quality of mobile services in Bangladesh. The combination of a lack of 3G spectrum and that 4G services have only just launched (in February 2018) means Bangladesh has lagged neighbouring countries in terms of average download speeds, based on Ookla’s analysis of Speedtest Intelligence

average mobile speed data from Q4 2017 (Figure 20).⁴² As more Bangladeshis gain access to affordable smartphones, from local vendors including Symphony and Walton, this will drive data traffic volumes through greater engagement with video communications (Skype, WhatsApp, FaceTime) and video content applications (TV Anywhere, YouTube).

Source: GSMA, Ookla*

20 Mean download speeds in select Asian countries in Q4 2017 (Mbps)



42 Ookla trademarks used under license and reprinted with permission

The recent spectrum auction in the 900, 1800 and 2100 MHz bands represents an important step for the mobile industry in Bangladesh, unlocking the potential of 4G/LTE technology, which will help service some of this growing demand for higher-speed, always-on connectivity. However, network capacity constraints will continue to intensify over time, particularly in dense urban areas such as Dhaka, meaning more

spectrum is needed. A spectrum roadmap would bring predictability and clarity for continued planning and investment in networks. Network coverage is also facing challenges, as no Digital Dividend spectrum (700 MHz) has been released in Bangladesh to date. Allocation of the harmonised APT band plan of 700 MHz to the mobile sector can boost connectivity, and consequently provide socioeconomic benefits.

Digital Dividend

As countries move from analogue to digital television, some low-frequency spectrum previously used for analogue broadcasting is freed up – the Digital Dividend. For countries that want to connect more people to accelerate progress against the SDGs, making Digital Dividend spectrum available is key. The spectrum is ideal for reaching more people with mobile broadband because of the better coverage capabilities, allowing operators to provide broader, more affordable coverage, especially in rural areas where connectivity can be a challenge. Digital Dividend spectrum also delivers benefits in urban areas, providing improved indoor coverage as these frequencies can more easily penetrate buildings, bringing the benefits of mobile connectivity to more people, more regularly.

In order to maximise the benefits associated with the Digital Dividend spectrum – which is vital for supporting wide area, affordable mobile broadband services – it is essential that governments do not set unreasonably high spectrum prices.

Prior to the 2018 spectrum auctions, spectrum licences assigned to mobile operators in Bangladesh were not technology neutral. Although the move to make the recent spectrum licences technology neutral is welcomed, charging any conversion fee will put further pressure on an already high cost of service provision. Allowing operators to upgrade their services using existing spectrum licences with no additional fee would have facilitated faster deployment of new technologies to the benefit of the people of Bangladesh. Moreover, the licensing process and the multiple different types of taxes and licences that mobile operators are subject to – as summarised in Table 2 – reduces the business environment and constrains the ability of mobile operators to invest in the sector.

One of the other major factors impacting the investment in the networks and affordability of services are the spectrum reserve prices. The high reserve prices of the February 2018 auctions created an unrealistic predetermination of spectrum value that resulted in poor appetite from operators to bid and therefore limited the amount of acquired spectrum. Moreover, the high prices served to reduce the funds available for spectrum and network investment, which can negatively affect the quality, speed and reach of mobile broadband services.

While recognising that taxation and fees from the mobile sector remain an important source of revenue to continue financing public expenditure in Bangladesh, taxation and fees on the mobile industry are often levied in ways that do not account for key investment and economic features of the industry. This potentially creates a number of distortions that in the medium term can act to discourage investment, harm consumers and limit the extension of mobile connectivity to those that remain unconnected.

Source: GSMA, EY

2 Key taxes on consumers and mobile operators in Bangladesh in 2016

Consumers		Mobile operators	
Customs duty	Handsets: 10% Sim cards: 25%	Central taxes	Corporation tax 45% ⁴²
			Personal income tax (on wages) 30% (top rate)
Value-added tax (VAT)	15%		Minimum corporation tax 0.75%
Supplementary duty on SIM cards	35%		Stamp duty 0.07–4% ⁴³
Additional supplementary duty on mobile services	5%		Workers profit participation 5% ⁴⁴
Surcharge on mobile services	1%		Real-estate tax (industrial land) BDT125 per decimal of land
		Regulatory fees	Universal service fund 1% of annual gross revenue
			Licence application fee BDT100,000
			Radio communications equipment licence BDT50,000
			Application fee for the spectrum BDT50,000
			Spectrum assignment fee BDT150,000,000 per MHz
			Annual licence fee BDT75,000,000
			Annual spectrum fees Different sums ⁴⁵
			Revenue sharing (Commission) 5.5% of annual gross revenue
			Revenue sharing of international phone calls 30% of the retail tariff less the carrier charge ⁴⁶
			Licence renewal fee BDT10,000,000

In 2014, the total tax contribution of the mobile sector was an estimated \$1.36 billion, representing around 46% of the sector's total market revenue and accounting for 7.2% of the total tax revenues of Bangladesh.⁴⁸ Mobile operators pay 70% of the total taxes, with consumers the remainder (Figure 21). The

mobile sector also made a large contribution in taxes and fees relative to its size in the economy in 2014: tax and fee payments from the sector, as a share of total tax revenues, were 4.5 times greater than the sector's revenue as a share of GDP.

43 Reduced to 40% if converted into publicly traded companies by issue of at least 10% of paid-up capital through a stock exchange in Bangladesh, of which the pre-initial public offering placement should not be more than 5%.

44 Rate depends on the dutiable transaction.

45 Tax on gross receipts of the business.

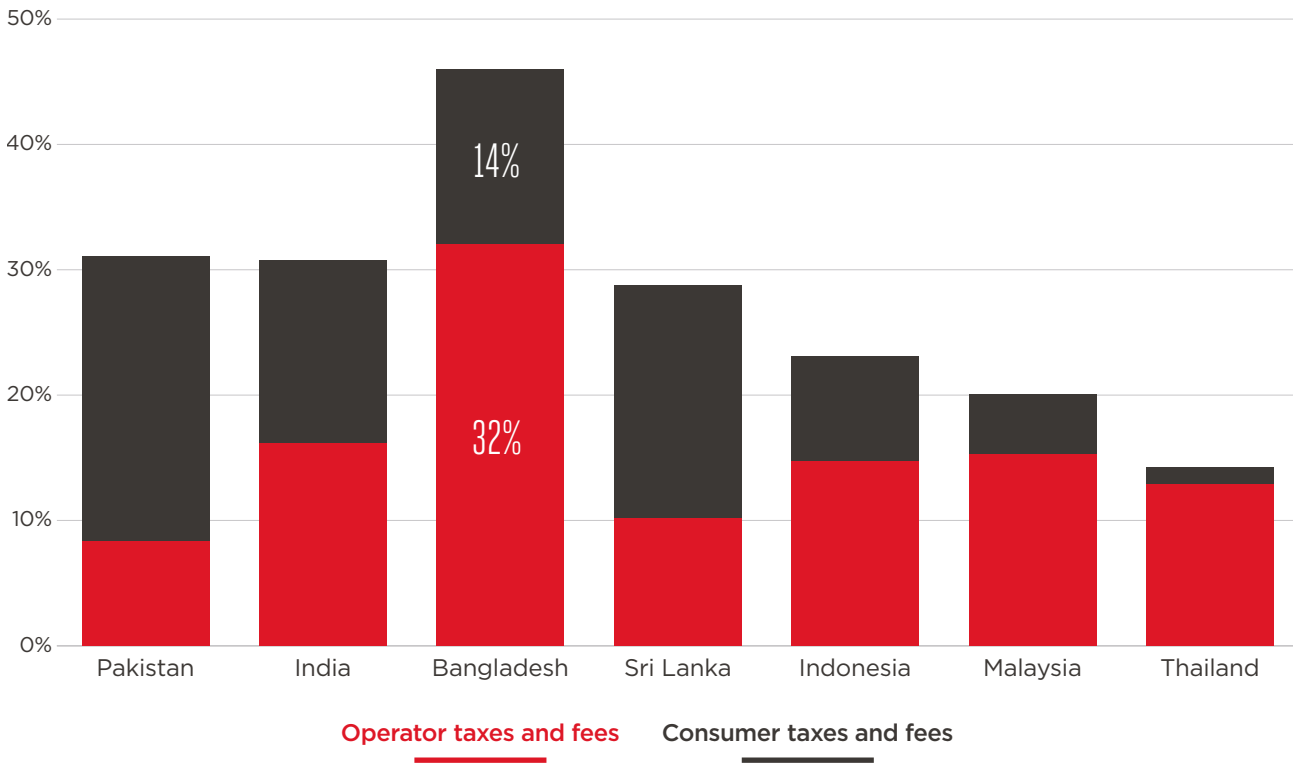
46 Spectrum charges are calculated using a formula set by the BTRC.

47 Operator shall share revenue of international incoming and outgoing phone calls. International incoming and outgoing call termination rates shall be determined and reviewed from time to time by the Commission. Source: BTRC.

48 Reforming mobile sector taxation in Bangladesh: Enhancing mobile connectivity across Bangladesh through a more efficient tax system, GSMA, 2018

Source: GSMA Intelligence, EY Analysis and operator data

21 Operator vs consumer taxes (as a share of total mobile revenue)



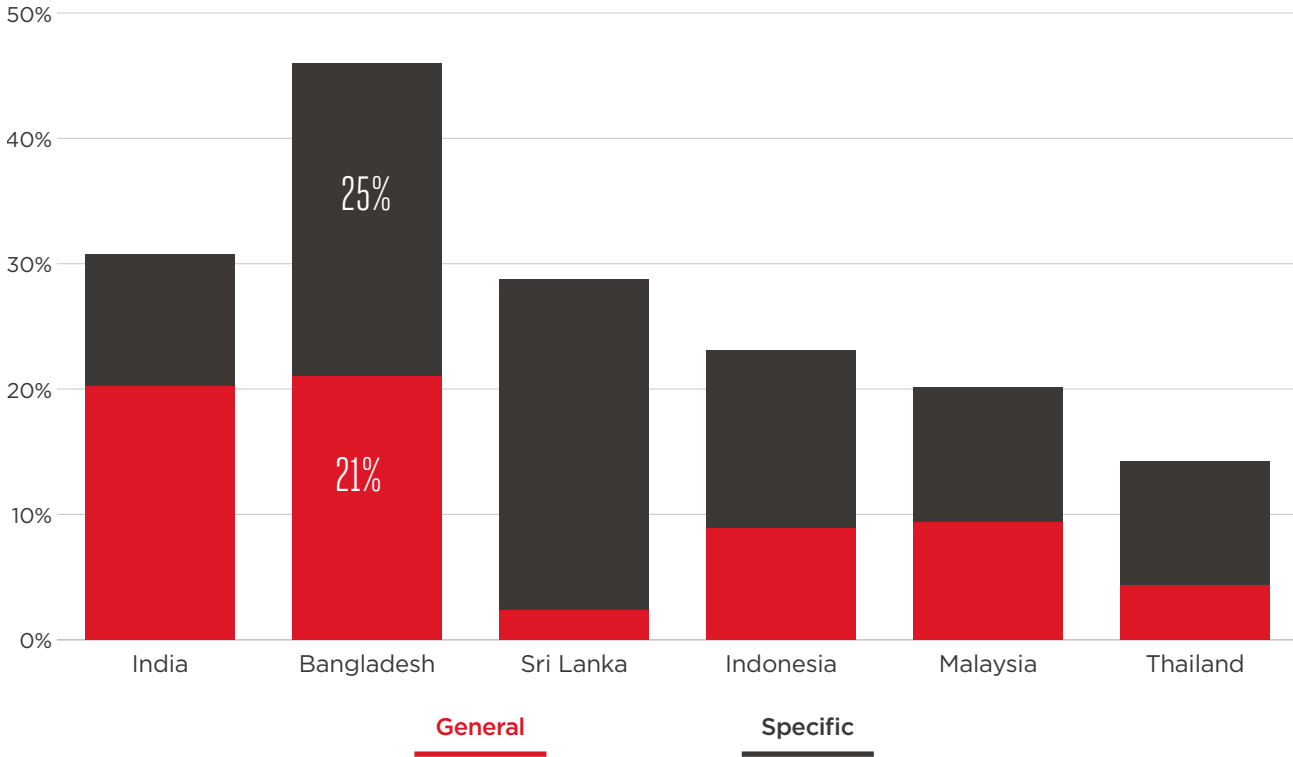
Mobile operators in Bangladesh face a number of sector-specific taxes and fees that are either exclusive to the mobile industry or applied at higher rates than other sectors in the economy. For example, mobile operators are subject to the highest rates of corporation tax of 40% and 45% (for publicly traded companies and non-publicly traded companies respectively). They are also subject to a number of different regulatory fees; for example, the gross revenue sharing fee with the Commission is 5.5% and the Social Obligation Fund revenue rate is 1%.

Taxation over and above that applied to other standard goods and services is not fully aligned with the best-practice principles of taxation, which have been developed by international organisations such as the IMF, OECD, UN and World Bank.⁴⁹ Furthermore, high levels of taxation and spectrum prices can have a significant negative impact on the incentive for mobile operators to invest in network infrastructure, and could have long-term implications for network coverage and mobile broadband expansion.

49 Supporting the Development of More Effective Tax Systems. A Report to the G-20 Development Working Group by the IMF, OECD, UN and World Bank, 2011

Source: GSMA Intelligence, EY Analysis and operator data

22 General taxes and fees vs mobile sector-specific taxes and fees (as percentage of mobile sector revenue)



Regulatory fees and payments imposed on the mobile sector can represent a high burden and can vary substantially and unexpectedly from one year to another, adding uncertainty for market players. The high upfront investment required for mobile infrastructure and long repayment cycle present a number of risks to operators: in particular, once investment has been made, any unfavourable changes in policies, taxation and regulatory fees can impact directly on profitability, lowering returns.

If taxes or regulatory fees are introduced or increased after an auction or during a licence period, these will negatively impact the operator business case, affect the rollout of network infrastructure and can have adverse effects on consumers. It also risks further exacerbating the rural coverage gap for the unconnected, as it is investment with the least immediate return – i.e. in rural areas – that is likely to be curtailed.

3.5 Tax reform can facilitate greater investment and improve affordability

As Bangladesh progresses to a more advanced digital society, promoting and extending connectivity has the potential to deliver substantial social and economic benefits to the country.

The development of ICT technologies and access to mobile broadband are also core to achieving the objectives of Vision 2021 and the SDGs. Through policy reform, the government of Bangladesh has the opportunity to simplify and rebalance mobile sector taxation, supporting the growth of the economy and leading to increased digital and financial inclusion.

On this basis, a study undertaken by the GSMA and EY in 2018⁵⁰ identified three options for tax reform that would increase investment in the mobile sector, improve the affordability of mobile products and services, and therefore deliver substantial socioeconomic benefits as summarised in Table 3.

Source: GSMA, EY

3 Summary of socioeconomic benefits of the proposed tax reforms, by 2023

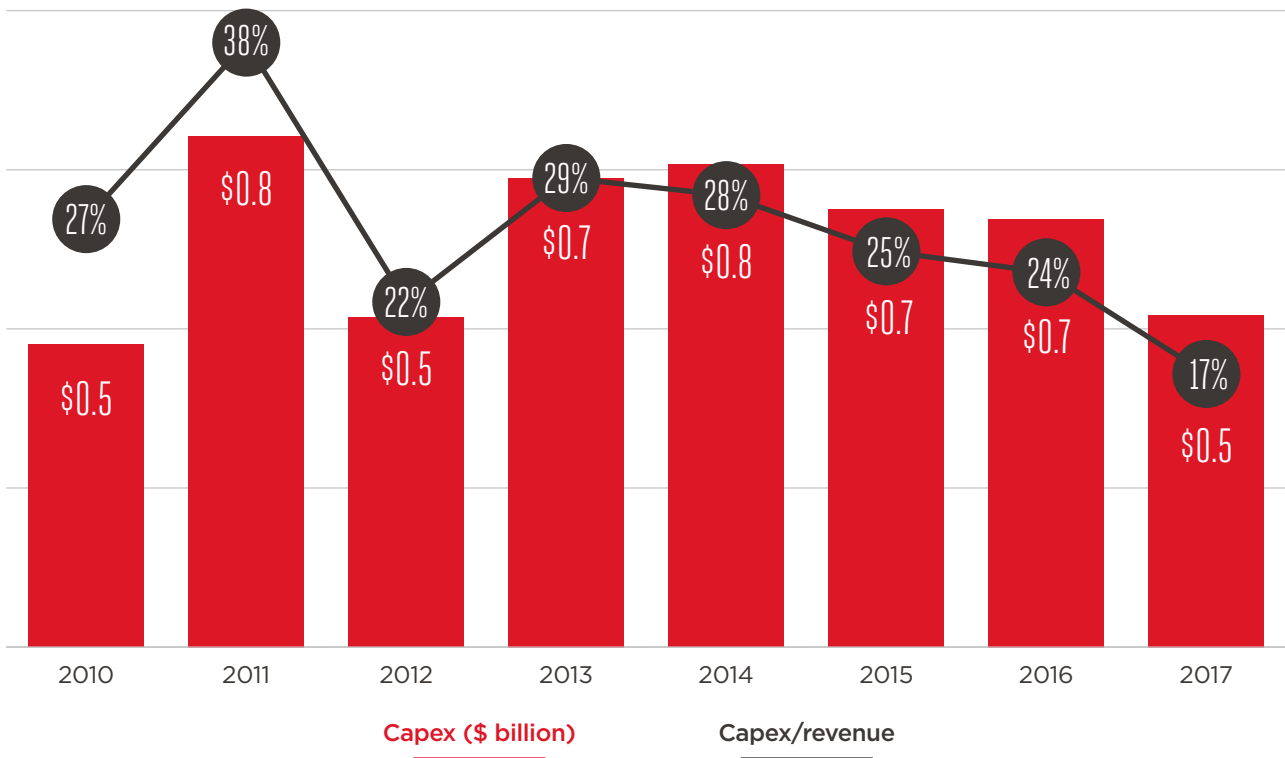
Indicator	Reducing corporation tax from 45% to 40% for private mobile operators and from 40% to 35% for public mobile operators	Eliminating the supplementary duty of 35% applied on the supply of SIM cards and VAT of 15% on SIM cards	Eliminating the 5% supplementary duty levied on mobile services
New unique subscribers	+0.5m	+2.3m	+3.2m
Sector revenue	+\$42m	+\$75m	+\$82m
GDP increase	+\$131m	+\$535m	+\$749m
Wider investment	+\$180m	+\$468m	+\$687m
Annual gain in tax revenue	+\$14m	+\$123m	+\$135m

50 Reforming mobile sector taxation in Bangladesh: Enhancing mobile connectivity across Bangladesh through a more efficient tax system, GSMA, 2018

3.6 Allowing all types of network infrastructure sharing can increase accessibility and help close the coverage gap

Source: GSMA Intelligence

23 Mobile operators in Bangladesh have invested heavily to enable broadband adoption



With capex totalling more than \$3.4 billion over the last five years, including \$525 million on spectrum acquisitions in 2013/14, mobile network access has expanded rapidly in Bangladesh. 2G networks have achieved nationwide coverage and 3G coverage has expanded to reach 93% of the population by the end of 2017. Significantly, however, in 2017, 72% of the population or more than 118 million people were covered by a mobile broadband network but did not subscribe. These people are more likely to be in lower income groups, for whom affordability is a key barrier.

Furthermore, rolling out mobile broadband coverage in hard-to-reach rural and remote areas may require innovative solutions such as network sharing. There are many forms and combinations of mobile network

infrastructure sharing and, up to now in Bangladesh, this has predominantly been conducted in the form of passive and backhaul sharing.⁵¹ Active sharing (MORAN or MOCN),⁵² however, is not currently permitted by the regulator, though discussions are ongoing about possible pilot schemes, which can look to bridge mobile broadband coverage gaps for the underserved.

The potential benefits of active sharing to the economy and people of Bangladesh are significant. For example, a study conducted in 2017 by the GSMA Connected Society programme – assessing the impact of expanding mobile broadband coverage in Bangladesh to 100% of the population – found that implementation of active sharing between the three

51 Passive and backhaul sharing – sharing of the ‘passive’ non-electronic infrastructure (such as the cell sites, towers, poles, ducts, trays, shelters, equipment rooms, power, security, etc.) and the backhaul transmission from the cell site to the core network (by microwave, satellite, fibre-optic cable or a combination thereof)

52 Active sharing – MORAN (multi-operator RAN) – sharing of the ‘active’ (i.e. electronic) infrastructure in the radio access network (RAN) including the BTS/BSC (2G), Node B/RNC (3G) and the antennas (and associated feeders, combiners, etc.); MOCN (multi-operator core network) – the same as MORAN but the spectrum is also shared

largest operators could, by 2021, increase GDP (in nominal terms) in Bangladesh by more than \$3 billion per annum, representing a 0.1% yearly increase in GDP. In this case, the government would also benefit from additional fiscal income of more than \$300 million per annum from 2021 onwards.

As operators gear up to launch 4G services, there is a significant opportunity for the BTRC, the Telecom Ministry and stakeholders, including mobile operators, to collaborate and prove the concept of network sharing. The benefits of doing so can be substantial.

Benefits for the government and regulator:

- Address coverage and social inclusion issues in priority rural locations
- Explore application of policy considerations for mobile broadband rural expansion
- Demonstrate benefits to government of introducing a more favourable regulatory environment on a national basis

Benefits to the operators:

- Demonstrate further commitment from operators to supporting a Digital Bangladesh
- Allow operators to explore alternative investment, revenue and technology models
- Explore viability of infrastructure sharing in driving forward rural broadband expansion



4

A forward-looking
regulatory environment

A woman wearing a traditional Indian headscarf and a patterned blouse is sitting and talking on a mobile phone. The background is a blurred outdoor setting. The entire image has a teal color overlay.

Mobile industry dynamics in Bangladesh have changed significantly over the last decade, through the convergence of technologies, the emergence of new digital services and increased competition from internet and digital ecosystem players. These shifting dynamics have created a challenging investment climate for mobile operators, who are faced with funding the underlying network infrastructure to accommodate growth in digital services.

In addition, despite the rapid uptake of mobile in Bangladesh in recent years, around half of the population remain without access to mobile services and, further still, only one-fifth of the population subscribe to mobile internet services. Through review, reform and modernisation of regulation in key areas,

policymakers and the regulator in Bangladesh can play a major role in facilitating the expansion of mobile broadband access and adoption across the country, supporting progress towards achievement of Vision 2021 and the SDGs.

A long-term roadmap for spectrum at affordable prices is required

With the recent spectrum auction, Bangladesh policymakers made important steps towards introducing 4G/LTE services in the country, in support of Digital Bangladesh. The release of technology-neutral licences and spectrum in the 900, 1800 and 2100 MHz bands is a significant development for the country's mobile industry. However, even after an open consultation process with stakeholders, high auction reserve prices and associated licence fees remained. When coupled with some of the lowest ARPU levels in the world in Bangladesh, some of this high-priced spectrum went unsold.

The experience with this auction highlights the importance of setting reserve prices for future spectrum auctions at levels that take into account that operators need to not only finance access to spectrum, but also to deploy infrastructure to use that spectrum. This will become even more important as mobile broadband adoption scales and increased

data demand further strains networks, requiring even greater access to spectrum. Without sufficient spectrum, quality of service for the end customer will suffer, impeding the use of digital services. The government should therefore ensure both the timely release of spectrum and fair prices for access to that spectrum to facilitate better quality and more affordable services.

It is also vital that the government creates a predictable spectrum roadmap for future assignments of spectrum (e.g. 700 MHz), helping to create a stable and transparent investment environment, which takes into account the long lead time required for network rollout and expansion. As part of this, harmonisation at the ITU level is a crucial requirement. The government should consult on spectrum planning well ahead of the World Radiocommunication Conference (WRC) in November 2019 and support regional harmonisation at the conference.

Rebalance taxation in line with best-practice principles to improve affordability and foster investment

As the Bangladesh mobile sector continues to develop, the focus should turn to encouraging an environment that is conducive to investment. Reforming taxation applied on the mobile sector towards a more balanced and efficient structure, in line with principles

established by international organisations such as the IMF, World Bank, OECD and UN, has the potential to provide significant economic and social benefits. Reducing the complexity and uncertainty of taxes and fees on the mobile sector will also improve

predictability and business confidence. Tax rules should be clear and simple to understand, so that taxpayers can anticipate the tax consequences in advance of a transaction. Abolishing inconsistent applications of tax rules will provide a better investment climate. Section 3.5 sets out three options for reform that would address some of the most

distortive taxes on the mobile economy in Bangladesh. These can increase affordability of mobile products and services, by lowering the tax burden on consumers and mobile operators, and can add further value to the economy through productivity gains and the knock-on impact on other industries.

Allow all types of network sharing to facilitate mobile broadband expansion

Infrastructure remains a major barrier to providing rural coverage in Bangladesh. In recognition of the need to find solutions that are commercially sustainable, network sharing offers a great opportunity to help bring mobile internet services to all Bangladeshis. Though the country has started to see benefits from passive infrastructure sharing,

it is imperative that the government allow all types of network infrastructure sharing including MORAN, MOCN and roaming. As part of this, infrastructure sharing should remain optional for mobile operators; forcing them to share infrastructure creates a disincentive to deploy new infrastructure and may negatively affect investment and coverage.

Rationalise licensing regime to support quality of service for the consumer and improve the investment climate

The current licensing regime in Bangladesh is highly fragmented and complex. On a number of occasions, the government has introduced policies and regulations that have brought in new licensees/entities into the service delivery value chain (i.e. operators of Bangladesh's Nationwide Telecommunication Transmission Network) that are not subject to the same quality of service obligations

as mobile operators, resulting in inefficiencies that negatively impact on the end user experience and raise compliance costs for mobile operators. The government should seek to rationalise the licensing regime and reduce the unpredictable licensing changes in order to improve business confidence, reduce costs, facilitate network investment and thus improve the overall experience for mobile users.

Reform regulation to realise the full potential of mobile financial services

As the take-up of mobile broadband and smartphone adoption continues, emerging services including mobile financial services and mobile money applications can help accelerate productivity and financial inclusion throughout the economy. Despite the improvement in financial access in Bangladesh, there remains a lack of competition and cooperation in the provision of MFS. It is therefore important to improve the regulatory environment, in order to seize the significant opportunity that MFS offers in Bangladesh.

Globally mobile operators have proven they can address the needs of the unbanked or the underbanked by building a sustainable business over time that is complementary to their core GSM business. In order to unlock the full potential of mobile money and develop an efficient financial sector in Bangladesh, the government and the regulator should create an open and level playing field that allows both banks and non-bank providers to offer these storage and payment services – particularly operators, which are well suited to building sustainable services and extending the reach of the formal financial sector.

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