



Country overview: Pakistan

A digital future



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Executive summary



Pakistan has grown quickly, but the digital divide is still wide

Pakistan has an emerging mobile industry: there are approximately 90 million unique subscribers in the country, accounting for 47% of the population. However, the enablers of mobile internet connectivity: infrastructure, affordability, consumer readiness and content, all rank low in Pakistan relative to its neighbours. These enablers are critical to creating the right conditions of supply and demand for mobile internet connectivity to flourish. Pakistan therefore has one of the lowest penetration rates in South Asia.

Although mobile broadband (3G and above) coverage has increased rapidly since launch in 2014, reaching 75% of citizens by mid-2016, uptake has remained low: as of June 2016, only around 10% of Pakistanis subscribed to mobile broadband services. This is the lowest of any South Asian country except

Afghanistan. Many citizens either cannot afford or do not know how to use the devices and services that deliver mobile broadband.

Over the next three years, mobile subscriber penetration will grow to just over half of the country's population – only a small increase from now. Today's users will accelerate their transition to mobile broadband from 2G services, with improved network coverage and more affordable smartphones the key drivers. By 2020, mobile broadband will be accessed by about a third of the population, albeit predominantly those migrating from 2G. Given the lack of fixed line broadband connectivity in Pakistan, the digital divide – between those that have access to the internet and those that do not – will remain substantial.

Mobile is laying the foundations for a digital society

Pakistan is an emerging digital society: digitisation is still in its early stages, and is used mainly as a tool for accelerating socioeconomic development, particularly in improving digital and financial inclusion. However, through its Vision 2025 strategy, Pakistan aims to complete its transition to a knowledge-based economy, creating a globally competitive and prosperous country that provides a high quality of life for all its citizens.

Vision 2025 aspires to a more advanced digital society: digital development can drive increased engagement between individuals and institutions, provide huge growth potential and productivity gains in all sectors, and enable more advanced and innovative government services.

Pakistan's mobile sector is in a unique position to support the country's digital development for three key reasons:

- mobile can connect more people than any other technology, particularly in underserved rural areas
- mobile can provide secure access to a variety of digital services such as health and education
- mobile can provide a platform to provide financial inclusion, engaging many people in the economy for the first time.

In parallel, innovative services that run over mobile networks can support many of the government's Vision 2025 objectives, such as increasing enrolment in education, improving food security and driving private sector growth.

Accelerating mobile-led growth

Mobile operators in Pakistan are playing their part in innovating to deliver the services that will accelerate progress towards the goals of Vision 2025 – and in doing so generating growth, jobs and investment in the wider economy. But they have an opportunity to do more. Today, more than half of Pakistani citizens do not subscribe to a mobile service, and some (predominantly rural) areas of the country do not have high-quality mobile broadband coverage at all. There is a clear role for the government in addressing some of the factors that lie at the heart of this issue, and its agenda must focus on the following areas.

Recognising the impact that mobile-specific taxation has on uptake of mobile services

Mobile consumers and operators in Pakistan are subject to general taxes, some of which are higher for mobile services than for other goods and services. These include sales tax/federal excise duty (FED) and withholding tax, which together account for more than two thirds of the tax and regulatory fee payments made by the sector, and which are higher than those imposed on other sectors of the economy. Further, taxes and regulatory fees are applied specifically on the mobile sector, including a tax on SIM cards (a relatively rare form of taxation) and various regulatory, numbering and administrative spectrum fees levied on mobile operator revenues. With this different treatment of mobile services compared to other goods and services, the mobile sector contributes around 38% of its revenue in tax and regulatory fee payments, which is higher than in most countries for which data is available (2014 data).

These higher taxes and fees on mobile services may reduce affordability: for example, for the poorest 20% of the population, the total cost of mobile ownership may account for as much as a fifth of average annual income. Taxes and regulatory fees in Pakistan represent a large share of final consumer costs compared to other countries in the region, and could be preventing more widespread uptake of mobile services, including mobile broadband.

In addition, the current treatment of the mobile sector may lead to inefficient investment decisions and reduced returns on investment, with potential issues arising from the complexity and frequent changes of the tax regime, as well as an uncertain business climate.

Rebalancing sector-specific taxation in line with international best practice

The mobile industry recognises that its fiscal contribution remains critical to financing public expenditure in Pakistan. However, the current treatment of the mobile sector may be limiting growth in connectivity that could support each of the seven pillars of the Vision 2025 strategy. Reducing taxation on mobile services to be more in line with other goods and services, and simplifying the structure of taxes and fees, could support economic growth, investment and fiscal stability. As illustrative examples:

- Reducing the rate of sales tax/FED on mobile services has the potential to reduce prices for consumers. A reduction from the current rates of 18.5–19.5% to a uniform 17% could generate an additional 1.8 million connections over the four-year period to 2021, potentially increasing GDP by \$1.2 billion in 2021. Across the wider economy, total investment could increase by a combined \$480 million over the same period.
- Removing the SIM card sales tax has the potential to make mobile more accessible. Elimination of the sales tax could generate almost 1 million new connections over the four-year period to 2021, potentially increasing GDP by more than \$600 million in 2021. Increased activity in the mobile sector may increase employment in the sector and the wider economy by more than 2,000 employees.
- Reducing regulatory fees has the potential to create a more favourable environment for investment. For example, elimination of the annual licence fee could generate almost 200,000 new connections over the four-year period to 2021, potentially increasing GDP by \$140 million in 2021. Increased investment by the mobile sector may lead to 250 new or upgraded mobile sites by 2021 and 500 new jobs created in the mobile sector alone.

Given the myriad taxes and fees imposed on the mobile sector, further reforms may be possible in order to generate similar benefits. For example:

- Mobile operators are not currently considered industrial undertakings, meaning they face different treatment compared to other sectors in relation to certain taxes. Addressing this could lead to a simpler and less distortionary tax structure.
- Customs duty and sales tax levied on imported handsets are applied using flat rates, which have a greater impact on the poorest consumers. Reducing these taxes may lower the costs of mobile ownership and drive higher penetration.

In the medium term, tax and regulatory fee reductions on the mobile sector have the potential to increase wider tax revenue for the government, due to the benefits from increased mobile usage and growth of investment across the economy. In the short term, the government may consider alternative ways to cover the tax revenue shortfall from removing sector-specific taxes. As an illustrative example, based on the 2016–17 budget, a modest increase of less than 0.5% of total general sales tax (GST) may be sufficient to cover revenue shortfalls for each reform scenario. This estimate is intended to provide perspective on the scale of tax revenue shortfalls. Aside from changing the GST rate, changes to other general taxes, such as direct taxes, are alternative options.

Reforming regulation of digital networks and services

Regulation needs to acknowledge the fact that the sector has evolved. The boundaries between the once-distinct sectors of telecoms and internet services are blurring, and the current regulatory framework does not reflect today's dynamic digital marketplace. This in turn is causing market distortions that threaten to delay coverage expansion and the emergence of innovative new services and technologies.

Thankfully, the newly published National Telecoms Policy includes provisions, which if enacted in a timely way, would help to mitigate these problems. Three key areas require immediate attention:

- a competition policy that considers all market players, not just telecoms service providers, in a technology-neutral environment aimed at preventing bottlenecks and exclusionary conduct

- clear and simplified licensing practices based on function rather than technology or legacy industry structures, which can accommodate the rapidly changing market and encourage investment and innovation
- a new framework for physical network cooperation (including network and spectrum sharing) that is light-touch and focuses on general competition principles and transparency.

Without policy reforms that reflect this changed digital landscape, markets will become further distorted, and investment and innovation will be put at significant risk. There is a real opportunity for the government, institutions, mobile operators and the wider mobile industry to work together to make these regulations a better fit for the modern digital ecosystem.

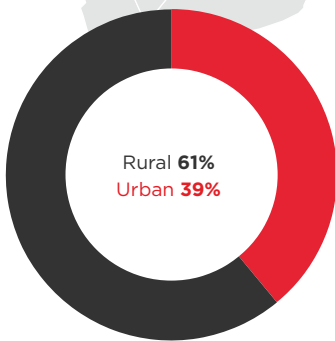
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Pakistan as a digital society

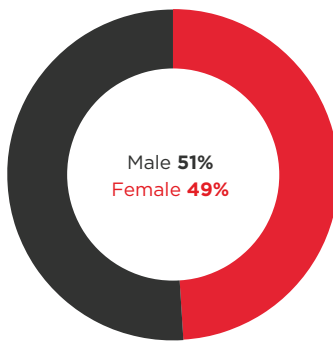
1.1 Pakistan in numbers

Source: World Bank, UN, PBS, GSMA Intelligence

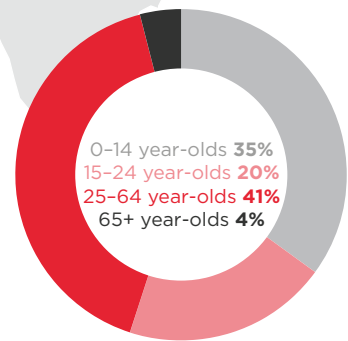
1 Pakistan key facts



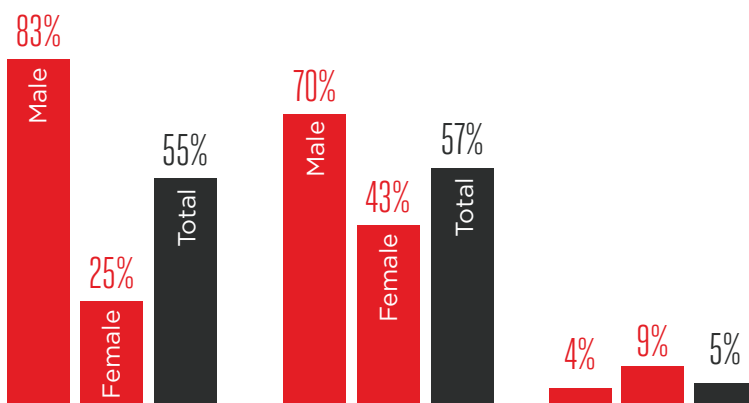
MOSTLY RURAL



EVEN GENDER SPLIT



YOUTHFUL POPULATION

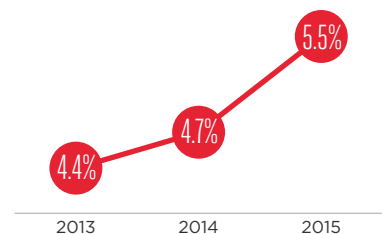


Labour force participation rate

Literacy rates

Unemployment

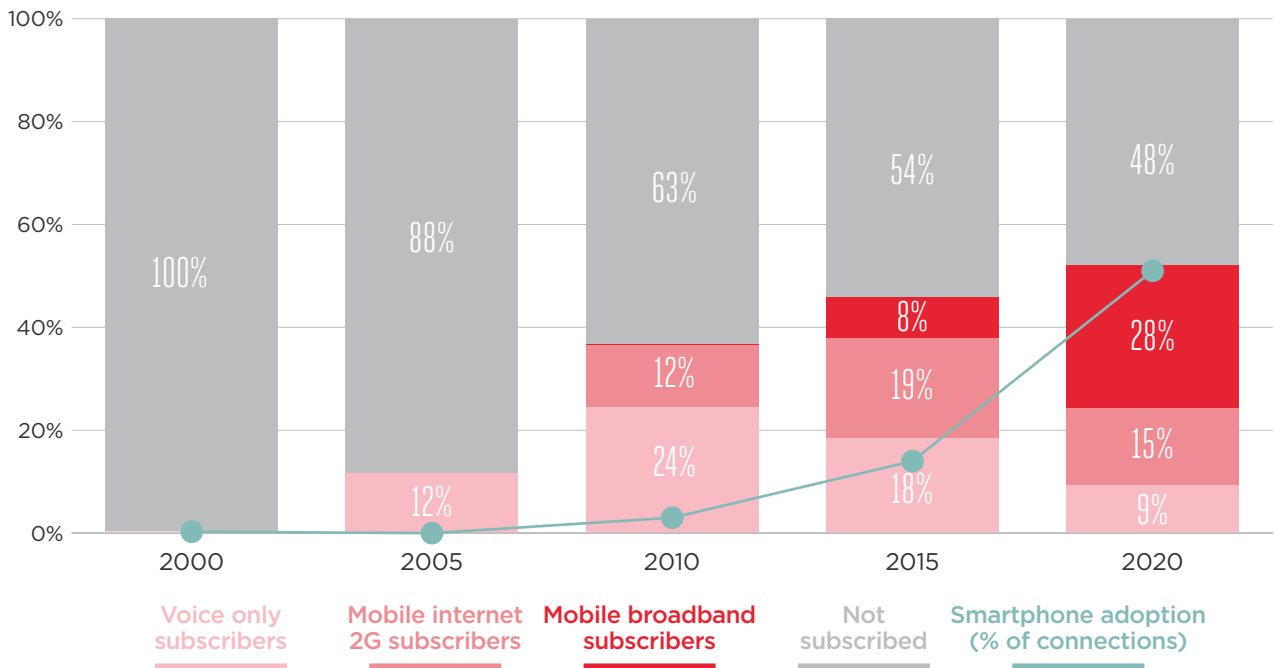
GDP GROWTH



GDP PER CAPITA
\$1,429
Lower middle income

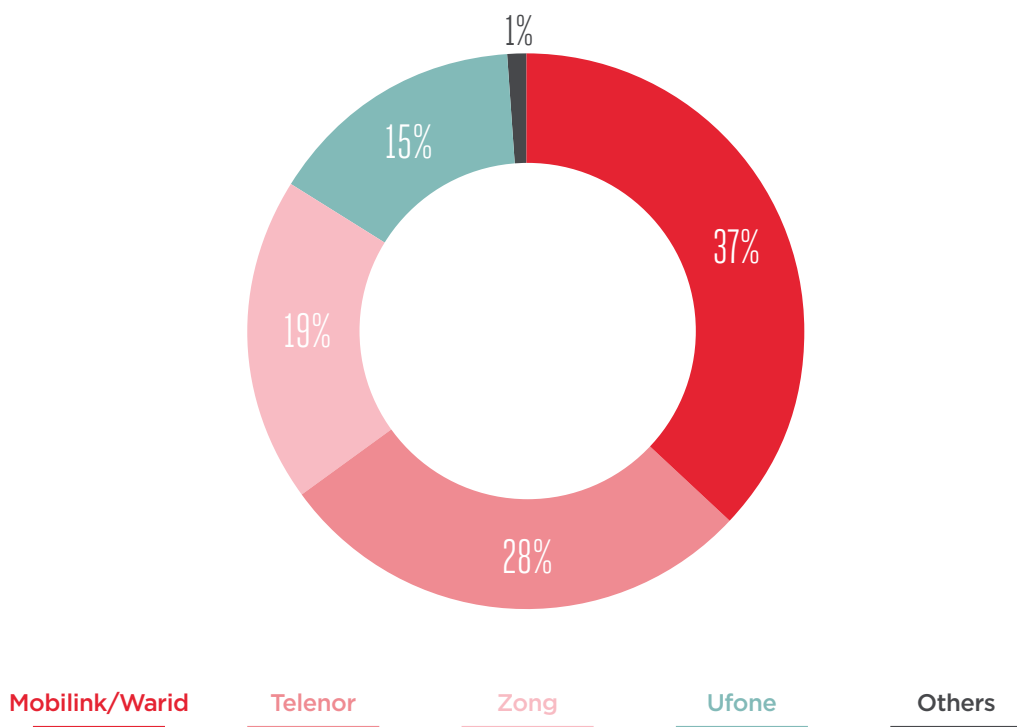
Source: GSMA Intelligence

2 Pakistan mobile market evolution (percentage of population)



Source: GSMA Intelligence

3 Pakistan mobile operator share of connections, Q3 2016



Source: Operator websites, news reports, GSMA Intelligence

4 Major milestones of the Pakistani mobile market

1990

- Mobile services launched in Pakistan

1992

- First GSM network

2000

- Millicom acquires Paktel from Cable & Wireless

2005

- 10 million connections. Telenor Pakistan and Warid launch services

2004

- Cellular Mobile Policy issued. Nationwide GSM licences auctioned

2003

- Telecom Deregulation Policy issued

2006

- 25% market penetration (connections)

2007

- 50 million connections. China Mobile acquires Paktel from Millicom

2008

- 50% market penetration (connections). Paktel rebranded as Zong

2014

- 3G/4G auction held after a four-year delay. Ufone, Telenor and Mobilink launch 3G networks, Zong launches 3G and 4G services

2010

- 100 million connections

2015

- 10 million 3G connections, 1 million 4G connections. Telecom Policy 2015 published, Warid launches 4G services

2016

- Telenor launches 4G services and enters sole bid for 850 MHz band. Mobilink acquires Warid from Abu Dhabi Group

1.2 Mobile market evolution

1.2.1 Pakistan's position in a digital world

Digital technology is evolving rapidly, leading to the emergence of new services and applications that are transforming the way people live, work, play and communicate. The large-scale societal adoption and use of digital technologies is a key driver of measurable economic, social and cultural value, including increased productivity, a rise in employment rates, improved security and greater capacity to tackle social and environmental issues.

In this report, we discuss Pakistan's vision to create a globally competitive and prosperous country providing a high quality of life for all its citizens. However, in order to better understand the context of this development blueprint that aspires to transform Pakistan into a connected, industrialised and knowledge-based, middle-income country by 2025, it is important to first assess Pakistan's position in a digital world today.

The GSMA Mobile Connectivity Index measures how the key enabling factors for mobile connectivity differ across markets, helping focus the efforts and resources of the mobile industry and wider international community on the right projects in the right markets at the right time, so progress towards universal access can be as swift and economically sustainable as possible.

The index is built around four key enablers of mobile internet connectivity, which are critical to creating the right conditions of supply and demand for mobile internet connectivity to flourish:

Infrastructure – the availability of high-performance mobile internet network coverage

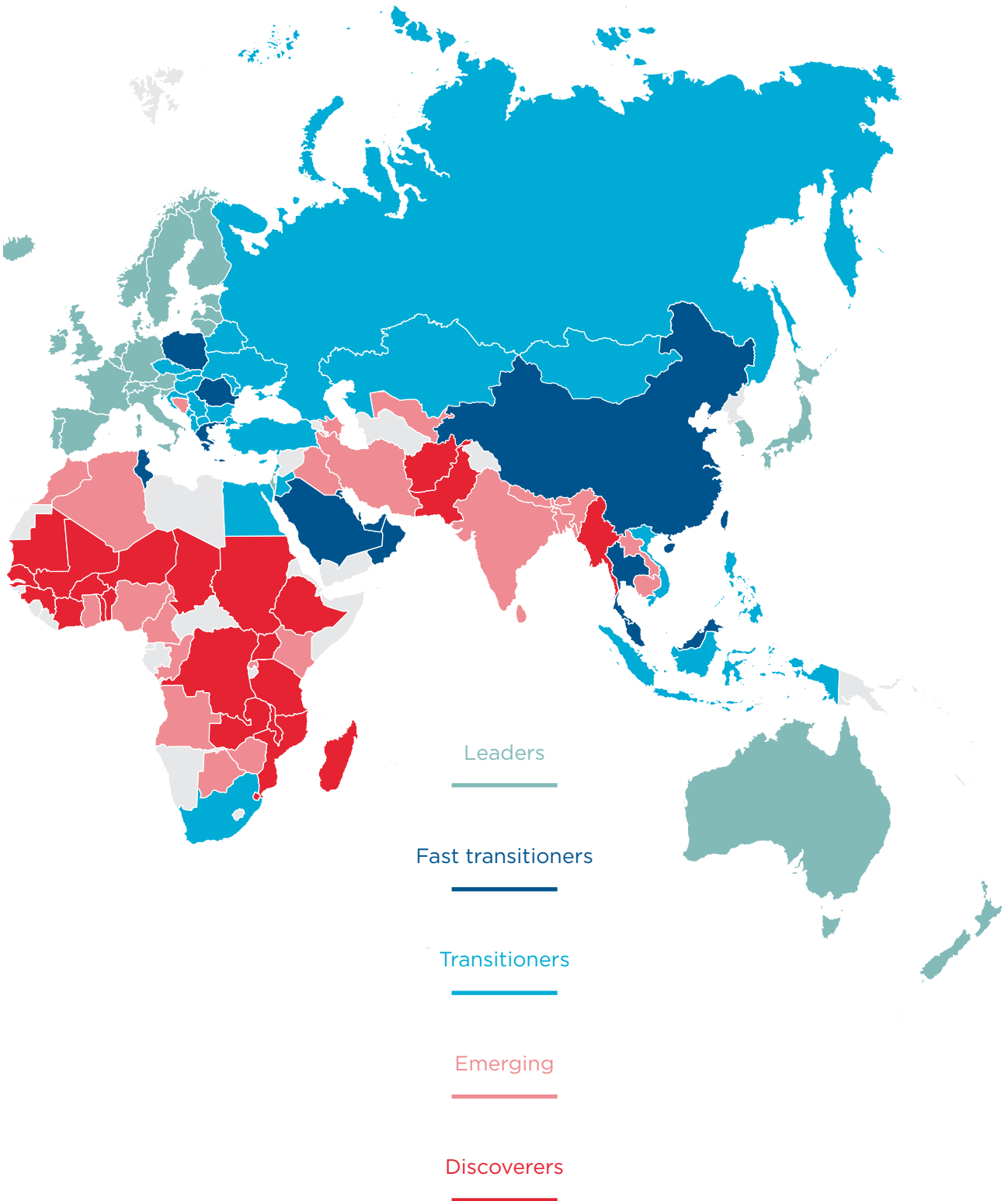
Affordability – the availability of mobile services and devices at price points that reflect the level of income across a national population

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.

Source: GSMA Intelligence

5 The Mobile Connectivity Index in Europe, Africa and Asia













Pakistan has an index score of 33.8, positioning it in the bottom 25 countries globally, and is classified as a Discoverer country, meaning there is room for improvement across all four enablers.

Compared to the rest of South Asia, Pakistan scores particularly poorly on infrastructure and consumer readiness, and concurrently, mobile internet

penetration is 29% versus a regional average of 32%. In comparison to other Discoverer countries worldwide, Pakistan scores fairly well in terms of infrastructure, affordability and content, hence a slightly higher overall index score and mobile internet penetration rate. However, one particular area of concern is consumer readiness.

Source: GSMA Intelligence

6 Pakistan in relation to South Asia peers and cluster average

	Mobile Connectivity Index	Infrastructure	Affordability	Consumer readiness	Content	Mobile internet penetration
Pakistan	34	23	55	25	41	 29%
South Asia	38	30	55	45	31	 32%
Afghanistan	22	27	41	11	21	 18%
Bangladesh	41	33	56	52	30	 30%
Bhutan	37	33	62	43	22	 37%
India	38	25	58	43	33	 32%
Iran	44	23	67	69	38	 29%
Nepal	40	32	45	46	39	 32%
Sri Lanka	49	45	62	73	27	 39%
Discoverers	27	21	39	39	19	 22%

Without the necessary skills and supporting cultural environment, individuals will not understand how to use the mobile internet or appreciate how it can benefit them. Individuals, especially women, might also find themselves prevented from accessing the mobile internet. It is therefore important to consider the skills and education levels of a country, as well as the degree of gender equality in education, finance and in the labour market.

In Pakistan, less than 60% of the population are literate or participate in the labour market, and this is even lower for females – 43% and 25% respectively. In terms of education, less than three quarters of children are enrolled in primary school, and only 40%

go on to secondary education.¹ As for digital literacy, around 40% of mobile phone owners who do not use the mobile internet state that they have difficulty understanding how to use their mobile handset.²

Affordability scores fairly well in the index compared to other Discoverer countries, given that the country has among the lowest ARPU in the world, and smartphones are available for less than \$50. However, due to the wide income distribution and high poverty rate in the country, affordability is a critical issue for those at the bottom of the pyramid, for whom mobile ownership can account for as much as a fifth of their average income. This is discussed further in Sections 1.2.2 and 3.1.1.

¹ World Bank

² GSMA Intelligence Consumer Survey 2016, a face-to-face survey of a sample of 1,000 respondents in Pakistan across a representative mix of age, gender, location and social class

1.2.2 The mobile story to date

Low penetration, but mobile broadband is growing

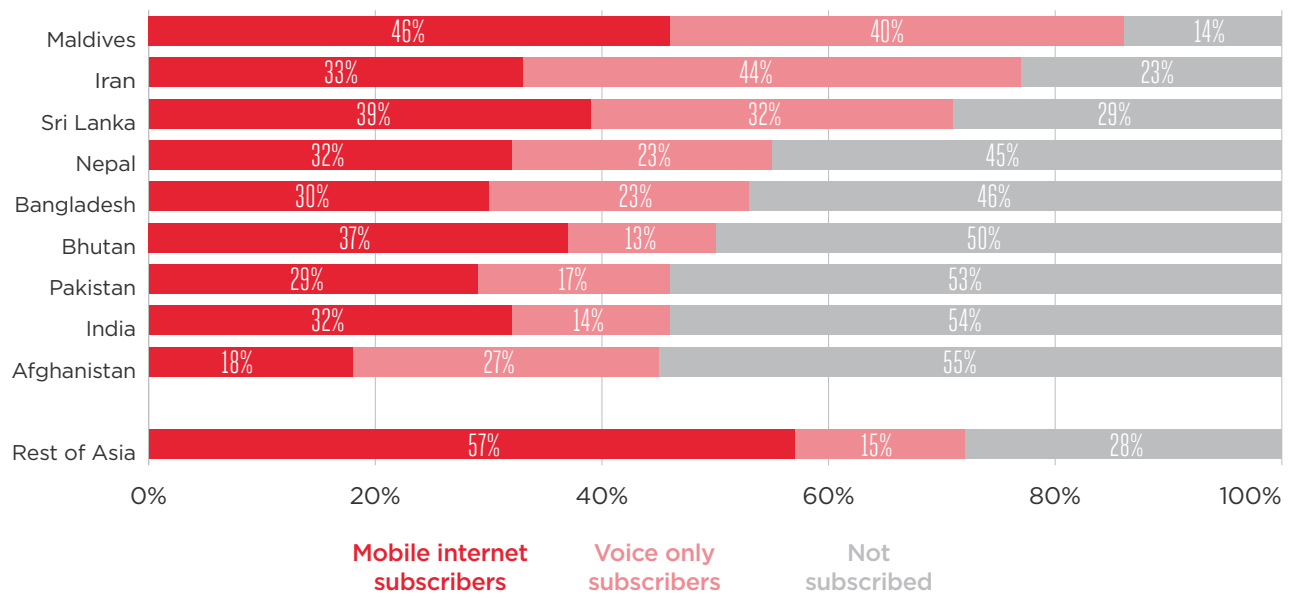
Pakistan has an emerging digital industry, with mobile penetration and internet usage lower than many of its regional and economic peers. By mid-2016, there were 90 million unique subscribers³ in Pakistan accounting for 47% of the population. This is among the lowest penetration levels in South Asia, ahead of only India and Afghanistan. Further, less than 30% are users of the mobile internet, ahead of only Afghanistan.



With an average subscriber owning 1.5 SIM cards, there were a total of 135 million connections⁴ in Pakistan as of Q2 2016, equating to a connections penetration of 70%.

Source: GSMA Intelligence

7 Mobile in South Asia, Q2 2016 (percentage of population)



Pakistan's first spectrum auction was held in April 2014, with 3G and 4G spectrum auctioned by the Pakistan Telecommunication Authority (PTA). Mobilink, Telenor, Ufone and Zong all won 3G licences and subsequently launched 3G services, while Zong also won Pakistan's first 4G licence. Warid Pakistan did not participate in the auction, but launched 4G LTE services in December 2014 on its existing 2G 1800 MHz spectrum, leaping directly from 2G to 4G.

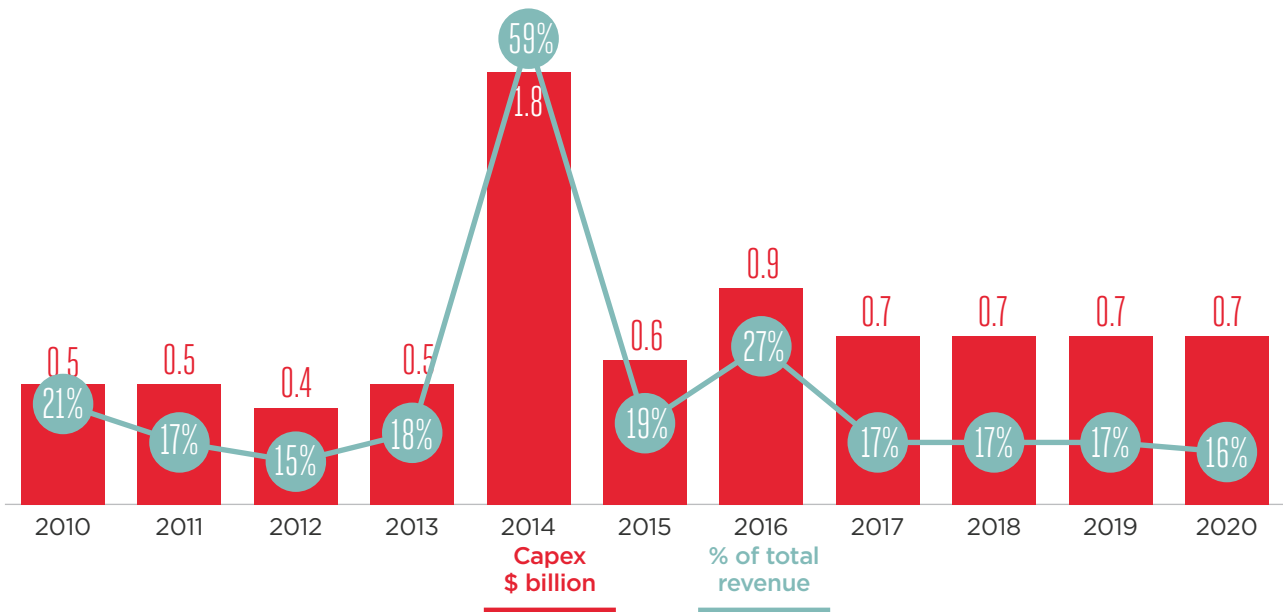
Over the last few years, mobile operators have invested heavily in their networks, with total capex in Pakistan surpassing \$3.3 billion between 2014 and 2016. This includes the total investment of \$1.1 billion for 3G and 4G licences as part of the auction in April 2014, as well as the investment of \$395 million by Telenor for 850 MHz spectrum in June 2016. These licencing costs account for a significant proportion of mobile operator revenues, reaching as high as 60% in 2014, highlighting the scale of the investments needed in delivering mobile broadband across Pakistan.

³ 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.

⁴ Unique SIM cards (or phone numbers, where SIM cards are not used) that have been registered on the mobile network at the end of the period. Connections differ from subscribers such that a unique subscriber can have multiple connections.

Source: GSMA Intelligence

8 Capex trends in Pakistan

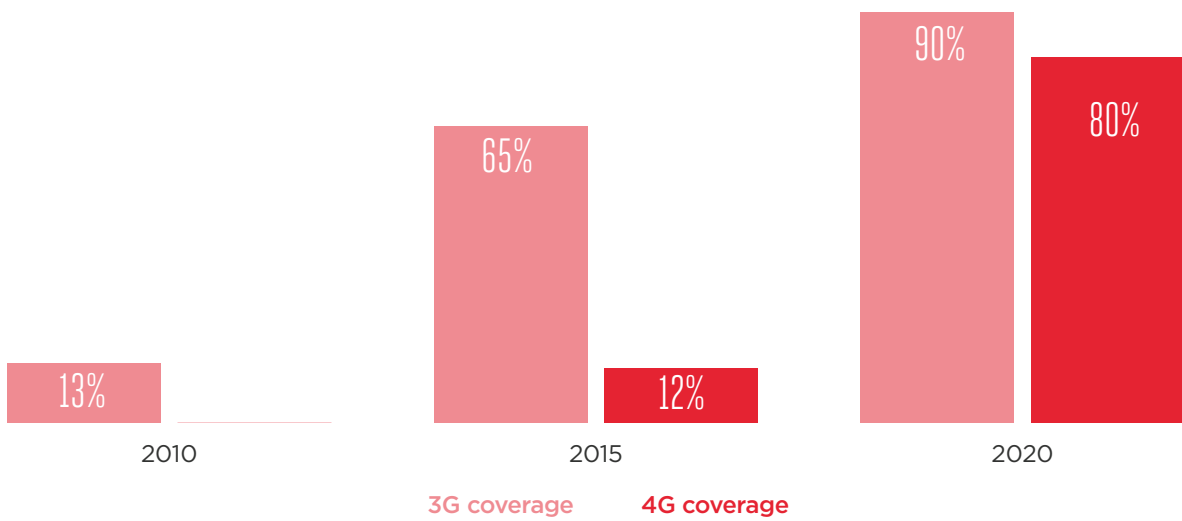


Following this heavy investment, 3G coverage reached 65% by the end of 2015, and by mid-2016, just under three quarters of the Pakistani population had access to 3G services. With continued investment – forecast to reach \$2.8 billion over the next four years (not including any additional spectrum costs) – 90% of the population will be covered by the end of the decade.

With only two operators, 4G rollout has proceeded more slowly, reaching 18% of the population by mid-2016. However, with Mobilink acquiring Warid and Telenor beginning 4G rollout in August 2016, 4G coverage will rapidly increase to 80% of the population by 2020.

Source: GSMA Intelligence

9 Mobile coverage expansion (percentage of population)



Despite the rapid spread of mobile broadband coverage, uptake has remained low: by Q2 2016, only around one in 10 of the population subscribed to mobile broadband services. The primary issues explaining this low uptake are affordability, literacy and security.

Affordability is the biggest barrier in Pakistan: 57% of phone owners who do not use the mobile internet state handset costs as a key reason. Additionally, 42% of non-users said that costs of mobile services are too high.⁵

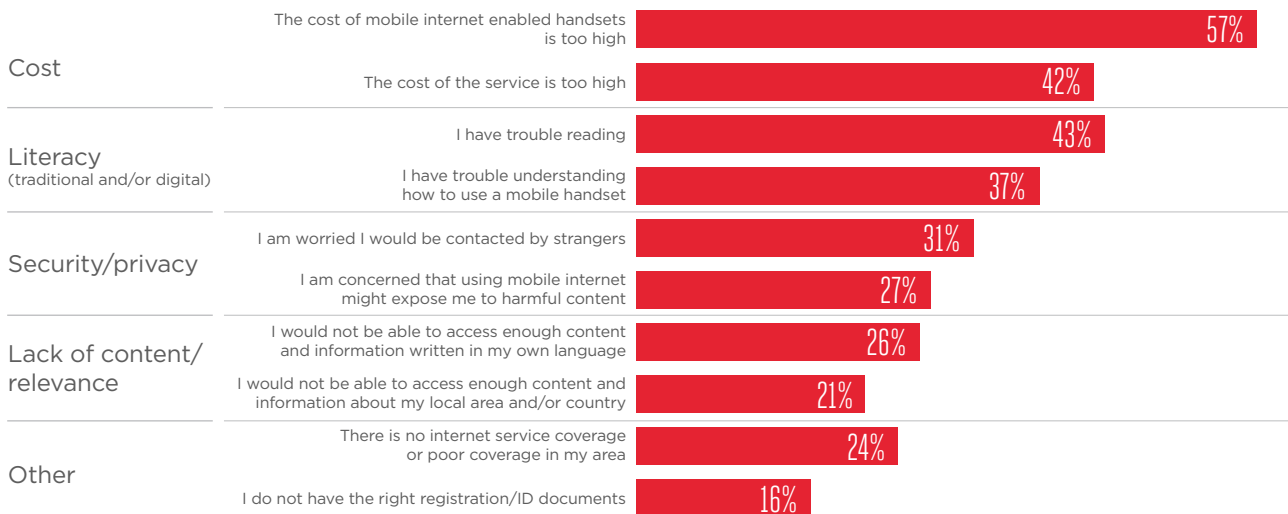
The average selling price (ASP) for smartphones in Pakistan in 2015 was \$135.⁶ While this is one of the lowest ASPs in the world, it is still more than the average monthly income of around \$120. Further,

nearly a third of the Pakistani population live below the national poverty line, earning less than PKR3,030 (\$29) per month. For these people, even the cheapest smartphone costs as much as one month's wages. In addition, despite the very low ARPU levels, costs of mobile ownership and usage can account for 10% of average income in Pakistan, increasing to over a fifth for the poorest 20% of the population. This is discussed further in Section 3.1.

Other barriers to mobile internet usage include literacy issues – both in the traditional sense (reading and writing) and in terms of digital knowledge; concerns over security and privacy; and the lack of availability of content that is relevant or in the local language.

Source: GSMA Intelligence Consumer Survey 2016

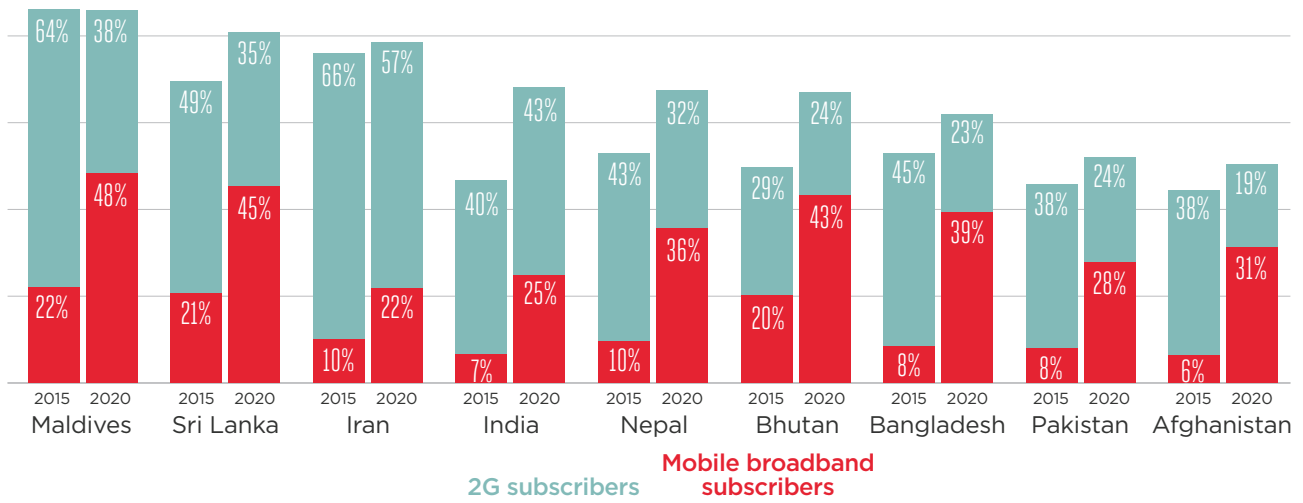
10 Barriers to mobile internet usage (percentage of phone owners who don't use the mobile internet)



Given these barriers, subscriber growth will be relatively slow in Pakistan for the next few years, reaching only 52% of the population by 2020. This is below much of the rest of the region, ahead of only Afghanistan. Within the subscriber base however, mobile broadband will grow rapidly due to the continued rollout of networks and increasing affordability of smartphones: by 2020, mobile broadband will account for more than 50% of total subscribers (up from a quarter in Q2 2016) and just under 30% of the population (up from just over 10% now).

5 GSMA Intelligence Consumer Survey 2016
6 Strategy Analytics

Source: GSMA Intelligence

11 Growth of mobile in South Asia (percentage of population)**Smartphone ownership and digital engagement low, but ready to grow rapidly**

The affordability barrier, as well as the relatively late rollout of mobile broadband networks, is a key reason why smartphone adoption has remained low in Pakistan – by mid-2016, smartphones accounted for only 17% of total connections. However, following the rapid rollout of 3G and 4G networks since the spectrum auction in 2014, mobile broadband services are becoming more widely available and, in parallel, smartphones are becoming increasingly affordable.

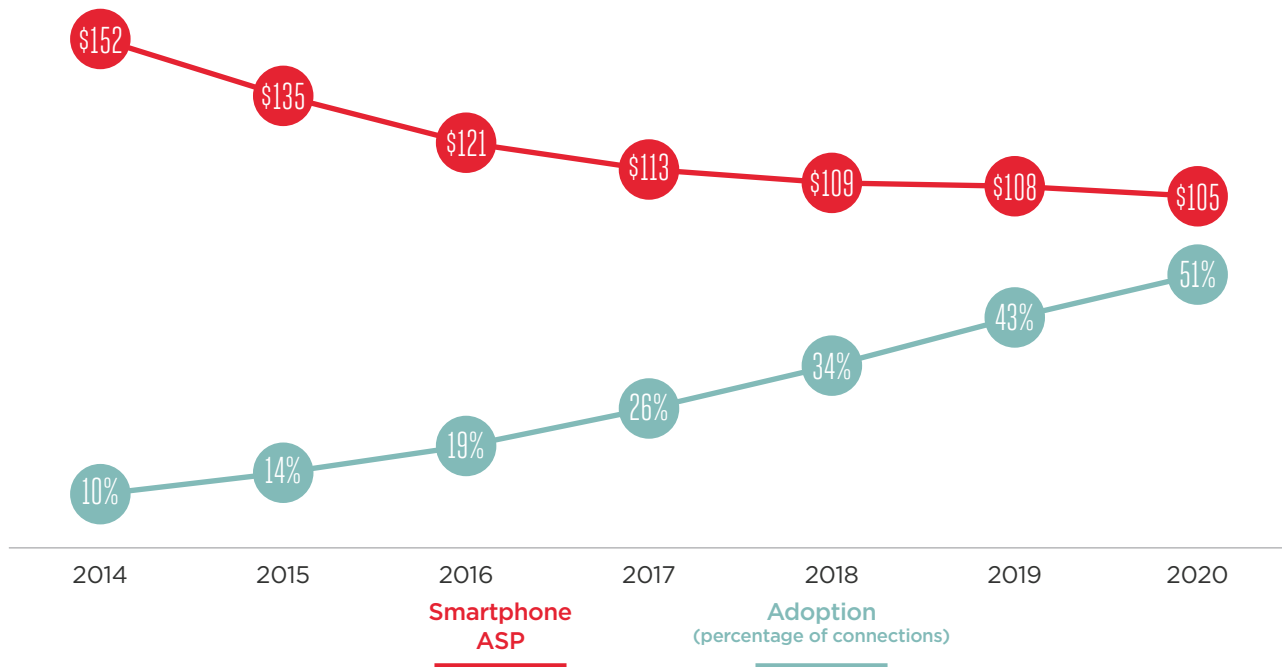
Both mobile operators and players in the broader mobile ecosystem (such as handset manufacturers) are contributing to making mobile services more

affordable. The average price of a smartphone in Pakistan dropped to \$135 in 2015, the second lowest in the world behind India (\$131). Much of this is due to local smartphone brand QMobile, which offers a large range of affordable smartphones: 19 QMobile smartphones retail at PKR5,300 (\$50) or less, and three – the Bolt T2, X2 Music and X2i – cost less than PKR3,100 (\$30). These low-end smartphones are proving extremely popular in Pakistan given the low purchasing power of the average individual, and have resulted in QMobile becoming one of the country's leading smartphone vendors with over 20% market share.⁷



Smartphone ASPs are expected to continue to decline in Pakistan, approaching \$100 by 2020. While they will still account for a large proportion of an average consumer's income, the increased affordability will help drive smartphone adoption. Thus, smartphone connections will overtake feature and basic phone connections in Pakistan by the end of the decade.

Source: Strategy Analytics, GSMA Intelligence

12 Declining prices helping drive smartphone adoption in Pakistan

The use of social media, whether for communication, business or entertainment, is a basic indicator of the advancement of a digital lifestyle. Social media is not just a platform for individuals; it is a symbol of online presence for companies and even governments. Examples include the official Twitter updates of Inter-Services Public Relations (ISPR – the administrative military media brand of the Pakistani Army), political party campaigns, Punjab Food Authority (PFA) posts about inspections at various food outlets, and regular updates from Rawalpindi DCO (District Coordination Officer) on city governance matters.

In Pakistan, use of social media platforms and IP messaging apps is increasing. Facebook is by far the most popular social media platform in Pakistan with 27 million users and 3 billion connections per day (largely driven by the popularity of Facebook Messenger). Twitter and Instagram are also popular, with 280 and 250 million connections per day respectively.⁸ IP messaging is also gaining traction as an alternative to traditional voice and text, with almost a quarter of mobile phone owners using such services, most notably WhatsApp.⁹



Mobile is the primary channel for social media – in September 2016, there were 22 million active mobile users of social media in Pakistan, accounting for over 80% of total social media users, and a 36% increase on March 2015.¹⁰

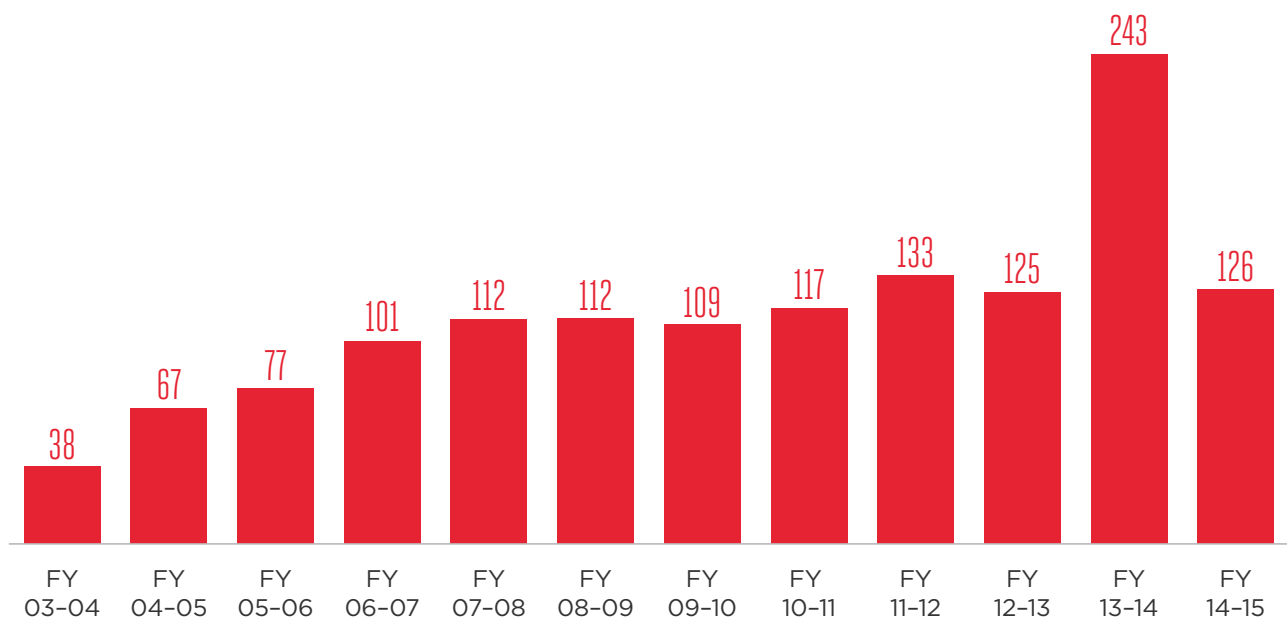
8 PTA
9 GSMA Intelligence Consumer Survey 2016
10 We Are Social

Contribution to the wider economy

The telecoms sector makes an important and steadily increasing contribution to the revenues of the Pakistani government, with PKR126 billion (\$1.1 billion) generated in FY 2014–15, approximately a third of sector revenue. The sector contributes more than 3% of total government tax revenue, despite only accounting for around 1% of Pakistan's GDP¹¹. Mobile also supports wider growth. For example, in low to middle-income countries such as Pakistan, every 10% increase in broadband subscriber penetration accelerates economic growth by 1.38%.

Source: Central Board of Revenue, PTA

13 Telecoms sector contribution to government revenues (PKR billion)



Note: FY 2013-14 includes revenue from NGMS spectrum auction

The digital sector is key in attracting investment to Pakistan. The country has faced low levels of foreign investment in recent years, with many countries reducing their investment levels (such as the US, Saudi Arabia, Egypt and Germany). However, thanks to investments of almost \$600 million from China, Pakistan received just under \$1.3 billion in foreign direct investment (FDI) in FY 2015–16, a 40% increase on the previous year.¹² Around 16% of this was invested in the telecoms sector. This is discussed further in Section 3.1.2.

Further, risk capital has been flooding into Pakistan, with venture-capital (VC) funding reaching \$100 million since the start of 2015. Over three quarters of this was in the internet and mobile sector. Examples include the following:

- **Daraz** – one of Asia's leading online shops for shoes and fashion, active in Bangladesh, Myanmar and Pakistan. It raised \$55 million in September 2015.
- **Zameen** – an online real-estate portal connecting dealers, developers and estate agencies with general buyers, sellers and renters across Pakistan. It has raised just under \$30 million in the last year.
- **Inov8** – Pakistan's fastest growing mobile payments company, enabling access to mobile financial services for the unbanked and making mobile payments more convenient for the banked. It attracted an investment of \$5.4 million in October 2015.

¹¹ Deloitte analysis based on operator data, World Bank data and GSMA Intelligence
¹² Pakistan Board of Investment

1.3 Looking to the digital future

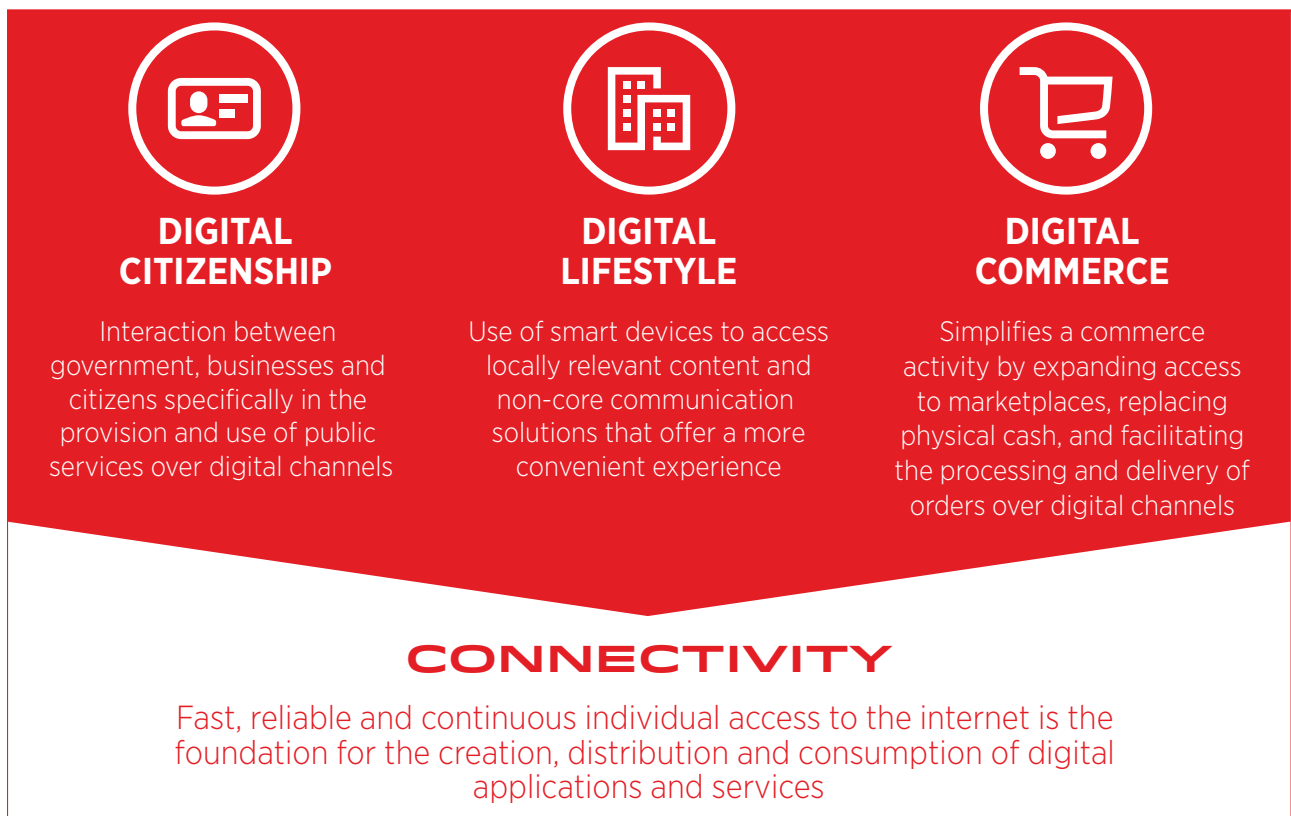
1.3.1 Pakistan's emerging digital society

The term 'digital society' refers to a modern society where citizens seamlessly interact with different aspects of life, including work, play and communication, over digital channels through a network of intelligently connected devices and interoperable services. In practice, people in a digital society can access and interact with a host of public and private services, including financial services, utilities, education, health and transportation, anytime and anywhere using digital technologies.

Internet connectivity is a key foundational element for a digital society – it is the primary requirement for creating, distributing and consuming digital applications and services. Beyond connectivity however, there are three broad and interrelated components required for a digital society to function effectively and deliver benefits to all sectors of society: digital citizenship, digital lifestyle and digital commerce.

Source: GSMA Intelligence

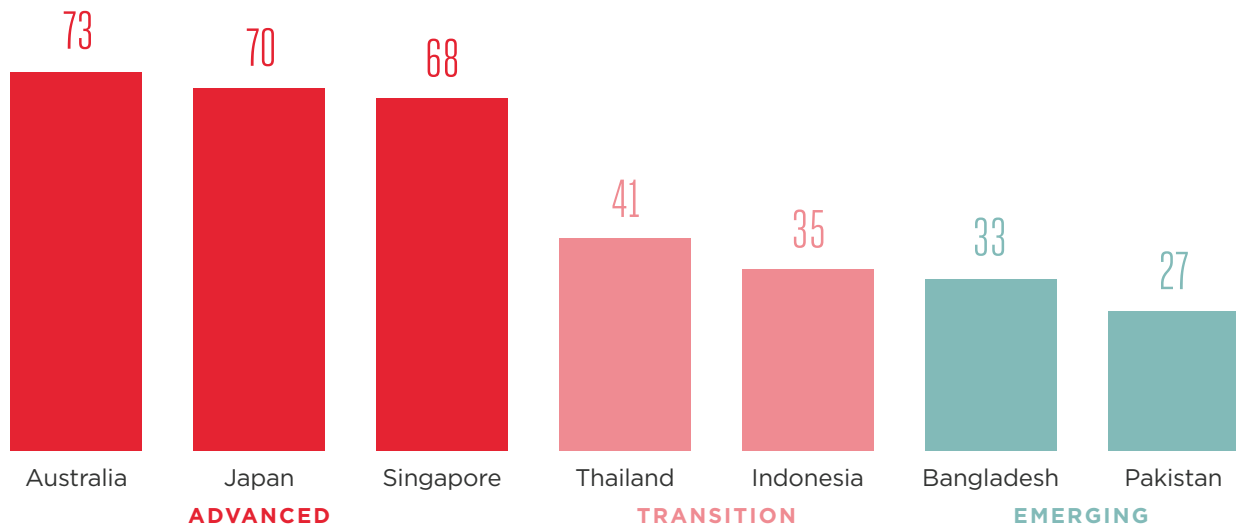
14 Key components of a digital society



The level of digitisation in a society depends on the connectivity of its citizens as well as the advancement of these four components of a digital society. In order to quantify and compare current levels of digitisation, the GSMA created the Digital Development Index as part of the Digital Societies report series,¹³ highlighting seven focus countries across Asia.

Source: GSMA Intelligence

15 Digital Development Index in Asia (selected countries)



According to the Digital Development Index, Pakistan is an 'emerging' digital society, still in the early stages of digitisation. Countries in this category (which also includes Bangladesh) largely see digitisation as a tool for accelerating socioeconomic development, particularly in relation to improving social inclusion. Most services centre on digital citizenship and digital commerce, with the primary goal of increasing citizens' engagement with government and driving digital and financial inclusion. For these countries, the provision of essential services, such as healthcare, education and financial services, which are otherwise not easily accessible due to a lack of infrastructure, poor logistics and lack of affordability, is a priority. In order to move up the digital value chain, emerging digital societies need to adopt holistic planning mechanisms to build the foundational elements of more advanced digitally enabled activities and transactions, and must establish the enabling regulatory environment for creative disruption to occur.

As digital societies become more advanced (for example, Thailand and Indonesia), personalised services lead to higher levels of engagement between individuals and institutions, and there is an increasing focus on more advanced lifestyle services (e-commerce, for example), partly driven by the need to effectively tackle the social, infrastructural and environmental issues that

arise with rapid urbanisation. These 'transition' digital societies need to progress from connectivity to 'hyper-connectivity', epitomised by interoperability across networks (regardless of sector) and the implementation of a forward-looking agenda focused on using those networks for all manner of services.

Finally, the most advanced digital societies, such as Australia, Japan and Singapore, are far more focused on developing interconnected and interoperable digital technologies between sectors, having achieved comparatively ubiquitous levels of infrastructure access and capacity. Here, the emphasis is on improving efficiency in the utilisation of scarce resources using smart technologies such as IoT. This often manifests itself in a broader and coordinated strategic approach to building a digitally enabled society, compared to the largely fragmented approach to digitisation in many emerging and transition digital societies. To maintain their competitive edge, 'advanced' digital societies should focus on improving citizen experience when accessing public services and, crucially, assuming a regional leadership role in standards setting and the sharing of best practices with other nations (especially in key areas such as the Internet of Things – IoT) to create a truly 'Digital Asia'.

1.3.2 The role of mobile in delivering a digital society

Mobile is well-suited to be the technology of choice for a digital society, not only by providing the required connectivity foundations, but also in delivering the content necessary for the other components of digitisation. This is based on the capability of wireless networks to cover a wide area with greater efficiency than many other technologies, and the increasing availability and affordability of high-specification devices capable of supporting a variety of feature-rich content and value-added services.

Further, mobile broadband brings significant benefits to consumers and the Pakistan economy, providing huge growth potential and productivity gains in all sectors including education, employment, banking, media, health and commerce. It is also a key enabler for innovative government services, particularly in rural and remote areas of the country.

Three key elements of a digital society – connectivity, identity and financial access – are enabled by mobile technology.

Connectivity: mobile connects more people than any other technology

Globally, more than 3.4 billion people are accessing the internet via mobile and directly benefiting from and contributing to the digital economy. However, around 4 billion people remain offline, unable to participate in digital services. The unconnected population is predominantly located in developing markets, typically on low incomes.

Mobile represents the best opportunity to bring these people online, particularly those living in rural areas and difficult terrains where the cost of deploying other technologies, such as fixed broadband and Wi-Fi, is prohibitive.

Mobile networks are increasingly ubiquitous in Pakistan, covering over 85% of the population. Since 2014, when 3G and 4G licences were allocated, mobile operators have invested heavily in their networks (\$4.7 billion in capex between Q2 2014 and Q2 2016), pushing 3G coverage to three quarters of the population. By 2019, 90% of the population are expected to be covered by a mobile broadband network.

In parallel, fixed penetration in Pakistan is very low due to the limited reach of fixed infrastructure – less than 2% of the population have a fixed connection, compared to 47% that subscribe to a mobile service. This means that mobile technology is well-suited to extend connectivity and improve service delivery to rural areas, reducing the digital divide, and can act as the enabler for innovative services where other technologies and delivery modes fall short.

Source: ITU (2015), GSMA Intelligence (Q2 2016)

16 Mobile versus fixed penetration in Pakistan (percentage of population)



Identity: mobile provides secure access to digital services

Although connectivity is key to the success of digital services, security is also an important consideration. As the number of digital services has grown and the level of risk to which individuals are exposed has increased, governments and businesses recognise the need for more sophisticated, secure and convenient ways of creating, managing and applying digital identities.

Mobile identity represents a valuable platform through which to achieve these aims. Mobile offers a compelling proposition for governments and businesses seeking to provide secure access to digital services; the value of mobile identity for businesses and public administrations lies in its ability to provide increased convenience and accessibility, strong security and enhanced privacy for people, as well as lower implementation costs and greater uptake of digital services.

Mobile-based identity solutions are already meeting these expectations in Pakistan, spurred on by the government's Biometric Verification System (BVS) project implemented in January 2015 to register the biometric data of all mobile users in the country as a security precaution.

As the government develops its electronic identification frameworks further and creates online environments where individuals and organisations can trust each other, cooperation between mobile operators and policymakers is required. The GSMA Mobile Connect service – a mobile operator facilitated authentication solution that provides simple, secure and convenient access to online services – provides a potential solution. It works by combining the user's unique mobile number and PIN to verify and authenticate them online, offering a single, trusted, mobile phone based authentication solution that respects their online privacy.

Mobile Connect has been launched by nearly 40 mobile operators in around 30 countries, with potential to reach more than 2 billion users. In December 2015, Telenor Pakistan introduced Mobile Connect in collaboration with Telenor Digital and Homeshopping.pk, an online retailer. Using the mobile site, simply pressing the Mobile Connect button will log the user in to the site, while from a computer users go through a simple mobile number verification before they can log in to the site.

Financial access: mobile provides banking for the unbanked

Digital commerce has grown significantly in recent years. A lot of that growth is driven by mobile commerce – electronic transactions performed on mobile phones. Consumers are increasingly using contactless payment technologies, such as near field communication (NFC), while businesses in various industry verticals, including financial services, retail and transportation, are enhancing the user experience of their digital services on mobile platforms.

But mobile is not just an alternative channel for existing digital commerce platforms. Crucially, it is changing the landscape of financial inclusion in developing countries where the majority of people without access to formal financial services live. People living in remote rural communities that are culturally and socially distinct from cities are able to use mobile money to purchase goods and services that would have previously been unobtainable.

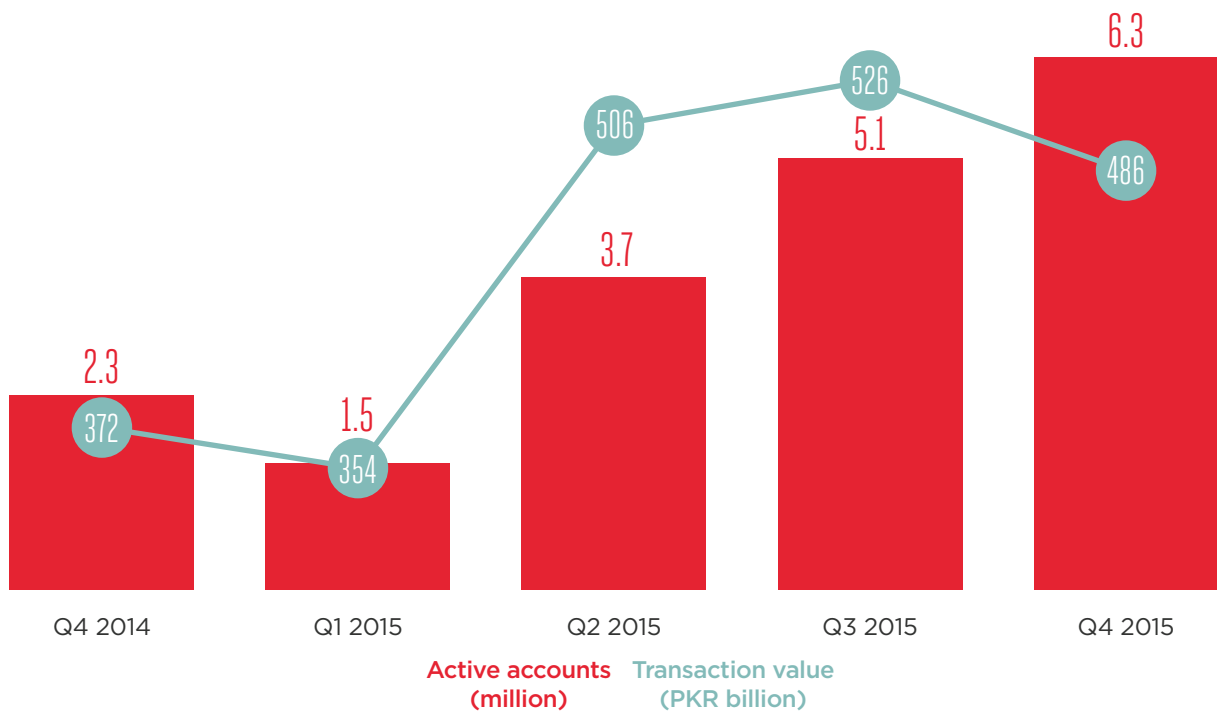
In Pakistan, half of the adult population (approximately 60 million people) have access to a mobile phone but do not have a bank account. As a result, mobile money providers (or 'branchless banking' service providers) have heavily invested in the opportunity to extend the reach of mobile financial services to people outside the traditional banking system. Pakistan's branchless banking industry has flourished since the Branchless Banking Regulations and first licences were issued in 2008, and has shown in such a short time that it can serve the needs of the poor and unbanked population, who primarily perform low-value transactions. The first of such services, Easypaisa, was launched in 2009 by Tameer Microfinance Bank and Telenor Pakistan. Since then, six other branchless banking operations have launched: two bank-only and four partnerships between a bank and mobile operator. All of Pakistan's mobile operators have launched services in partnerships with banks.

By the end of 2015, 9% of the adult population in Pakistan (just over 11 million people) had used P2P transfer or bill payment services offered by the branchless banking operators at least once.¹⁴ At this point, there were just over 6 million active branchless banking accounts, which had generated transactions of just under PKR1.9 trillion (\$18 billion) over the course of 2015, equivalent to approximately 7% of the country's GDP.¹⁵

With the opportunity to manage their money more effectively and generally improve their financial health, people have greater access to health and education and can create micro economies. This results in healthier, more educated people with greater potential to drive economic growth.

Source: SBP

17 Branchless banking in Pakistan



Note: Q1 2015 active accounts declined due to the BVS project

1.3.3 Pakistan Vision 2025

Digitisation can unlock huge social and economic benefits for Asian countries and help governments in the region tackle some of the challenges they face. Some governments have articulated national aspirational plans around economic growth and development, job and wealth creation, and citizens' wellbeing, all of which could benefit from the digitisation of services and increased connectivity of citizens. For Pakistan, this takes the form of Vision 2025.

Pakistan's Vision 2025 aims to create a globally competitive and prosperous country providing a high quality of life for all its citizens. The mobile industry can support many of the government's objectives outlined in the Vision: both those that are specifically focused on ICT policy and those related to wider economic and social developments. In Vision 2025, the Pakistani government has demonstrated its commitment to revolutionising ICT usage across the country. In particular, it aims to complete Pakistan's transition to a knowledge-based economy through innovation, education and value addition, while promoting efficient, sustainable and effective ICT initiatives through the development of both industrial and academic resources. The government has also recognised the importance of young people in facilitating further uptake of ICT and in fostering innovation and entrepreneurship within the sector, and has outlined several specific aims to promote the adoption of these technologies:

- Increase the flow of knowledge and ideas through wider broadband internet access, particularly through 3G and 4G/LTE networks, which offer significant increases in bandwidth and internet speed.
- Introduce m-education, m-commerce, m-health and m-government, aimed at increasing the adoption and promotion of technology in the public sector.
- Reduce tariffs and taxes on R&D equipment, fostering innovation in new technologies.
- Improve the flow of knowledge across sectors, with a particular aim of improving agricultural productivity.

The government of Pakistan recognises that ICT is a key driver of innovation, economic competitiveness and greater social inclusion: through advances in ICT and by extending access to mobile services, Pakistan has the potential to achieve wider social and economic goals.

Launched in August 2014, the Pakistan Vision 2025 strategy sets out a range of challenging aspirations for the country's future development. The Vision encompasses seven key pillars, which are aligned with the United Nations' Millennium Development and Sustainable Development Goals. The following pages outline how mobile-enabled services can play a key role in helping achieve the objectives of these seven pillars.

Pillar

1

Putting people first: developing human and social capital

Key objectives

- Increase primary education enrolment and completion to 100% (from 73% and 74% respectively) and literacy to 90% (from 57%)
- Reduce infant mortality rate from 74 to less than 40 (per 1,000 births) and reduce maternal mortality rate from 276 to less than 140 (per 1,000 births)
- Reduce incidence/prevalence of communicable diseases by 50%

How mobile can help

Education

Telenor Pakistan is helping to improve the gender equity in education for girls from bottom of the pyramid (BOP) families in rural areas, through the Sindh Education Reform Programme (SERP). Launched in June 2014 in 23 remote districts of the Sindh province, the programme provides stipends to 425,000 female students using the Easypaisa network.¹⁶

In November 2015 Zong announced that it would provide 100,000 3G dongles to students for free across Pakistan as part of the Prime Minister's laptop scheme, phase two. The students are provided with wireless internet access to global educational resources available on the Higher Education Commission's digital library, for which Zong is also helping with the design, implementation and execution.

Health

A recent pilot project for birth registration through mobile phones, initiated by UNICEF and in collaboration with local and provincial authorities, looks to make the process of registering a new birth easier. New births are logged by health workers on their phones, and the data is delivered to a central team who verifies the data, approves the case, and uploads to the official database. In 2015, 95% of new-born children were registered within the first six months of their birth, compared to around 5% in 2014.¹⁷

Health-related apps are a nascent market in Pakistan, but one example of a successful initiative is Find My Doctor, which helps people find local doctors and book appointments in and around Karachi.

Mobile operators have also been instrumental in helping to raise funds and awareness for several health campaigns. For instance, Mobilink partners annually with the Pink Ribbon Pakistan cancer awareness campaign and the Shaukat Khanum Memorial Hospital. SMS messages are sent to its customer base to generate funds to treat cancer patients and to raise awareness.

Pillar

2

Achieving sustained, indigenous and inclusive growth

Key objectives

- Become one of the largest 25 economies in the world (from 41st in 2015), reaching Upper Middle Income country status
- Reduce poverty level by half, from 30%¹⁸ to 15%
- Increase annual FDI from \$600 million to over \$15 billion
- Increase tax-to-GDP ratio from 9.8% to 18%

How mobile can help

Increased mobile connectivity has been shown to support market growth and increase national GDP. Mobile penetration in Pakistan is currently at 47% and is predicted to grow to 52% by 2020. Greater connectivity positively affects the supply side of the economy through the operations undertaken by mobile operators and players in the wider mobile ecosystem, including providers of network services, providers of other support and commercial services, and the network of formal and informal points of sale.

Studies by the GSMA and Deloitte have found that in low to middle-income countries such as Pakistan, a 10% increase in broadband penetration accelerates economic growth by 1.38%,¹⁹ and that a 10% increase in 3G penetration increases average annual GDP per capita growth by 0.15 percentage points.²⁰ Achieving greater connectivity depends on investment by operators. It is therefore important that the government create a hospitable regulative and tax environment for operators.

18 New poverty line makes a third of Pakistanis poor, Dawn, April 2016
19 Digital inclusion and mobile sector taxation in Pakistan, GSMA/Deloitte, February 2015
20 What is the impact of mobile telephony on economic growth? GSMA, November 2012

Pillar

3

Democratic governance, institutional reform and public sector modernisation

Key objectives

- Place in the top 50th percentile for Political Stability (from bottom 1 percentile), No Violence/Terrorism (from bottom 1 percentile), and Control of Corruption (from bottom 13th percentile) as measured by the World Bank's Worldwide Governance Indicators

How mobile can help

Digital identity

The World Bank estimates that 1.5 billion people globally do not have access to formal identity documentation. Governments and businesses recognise the need for more sophisticated, secure and convenient ways of creating, managing and applying digital identities in order to better ensure security and safety for the population. Leveraging the mobile platform can help ensure everyone has formal identification, providing increased convenience and accessibility, strong security and enhanced privacy.

For example, in July 2016 Mobilink introduced an SMS-based service for family member verification, allowing any registered CNIC (computerised national identity cardholder) to check who else is registered under the same family tree, reporting any issues to the National Database & Registration Authority (NADRA).

SIM registration requirements were introduced in Pakistan in 2008, and in October 2013 the government proposed the use of biometric registration linked to the NADRA register. In mid-2014 the government

introduced the requirement for biometric identity validation for all newly provisioned SIMs. In January 2015 this was extended to all provisioned SIM cards, requiring re-registration of most of the 135 million SIMs.

Mobile Connect – a GSMA-backed authentication solution that provides simple, secure and convenient access to online services – has been launched by Mobilink, Telenor and Zong. It removes the need for usernames and passwords and allows users access to digital services through simple authentication using their mobile number, ensuring privacy for consumers and higher conversation rates for digital service providers. For example, in December 2015, Telenor Pakistan introduced Mobile Connect in collaboration with Telenor Digital and online retailer Homeshopping.pk; and Mobilink uses Mobile Connect for its eCare portal.

Pillar

4

Energy, food and water security

Key objectives

- Energy: double power generation to over 45,000 MW to provide uninterrupted and affordable electricity, and increase electricity access from 67% to over 90% of the population
- Ensure access to clean drinking water for all Pakistanis: currently there are 16 million people without access to safe water²¹
- Reduce food-insecure population from 60% to 30%

How mobile can help

Energy

An IFC lighting survey conducted in 2015 estimated that around three quarters of the Pakistani population live off-grid or with an unreliable electricity supply, spending nearly \$2.3 billion each year on poor-quality energy solutions such as diesel generators and battery-powered torches. In addition the GSMA estimates that nearly 16% of the population are covered by mobile networks but do not have access to electricity,²² meaning mobile technology is well placed to support customers who are living off-grid.

In February 2015 Telenor in conjunction with Tameer Microfinance Bank, Easypaisa and Roshan Energy launched a pay-as-you-go Solar Home Solution, enabling customers to purchase and use Roshan Energy's solar solutions with an upfront payment of just 15%, with the remaining payments made over 18 months through Easypaisa. Users can also top up directly through their Easypaisa mobile accounts.

Agriculture

Farmers in Pakistan struggle with limited access to information on weather, prices, techniques and other vital resources. In recent years several mobile services have launched addressing this issue.

In October 2016 Telenor, in conjunction with Tameer Bank and the government of Punjab, launched the Connected Agriculture Punjab Package (CAPP) for farmers. The CAPP includes an array of initiatives and services for farmers, such as interest-free loans, subsidies and access to consultancy and advisory services regarding crops and fertilisers. These services are provided through a digital mobile platform, supported by the distribution of 125,000 smartphones to farmers across the region.

Zong Kashtkar was launched to address the information gaps faced by the farmer community in Pakistan. The IVR-based service is a complete farmer guide that helps the farmer to increase their productivity by giving them useful information on weather, market rates, seeds, fertiliser and crops, as well as other helpful tips.

21
22

WaterAid, 2015
Assessing the opportunity for PAYG solar in Pakistan, GSMA, May 2016

Pillar

5

Private sector and entrepreneurship led growth

Key objectives

- Rank in the top 50 countries in the World Bank's Ease of Doing Business Rankings (from 144th in 2016)
- Create at least five global Pakistani brands (more than 50% of sales from outside the country) and make 'Made in Pakistan' a symbol of quality

How mobile can help

By supporting a large ecosystem of industries and small businesses, mobile services improve labour and capital productivity. This also attracts significant levels of investment to Pakistan, contributing to increased economic growth, decreasing poverty and fostering investment.

Private sector growth

The introduction of branchless banking is helping shift Pakistan from a cash-based society to a more sophisticated financial ecosystem that will catalyse private sector growth.

In November 2008 Telenor purchased a 51% stake in Tameer Microfinance Bank and just under a year later launched Easypaisa, Pakistan's first mobile money service. Since then, mobile money has significantly contributed to the changing financial inclusion landscape in Pakistan. In a country where just 8% of citizens have a bank account²³, there is a real need for alternative financial solutions.

The introduction of branchless banking through mobile allows more of society, including some of the most vulnerable groups, to access formal financial products. There are currently six branchless banking services live in Pakistan (Easypaisa, Omni, JazzCash, Timepey, Upaisa and HBL Express). In 2014 6% of Pakistanis had a mobile money account, while 7% (9 million people) had used P2P transfer or bill payment services offered by branchless banking providers.

Entrepreneurship

The growth of tech hubs in Pakistan is helping to foster a new wave of entrepreneurship in the country. Pakistan currently has more than 25 active tech hubs of varying sizes. Of particular note is Plan9, the country's largest tech hub. Launched in 2012 it has already incubated 118 start-ups, and provides space, mentorship, stable electricity and legal & financial support for start-ups.

Other tech hubs of note include Nest I/O, launched in conjunction with Google and Samsung; the National Incubation Centre, setup by ICT R&D and operated by Mobilink; and the LUMS Centre for Entrepreneurship.

Pillar

6

Developing a competitive knowledge economy through value addition

Key objectives

- Become one of the top 75 countries identified by the World Economic Forum's Global Competitiveness Report. Pakistan is currently ranked 122nd
- Triple labour and capital productivity
- Improve Pakistan's score on the World Bank Institute's Knowledge Economy Index from 2.2 to 4.0, and increase internet penetration to over 50% (from around 30% now)

How mobile can help

Mobile can play a significant role in improving a country's productivity: a 10% increase in mobile penetration increases total productivity in the long run by 4.2 percentage points.²⁴ While much of this value comes from the intangible benefits of improved communication and information sharing, there are some specific examples we can point to. In Pakistan for instance, we have seen the growth of job seeking applications from companies such as Rozee and Bayt. These apps help Pakistanis to find jobs more effectively, directly improving national productivity.

In Pakistan 45% of the labour force are involved in agriculture, so improving agricultural productivity is central to improving national productivity. The role mobile can play in agriculture is discussed under Pillar 4.

Pillar



Modernising transportation infrastructure

Key objectives

- Increase road density from 32 km/100 sq km to 64 km/100 sq km, and share of rail in transport from 4% to 20%
- Increase annual exports from \$25 billion to \$150 billion

How mobile can help

The last few years have seen the launch of several apps aimed at the transport space: Travly details bus timetables and allows users to book taxis and rickshaws; JazzCash recently launched an online ticket payment option for the Kohistan Bus Service; and a similar arrangement is soon to be launched with the Daewoo Bus Service.

Despite the increasing prevalence of these kinds of apps, mobile is still underrepresented in the transport space in Pakistan. However, examples exist elsewhere, highlighting the potential of mobile in the transport sector. In Thailand, the government has been moving towards an intelligent transport system (ITS) since 2011 with the implementation of electronic vehicle recognition systems. The systems collate information from in-vehicle sensors, infrastructure and individuals to

form meaningful insights on traffic and road conditions. This information can be used to advise road users, helping to reduce congestion and accidents. The GSMA estimates that implementing such a system in Bangkok could reduce the average commute time by 10–20%, reduce CO2 emissions by 3–5 million tonnes per annum and prevent more than 8,000 accidents per year.²⁵ A similar system in Pakistan could have comparable results.

1.3.4 Pakistan's National Telecoms Policy

In parallel with Vision 2025, Pakistan's National Telecoms Policy (NTP) seeks to modernise the regulatory framework of a market that has changed significantly since the industry was first privatised and the first set of regulations applied. Its key measures are outlined below.

The introduction of competition rules

Robust competition between operators encourages investment and innovation in the telecoms market, leading to new services that will ultimately help Pakistan achieve its Vision 2025 objectives. However, to foster competition, there must be an appropriate legislative environment. Mobile operators no longer only compete against each other – they are part of a broader digital ecosystem. Despite this, the regulatory framework imposed on operators has not adapted to these changes, leading to market distortions that threaten to delay or even completely halt the expansion of coverage and improvements in network quality.

The NTP asserts that effective competition policy should “identify product markets, determine the respective market power of service providers within each market, determine whether anti-competitive behaviour is prevalent and what remedies should be applied as ex ante or ex post measures.”²⁶ However, there are conflicting definitions of what constitutes ‘significant market power’: the Telecommunications Rules define this as an operator that controls 25% of a particular market, while the general 2010 Competition Act sets the threshold at 40%.

The lack of clarity in the competition policy regulation creates an uncertain environment for mobile operators, leading to a reluctance to invest.

Modernising the licensing framework

The current regulation has not developed sufficiently to acknowledge the full spectrum of players within the digital ecosystem, creating a dramatically uneven playing field. In such an environment, mobile operators are naturally less motivated to invest in the networks, having a negative impact on Pakistan's ability to achieve its Vision 2025 goals. Newer providers are able to offer services without the regulatory obligations imposed on traditional mobile service providers. Mobile operators continue to bear the full responsibility of providing critical public services, such as emergency services, lawful interception and data retention, but are also disallowed, by way of licensing obligations, from offering certain kinds of applications and services that require data to flow across networks without restrictions.

As an example of this regulatory imbalance, mobile operators are prohibited from transferring user information to any place outside Pakistan. OTT service providers meanwhile are not bound by the same

restrictions and so can offer services that operators cannot.

The NTP recommends a licensing regime whereby OTT services are licensed under a “general authorisation” in which a service provider is deemed to hold a licence by virtue of the services that it provides, and is then subject to the terms of that general authorisation (which may include national security requirements), like that of a licensed telecoms service provider.²⁷ The NTP, recognising the long-term nature of changes to the licensing framework, has also recommended more immediate, direct regulation by the PTA of “services such as VoIP that are partial or full substitutes for the traditional circuit-switched networks”. Finally the NTP has also opened the door for operators and OTT providers to establish revenue-sharing agreements based on operators offering better or different versions of services compared to OTT providers.²⁸

26 NTP 5.1.2.
27 NTP 5.2.5.
28 NTP 5.5.2.

Network sharing and trading framework

Network sharing gives mobile operators the ability to extend coverage into areas where they may have difficulty building their own networks, and to improve service quality elsewhere. 3G coverage in Pakistan is currently at 75% of the population; the remaining 25% are primarily in rural areas, increasing rollout costs and reducing return on investment (ROI). Passive sharing allows operators to gain more timely access to strategically important locations, particularly when tower siting approval processes are slow. Additionally, passive sharing makes otherwise unprofitable areas appealing to a mobile operator by reducing capex and opex. Active sharing meanwhile reduces the cost of operating a wider network and allows individual mobile operators to focus on innovation, rather than redundant networks.²⁹

The benefits of passive infrastructure sharing have long been promoted in Pakistan, but rules for active infrastructure sharing remain uncertain. The NTP has recommended codifying this policy, suggesting that mobile operators be required to consider active and passive infrastructure sharing arrangements before authorities approve new rights of way or tower siting applications.³⁰

The NTP similarly recognises the value of spectrum sharing, acknowledging the need for a “balance between the competing needs of different users and the finite availability of spectrum.”³¹ Spectrum sharing has the potential to help operators fill spectrum gaps in their coverage networks or to mitigate potential demand peaks.³² The guidelines should be “light touch”, and the PTA and Ministry of Information Technology and Telecom should seek ways to provide incentives to current mobile operators, to facilitate negotiations and implementation if necessary.

Where regulators may not be able to reclaim unused or sub-optimally used spectrum licences, spectrum trading mechanisms incentivise licensees to transfer them to other mobile operators while acquiring the funds to invest in their networks. For the market to operate efficiently and to facilitate participation by current licensees, the guidelines must allow the greatest possible degree of flexibility for mobile operators to set terms among themselves. Excessive administrative oversight or additional fees will raise the cost of spectrum, thereby distorting the market and eliminating the efficiencies through optimal allocation sought in the first place.

29 Mobile Infrastructure Sharing, GSMA, September 2012
30 NTP 7.5.1.
31 NTP 8.
32 The Impact of Licensed Shared Use of Spectrum, GSMA, February 2014

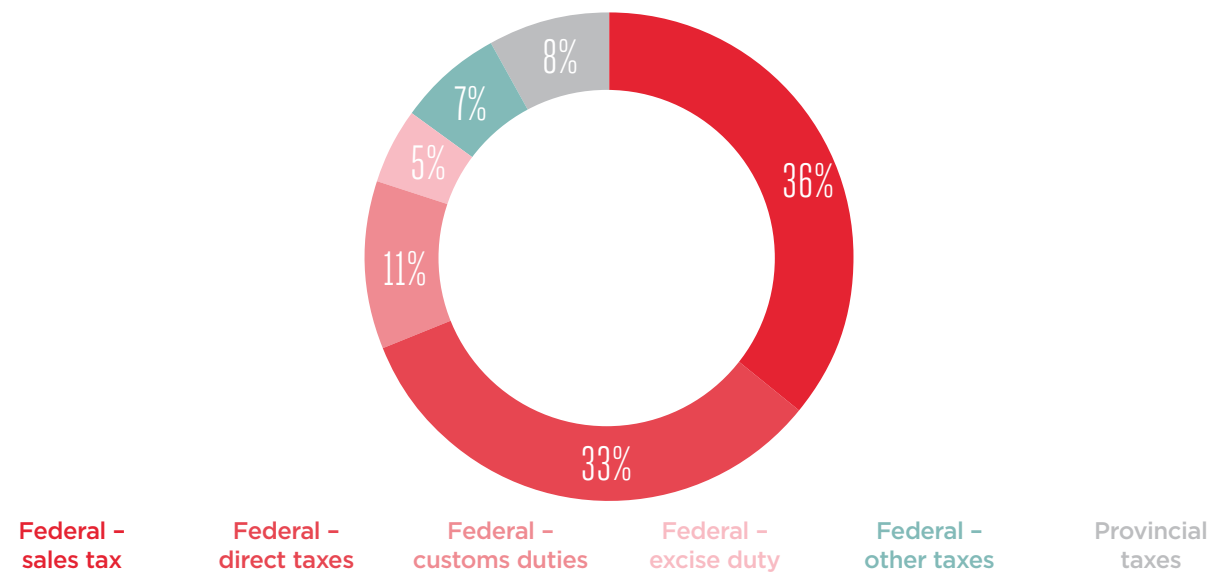
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Supporting mobile's contribution to Vision 2025: the role of tax*

Taxation is an important economic issue for Pakistan. Since 2011, total tax revenue as a share of GDP has increased from 9.5% to 12.4%, and according to the International Monetary Fund (IMF) remains low compared to other emerging markets.³³ Figures for the 2015–16 fiscal year show total tax revenue of around \$33 billion.³⁴ The majority of revenue is raised by the federal government, with sales tax (\$12.7 billion) and direct taxes (\$11.5 billion) the largest contributors.³⁵ A further \$2.7 billion comes from taxes raised by provincial governments.

Source: Ministry of Finance annual budget statement; Deloitte analysis

18 Breakdown of total government tax revenue in Pakistan, 2015–16



Note that 'direct taxes' include withholding taxes, which may be similar in nature to indirect taxes.

Pakistan received a \$6.6 billion loan from the IMF in 2013, against a backdrop of slow growth, declining reserves and an increasing fiscal deficit.³⁶ While the IMF programme appears to have helped restore economic stability, the IMF believes the country could benefit from further reform to improve the effectiveness of taxation, indicating that the tax revenue to GDP ratio could be nearly doubled in the long term with the right reforms.

The IMF notes that the tax system in Pakistan is characterised by low compliance, an “extensive use of tax concessions and exemptions” and a fragmented administration, with federal and provincial tax regimes.³⁷ The IMF also reports an “unusually high

dependence on indirect taxes collected from very narrow bases” and recommends reforms aimed at “broadening tax bases, strengthening revenue administration and taxpayer compliance, eliminating distortionary and overgenerous tax concessions and exemptions, and rationalising tax policy in an efficient and equitable manner”.³⁸

In this chapter, taxes and regulatory fees on the mobile sector are examined in light of the IMF recommendations and of the importance of increasing the effectiveness of the country’s tax regime. The mobile sector in Pakistan is subject to numerous taxes and regulatory fees that are levied on both operators and consumers.

33 Unlocking Pakistan’s Revenue Potential, IMF Working Paper, August 2016

34 Annual Budget Statement 2016–17, Government of Pakistan, May 2016

35 Direct taxes include corporate and personal income taxes, though there is limited visibility of revenue from different direct taxes.

36 Pakistan Gets \$6.6 Billion Loan from IMF, IMF Survey, September 2013

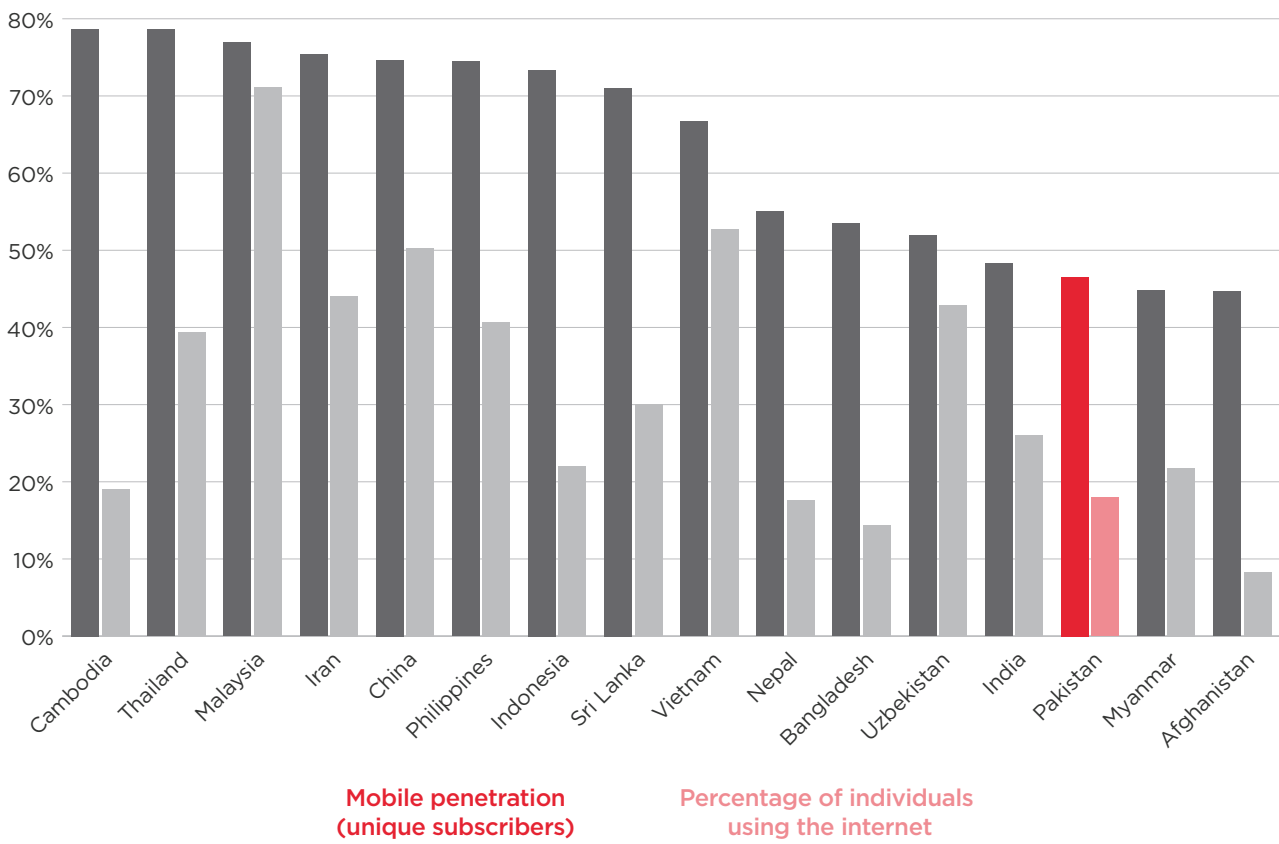
37 Pakistan Gets \$6.6 Billion Loan from IMF, IMF Survey, September 2013

38 Pakistan Gets \$6.6 Billion Loan from IMF, IMF Survey, September 2013

Some taxes and regulatory fees may be absorbed by operators in the form of lower profits, while others may be passed to consumers through higher prices, or there may be a combination of the two. When taxes and fees levied on the mobile sector are relatively high compared to other goods and services, they may have a negative effect on usage of mobile devices and services. In Pakistan, mobile penetration and internet usage are notably lower than in the majority of other countries in the region.³⁹ The State Bank of Pakistan believes that “heavy taxation in [the mobile] sector is the major reason of lower mobile and broadband usage”.⁴⁰

Source: GSMA Intelligence (mobile penetration, 2016), ITU (internet usage, 2015)

19 Mobile penetration and internet usage in selected Asian countries, 2015-16 (percent of population)



39 Where possible we compare Pakistan to a broad set of other countries in the region. In some instances the choice of comparator countries is dependent on data availability.
 40 The State of Pakistan's Economy - First Quarterly Report 2015-2016, State Bank of Pakistan, 2015

2.1 Taxes on mobile consumers

Mobile subscribers in Pakistan are affected by taxes that apply to devices, SIM cards and usage charges. These taxes are especially likely to affect the prices ultimately paid by consumers and may have a particularly strong effect on the poorest consumers. Many of these taxes are sector-specific or have higher rates for the mobile sector than other sectors of the economy.

Source: Operator data

20 Summary of mobile consumer taxes in Pakistan

Tax Base		Tax Type	Tax Rate
Devices		Sales tax	PKR300 / 1000 / 1500; 17% for tablets
		Value addition tax	3%
		Income tax on imports	5.5%
		Custom duty	PKR250 per device
Usage charges	Calls/SMS	Sales tax	○ 18.5-19.5%
		Withholding tax	○ 14%
	Mobile broadband	Sales tax	○ 0-19.5%
		Withholding tax	○ 14%
	m-Money	Sales tax	○ 18.5-19.5%
		Withholding tax	○ 12%
SIM cards issued		Sales tax	● PKR250 per card

● Sector-specific tax ○ Higher rate for mobile sector

Sales tax on mobile broadband is not applied in Punjab and centrally administered areas.

2.1.1 Mobile devices and SIM cards

Taxes on mobile devices and on the issuance of SIM cards increase the cost of accessing mobile services, which could constrain mobile penetration.

Various taxes are levied on mobile devices in Pakistan:

- Customs duty on handsets is applied at a flat rate of PKR250. Other devices, such as tablets, are subject to a combined customs duty rate of 4%.
- A sales tax charge is applied to handsets at the import stage. In the last three years this tax has increased from PKR150/250/500 (depending on handset capabilities) to PKR300/1,000/1,500. Other devices such as tablets are subject to a 17% sales tax rate.
- Income tax on imports is applied at a rate of 5.5% on the import value.
- Value addition tax is applied at a rate of 3% on the import value.

The following illustrative example for a basic utility phone suggests that total taxes could amount to over a third of a handset's import cost.

Source: Deloitte analysis based on operator data and industry sources

1 Illustrative example of import taxes on a basic utility phone

		Amount (\$)
Cost of imported device		20
Taxes	Customs duty	2.39
	Sales tax	2.87
	Value addition tax (3%)	0.67
	Income tax on imports (5.5%)	1.43
Total tax paid		7.36 (37% of device value)

The cost of an imported device may vary significantly depending on device characteristics. For simplicity, insurance and handling charges are not considered.

SIM cards that are issued to new subscribers or as a replacement are also subject to a fixed tax of PKR250 per card (around \$2.50).⁴¹ No adjustment of input tax is allowed against this tax. Taxes on the purchase or activation of SIM cards are relatively rare internationally; a Deloitte/GSMA survey of 110 countries found that only 10 countries applied such taxes in 2014.⁴²

⁴¹ This tax is the subject of judicial dispute at the time of writing.
⁴² Digital inclusion and mobile sector taxation 2015, Deloitte/GSMA, June 2015

2.1.2 Usage of mobile services

Taxes on mobile telephony and internet charges increase the prices consumers pay for such services, which may prevent more extensive usage. In Pakistan, mobile services are subject to sales tax and withholding tax, both of which are levied at a higher rate than in other sectors of the economy.

Sales tax

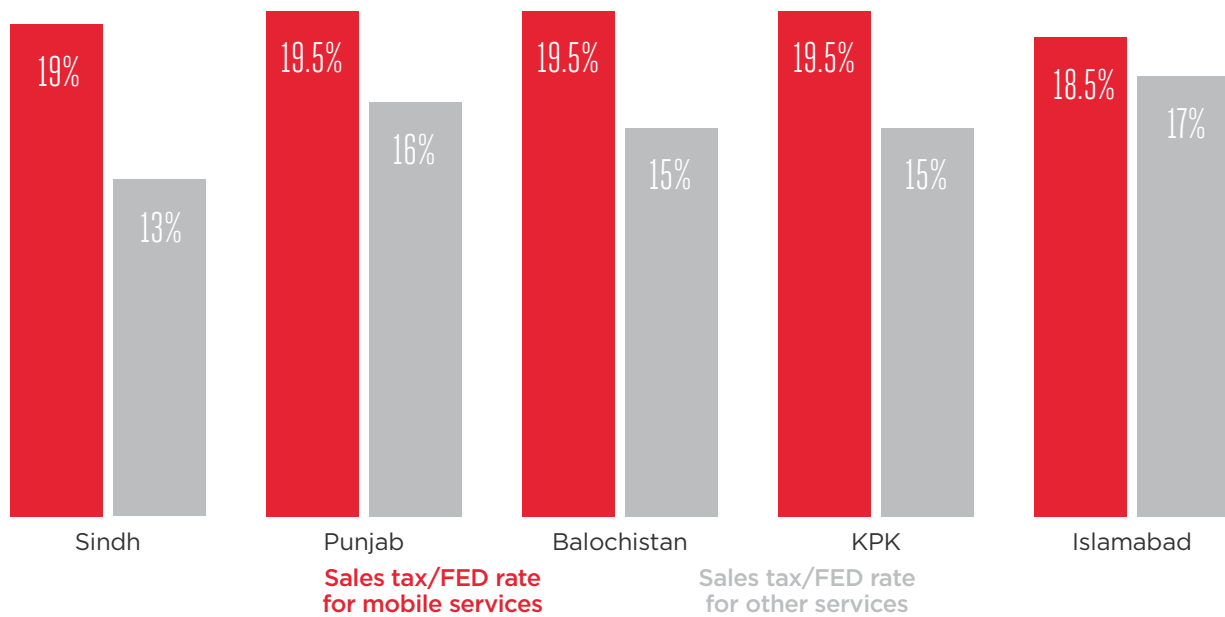
Since 2010, after the 18th Constitutional Amendment, Pakistan's provinces have had the authority to levy sales tax on mobile telephony services and currently set rates of 19.0–19.5% applicable to voice and SMS. In federal territories, the equivalent tax is known as the federal excise duty (FED) and is set at 18.5%.

Sales tax on mobile broadband usage has been introduced by some provinces in their respective legislations, at a rate of 19.5% in Balochistan and Khyber Pakhtunkhwa (KPK) and 19% in Sindh.⁴³

The sales tax/FED rates for mobile services are higher than for other services.

Source: Sales Tax Acts 16/17 for Sindh, Punjab, Balochistan and KPK; Federal Board of Revenue Finance Act 16/17

21 Comparison of sales tax/FED rates for different services in Pakistan, 2016–17



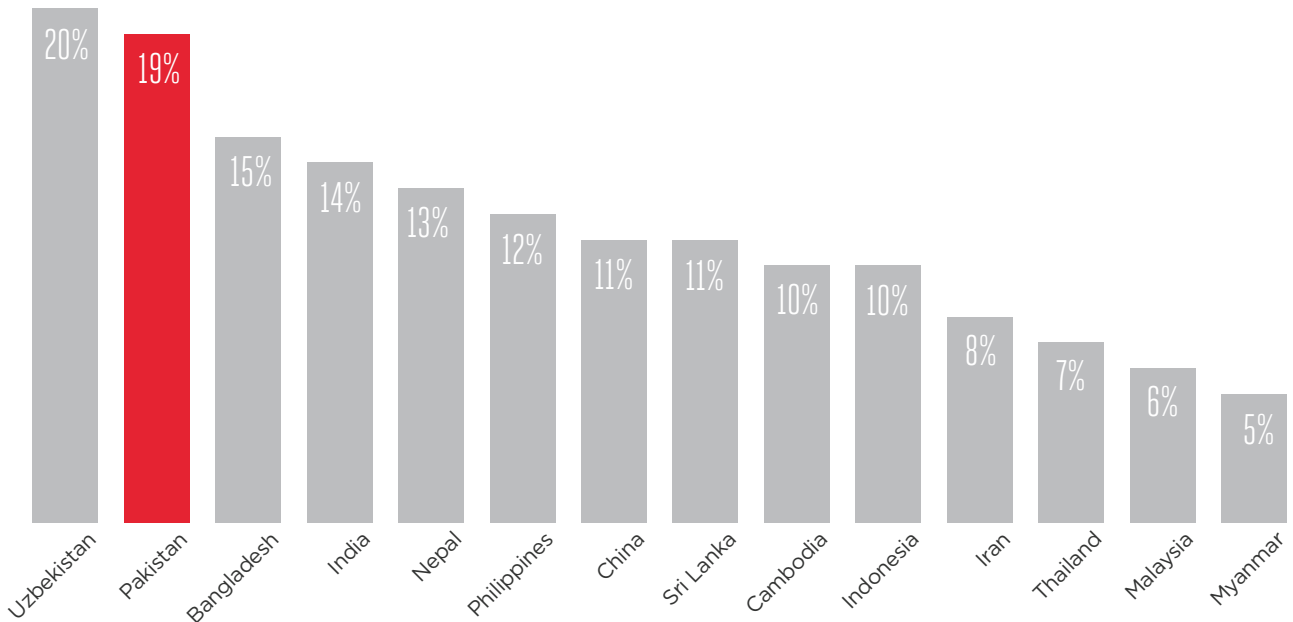
In some cases, the disparity between these rates has increased:

- In Sindh, the general sales tax rate for services has been reduced from 16% to 13% since 2013, whereas the rate for mobile services was increased from 18% to 19% in 2016.
- In KPK the general rate for services has been reduced from 16% to 15%, while the rate for mobile services is unchanged at 19.5%.

The sales tax/FED rates for mobile services in Pakistan are high relative to other countries in the region.

Source: Digital inclusion and mobile sector taxation 2016, Deloitte/GSMA, 2016

22 International comparison of sales tax/VAT rates on mobile services in selected Asian countries, 2015



Withholding tax

As well as sales tax, usage fees include a withholding tax of 14% that applies to mobile telephone services; this was extended to include mobile internet in 2015. Fixed telephony and internet services are subject to a lower 10% rate, which is only applied on billed amounts exceeding PKR1,000.

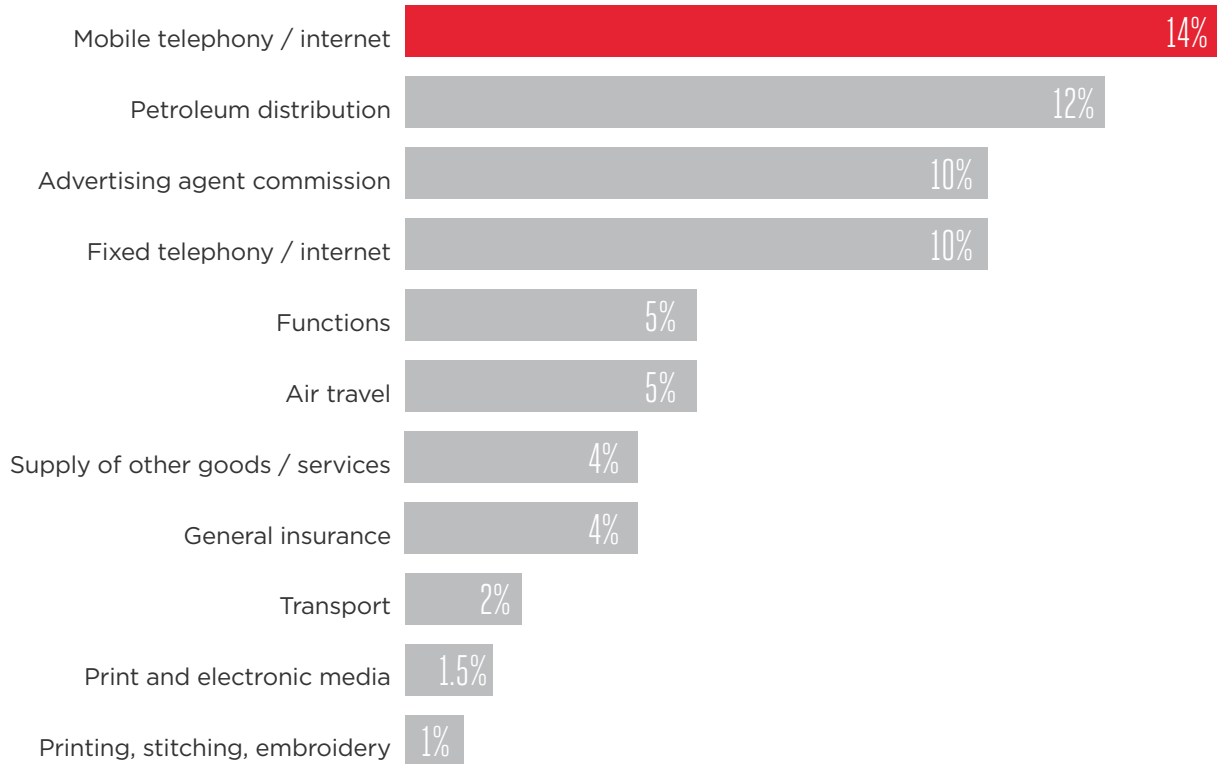
The withholding tax is payable by operators as an advance tax and theoretically can be claimed back

by subscribers that file a tax return, but in practice operators report that they are not able to do so due to the low levels of tax-filing among subscribers, reflecting that most subscribers' incomes fall below the taxable threshold. In practice, the tax amounts to an additional excise duty.

The withholding tax rate for mobile services is the highest across the economy.

Source: FBR Withholding Tax Regime rate card

23 Comparison of withholding tax rates in different sectors in Pakistan, 2016-17



2.2 Regulatory fees and taxes on mobile operators

Mobile operators in Pakistan are subject to corporation tax, various types of regulatory fees and payments related to the acquisition of spectrum, and a number of import taxes. Operator taxes may be passed on to consumers to an extent but may also significantly reduce the financial resources available for operators to invest in infrastructure.

Source: Operator data

24 Summary of mobile operator taxes and regulatory fees in Pakistan

Tax Base		Tax Type	Tax Rate
Corporate tax and alternatives	Taxable profits	Corporate tax	31%
	Revenue	Minimum tax	1–8%
	Accounting income	Alternative corporation tax	17%
Regulatory fees	Revenue	Universal service fund ●	1.5–2%
		R&D fund ●	0.5%
		Annual licence fee ●	0.5%
	Numbers allocated	Numbering fee ●	PKR0.5 per number
	Spectrum holdings	Annual administrative spectrum fee ●	Varies
One-off fees		Initial spectrum fee ●	Determined in auction / licence award
		Spectrum fee instalments ●	Determined in auction / licence award
		Advance income tax	10% of spectrum fees

● Sector-specific tax/regulatory fee

Corporation tax

Mobile operators are subject to the general rate of corporation tax. The minimum corporation tax payment due is determined as the largest of 31% of taxable profit, 17% of accounting income and of 1% of revenue (8% for a subset of services). Therefore, unlike in many other countries, firms who make a loss remain liable for a corporation tax payment.

Regulatory fees

Mobile operators pay a range of regulatory fees and contributions each year:

- 1.5% of revenue contributes to the universal service fund (2% in the self-governing territories Azad Jammu and Kashmir (AJK) and Gilgit-Baltistan (GB)).
- 0.5% of revenue is paid into an R&D fund.
- 0.5% of revenue is charged as an annual licence fee.
- Each operator pays an amount proportionate to its overall spectrum holdings as an annual spectrum administrative fee, covering 75% of the annual budget of the Frequency Administration Board.⁴⁴
- There is a charge of PKR0.50 per number allocated.

Spectrum fees

Mobile operators pay one-off fees when acquiring spectrum licences, which have been offered by auction in recent years.

Pakistan was the last country in South Asia to award spectrum that would enable operators to deliver 3G services. In the 2014 spectrum auction, four existing operators obtained 3G licences and Zong additionally obtained a 4G licence. According to the

Pakistan Telecommunication Authority (PTA), reserve prices were set “at the highest level of valuation of spectrum”⁴⁵ and the total proceeds from the auction were \$1.112 billion. A further licence for 4G spectrum was awarded to Telenor in 2016 for a price of \$395 million. The proceeds from each auction represent a substantial investment for the sector – over 35% of annual sector revenue in the case of the 2014 auction.

Source: PTA, Telegeography, ProPakistani

2 Summary of auction fees in Pakistan, 2014 and 2016

	Operator	Auction fee (\$ million)	Advance income tax (\$ million)
2014 auction	Zong	516	51.6
	Mobilink	309	30.9
	Ufone	147.5	14.75
	Telenor	147.5	14.75
2016 auction	Telenor	395	39.5

Auction fees are subject to an additional 10% advance income tax to be paid upfront. The tax has raised some controversy as operators claimed that its application was not adequately communicated prior to the auction.⁴⁶ Operators report that the issue has contributed to uncertainty in the tax regime applied to the mobile sector.

In addition to the above fees, some operators report that they continue to pay substantial annual instalments in relation to 2G licences previously awarded, with total annual payments of around \$30 million.

⁴⁴ In GB and AJK the fee is determined as PKR120,000 per MHz.
⁴⁵ Spectrum Auction and the Case Study from Pakistan, PTA, 2015

⁴⁶ For example see: 3G / 4G License Award Ceremony Likely on May 17th, Propakistani.pk, May 2014

Taxes on imports

Operators in Pakistan pay a number of taxes on imported goods.

Source: Operator data

25 Summary of mobile operator import taxes in Pakistan

Tax Base	Tax Type	Tax Rate
Value of imported network equipment	Sales tax	17%
	Income tax on imports	5.5%
	Customs duty	0–25%
Value of imported scratch cards	Sales tax	17%
	Value addition tax	3%
	Income tax on imports	5.5%
	Custom duty	10%
Value of imported SIM cards	Sales tax	17%
	Value addition tax	3%
	Income tax on imports	5.5%
	Custom duty	5%

Customs duty rates vary depending on the nature of the imported good. The rates can reach 20–25% for network equipment such as cables, antennas, batteries and power systems.⁴⁷ On top of this, mobile operators pay sales tax at a rate of 17% and income tax on imports at a rate of 5.5% on all goods imported. Changes in 2014 increased custom duties payable by mobile operators on many types of equipment, as well as removing an exemption from sales tax.

The following illustrative example for network equipment subject to a 20% rate of customs duty (such as power cabinets and cables) suggests that total taxes could amount to around half of the equipment's import value.

Source: Deloitte analysis based on operator data

3 Illustrative example of import taxes on network equipment

		\$
	Cost of imported equipment	1,000,000
Taxes	Customs duty (20%)	200,000
	Sales tax (17%)	204,000
	Income tax on imports (5.5%)	77,220
Total tax paid		481,220 (48% of equipment value)

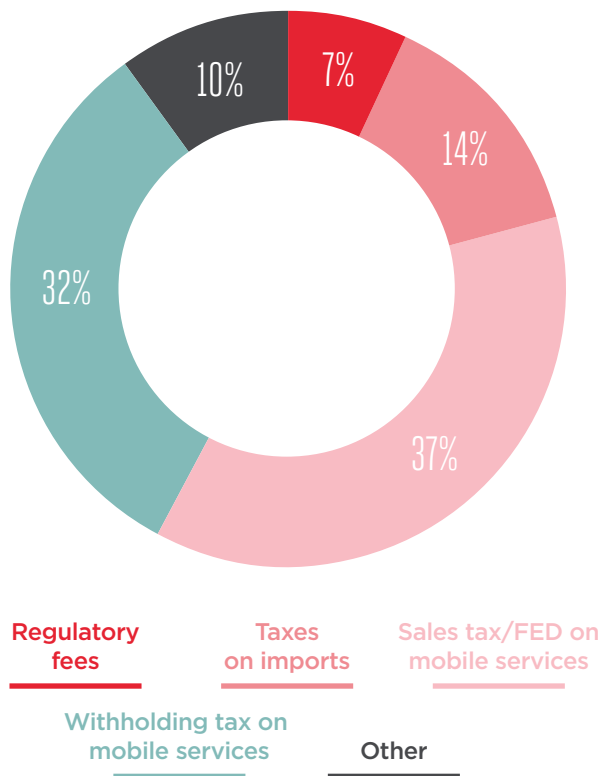
On goods imported for commercial resale, such as scratch cards and SIM cards, an additional tax of 3% is charged.

2.3 The contribution of the mobile sector

The mobile sector as a whole paid over \$1.1 billion in taxes and regulatory fees in the last financial year, which represents approximately 33% of sector revenue. Consumer taxes, such as the sales tax and withholding tax on mobiles services, account for a majority share of these payments.

Source: Operator data

26 Breakdown of total payments by mobile operators in Pakistan excluding corporation tax, 2015



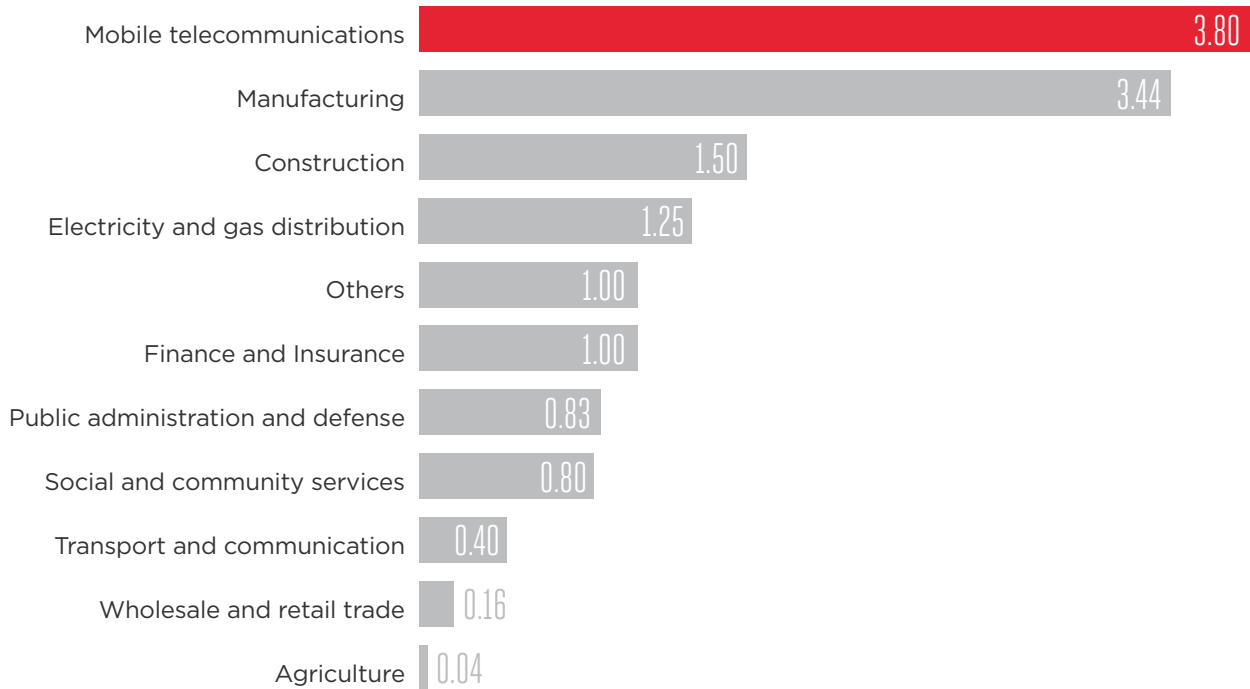
As a consequence of the higher tax rates applied to the mobile sector compared to other sectors, and the use of sector-specific taxes and fees, the mobile sector makes a large financial contribution relative to its economic footprint. The sector contributes over 3% of total government tax revenue, despite only accounting for around 1% of Pakistan's GDP.

Corporation tax is excluded for confidentiality reasons.

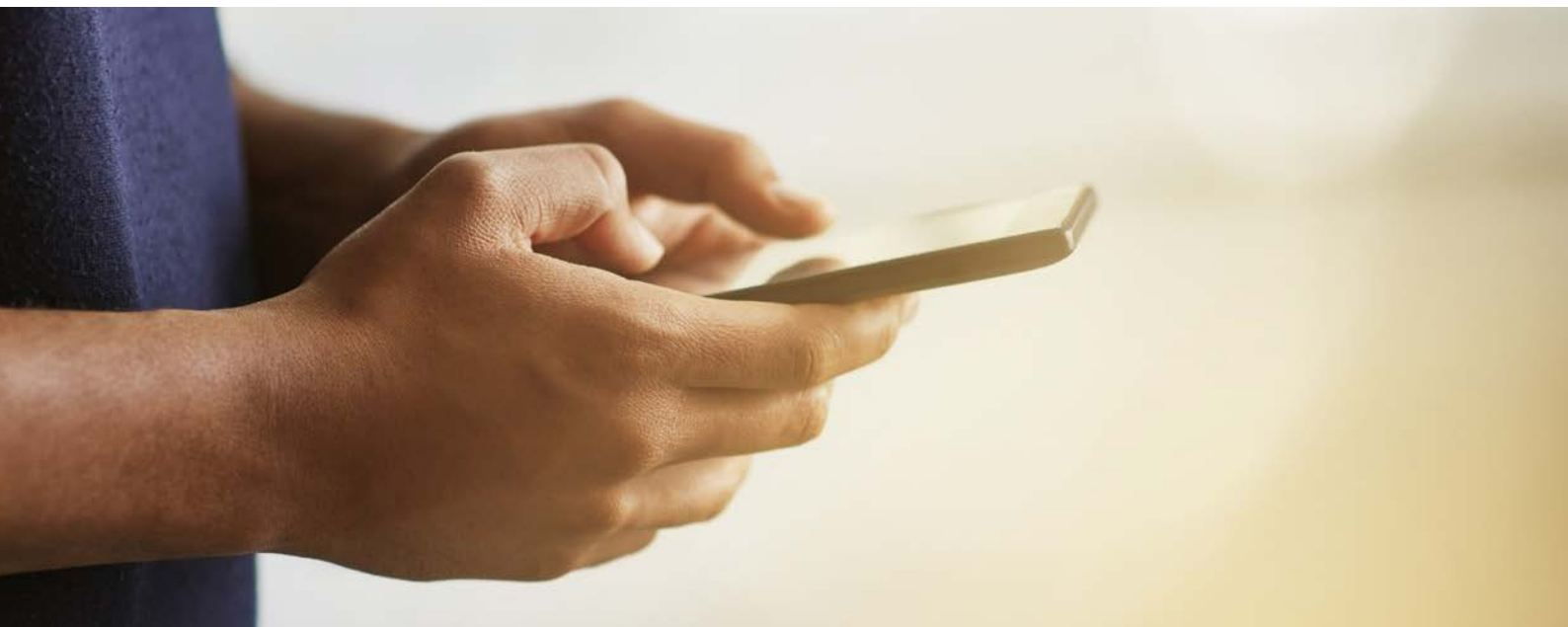
The ratio between share of tax revenue and share of GDP can be compared across sectors of Pakistan's economy. A value greater than 1 indicates that the sector over-contributes to tax revenue, relative to the size of the sector in the economy. Based on data available from 2014, the comparison indicates a large difference between sectors and highlights that all other sectors made a smaller financial contribution proportionate to their sizes.

Source: Mobile sector contribution based on *Digital inclusion and mobile sector taxation 2016*, Deloitte/GSMA, 2016

27 Share of total tax revenue divided by share of GDP across sectors, 2014



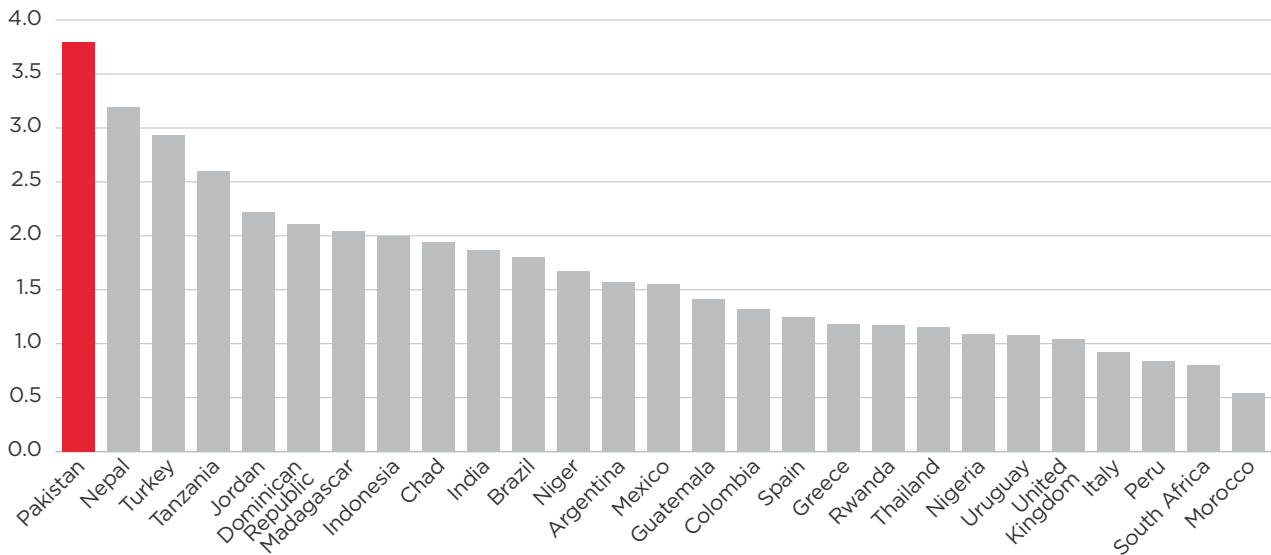
Contribution of other sectors based on Ministry of Finance data reported in Pakistan Economy, NAFA, 2015.



The same ratio can be compared between 27 countries for which data is available. Data from 2014 shows that Pakistan had a high value compared to other countries – that is, its mobile sector makes a particularly large relative contribution to tax revenue.

Source: Digital inclusion and mobile sector taxation 2016, Deloitte/GSMA, 2016

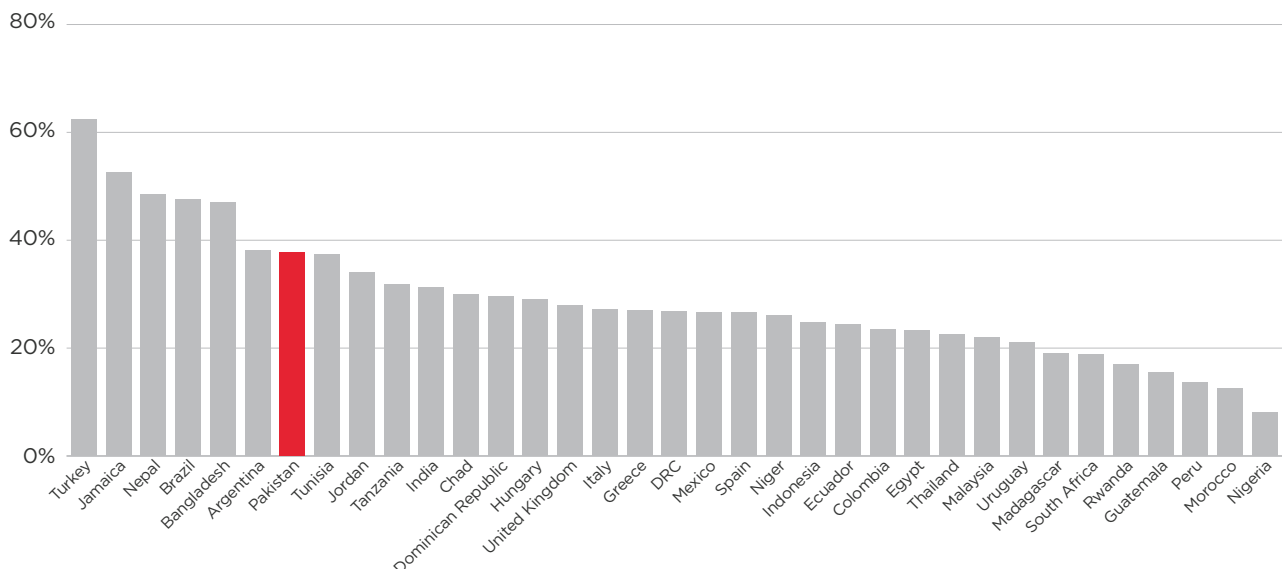
28 Mobile share of total tax revenue divided by mobile share of GDP in countries for which data is available, 2014



A similar difference can be observed by comparing the tax and regulatory fee payments made by the mobile sector as a proportion of sector revenues, across countries for which data is available.

Source: Digital inclusion and mobile sector taxation 2016, Deloitte/GSMA, 2016

29 Estimated tax and fee payments as a proportion of mobile market revenue in countries for which data is available, 2014



2.4 Taxes and fees on the mobile sector in Pakistan and taxation best practice

To minimise the potential distortionary impacts caused by taxation, organisations such as the World Bank,⁴⁸ IMF,⁴⁹ ITU⁵⁰ and OECD,⁵¹ among others, provide recommendations on how to balance these important factors.

Best practice in taxation can be captured by the principles of efficiency, equity, simplicity, transparency and incidence. The principles support specific steps for implementing effective taxation in practice:⁵²

- setting low tax rates on wide tax bases
- using a low number of taxes
- minimising use of tax exemptions
- applying the same tax treatment to similar or competing sectors.

Source: IMF, World Bank, OECD publications, Deloitte analysis

30 Best-practice principles and implications for effective taxation

Best practice				
Efficiency	Equity	Simplicity	Transparency	Incidence
Taxes may affect transactions by increasing costs and prices	Horizontal equity: similar taxpayers should have a similar tax treatment	Reducing complexity may lower the costs of compliance	Limited transparency may facilitate tax avoidance through loopholes	Need to consider effect on firms (lower profits) and/or consumers (higher prices)
An efficient tax system minimises impact on behaviour while raising the required revenue	Vertical equity: those who are better off could bear a larger tax burden	With complex taxes it may be more difficult to make sound business decisions e.g. investment	With low transparency it may be difficult to challenge tax payments	Impacts – e.g. lower investment / purchasing – may depend on demand elasticity
Implications for effective taxation				
Low rates on wide bases	Limited exemptions	Low number of taxes	Same treatment for similar / competing sectors	
<ul style="list-style-type: none"> • Low rates are less likely to distort behaviour • Low taxes over a wide base may raise the required revenue while minimising distortions 	<ul style="list-style-type: none"> • Exemptions may increase complexity of the tax system • They may introduce new distortions • They may reduce the tax base 	<ul style="list-style-type: none"> • A small number of taxes may reduce complexity and costs of compliance • E.g. a single corporate tax rate and VAT rate applied to a wide base 	<ul style="list-style-type: none"> • This may minimise distortions in firm profits and consumer prices • It favours efficient allocation of capital across sectors, promoting economic growth 	

48 Introduction to Tax Policy Design and Development, Bird and Zolt, April and May 2003

49 Taxing Principles, Mooij and Keen, December 2014

50 Taxing telecommunication/ICT services: an overview, ITU, June 2013

51 'Fundamental principles of taxation' in Addressing the Tax Challenges of the Digital Economy, OECD, September 2014

52 Course on Practical Issues of Tax Policy in Developing Countries, World Bank, April-May 2003 and 'Fundamental principles of taxation' in Addressing the Tax Challenges of the Digital Economy, OECD, September 2014

The importance of tax reform efforts in Pakistan in line with these principles is supported by institutions such as the IMF, which has highlighted that Pakistan's tax system has "unusually high dependence on indirect taxes collected from very narrow bases",⁵³ whereas best practice favours low rates on wider tax bases. The IMF recommendations for reform focus on the broadening of tax bases, elimination of distortionary taxes and rationalisation of the tax system in line with principles of efficiency and equity.

Pakistan's government has recognised that implementing reforms in line with these principles is an area of priority:

- Vision 2025 includes commitments to broadening the tax base, reducing exemptions, enhancing transparency and reducing complexity.
- The Ministry of Finance has noted that "some sectors are under taxed and some are not taxed at all".⁵⁴

- Pakistan's government acknowledges that "sharing the tax burden between sectors could add another 3–4% to [the] tax-to-GDP ratio in the short run and up to 6% in the medium term".⁵⁵
- In recent federal budgets, the importance of broadening the tax base and eliminating discretionary taxation has been noted.⁵⁶

The tax structure applied to the mobile sector in Pakistan is characterised by high tax collection from a relatively narrow base and is inconsistent with best practice in taxation, particularly with regards to efficiency, equity and simplicity. Tax reforms to reduce and rationalise taxes on the mobile sector would be in line with IMF recommendations and the Vision 2025 commitments.

Inefficiency of taxation

An efficient tax system minimises economic distortions while raising the required revenue. In Pakistan, tax rates are higher for the mobile sector than the equivalent rates for other sectors of the economy, and additional sector-specific taxes and regulatory fees are applied. As a result, the tax system may cause distortions in the mobile sector.

For consumers, taxes such as the SIM card sales tax and the sales tax/FED on mobile services may increase the barrier to mobile ownership and usage. For operators, taxes and regulatory fees such as the annual licence fee may restrict the ability to invest in expanding and improving networks. Such distortions involve economic and social costs due to the potential

benefits that could result from increased mobile usage and investment. The low rates of mobile penetration and internet usage in Pakistan, compared to other countries in the region, suggest there may be potential for further economic and social benefits.

Relying on general taxation, applied uniformly to broad bases, tends to be more efficient than using specific taxes.⁵⁷ For example, whereas the mobile sector currently faces higher rates of sales tax than other sectors, the IMF recommends "integrating the GST [General Sales Tax] regime (goods and services) with a single statutory rate under one collection agent, and eliminating GST exemptions, zero-ratings, and special schemes to attain greater efficiency in indirect taxes."⁵⁸

53 Unlocking Pakistan's Revenue Potential, IMF Working Paper, August 2016
 54 Economic Survey 2012-13, Pakistan Ministry of Finance, 2013
 55 Pakistan 2025. Ministry of Planning, Development & Reform, May 2014
 56 For example see: Salient Features Budget 2016-17, Federal Board of Revenue, June 2016
 57 Taxing Principles, Mooij and Keen, December 2014
 58 Unlocking Pakistan's Revenue Potential, IMF Working Paper, August 2016

Inequity of taxation

Equity suggests that those who are better off could bear relatively more taxes than those who are worse off. An equitable tax system is important not only in terms of fairness but also because it may encourage compliance. The IMF warns against inequitable reforms to increase taxes on compliant taxpayers, as this “would worsen inequalities, undermine tax morale and cause distortions in economic activity”.⁵⁹ The Ministry of Finance has recognised that an inequitable tax system does not favour tax compliance, noting that “[the] present tax structure of Pakistan is distortionary and incentivising massive tax evasion”.⁶⁰

Taxes on mobile services are likely to be regressive, as mobile ownership and usage costs tend to represent a higher proportion of income for lower-income subscribers. In Pakistan, sales tax/FED and withholding tax rates are higher than for other services, while various sector-specific taxes ultimately add to the tax burden on mobile users. Flat rate taxes, such as the SIM card sales tax, have a particularly regressive effect. Therefore, the current taxation of the mobile sector makes the tax system less equitable.

An equitable tax system should also apply a similar fiscal treatment to similar types of taxpayer. The large differences in tax rates and tax contribution across sectors are not indicative of an equitable tax system. There are also differences in fiscal treatment when comparing the mobile sector to similar or competing sectors:

- The import of laptops and personal computers is exempt from sales tax, while the rate of sales tax on imported mobile phones has increased in recent years. Imported smartphones are subject to a higher rate of tax than basic mobile phones, despite being more similar to laptops and personal computers in terms of capabilities.
- Over-the-top (OTT) providers compete with mobile operators as they provide similar services to mobile operators, with a notable impact on consumer behaviour.⁶¹ OTT providers can offer services to Pakistani consumers without establishing the same geographic ties to the country that mobile operators have, facing a limited tax burden in Pakistan.

Complexity of taxation

Complexity of taxes may discourage tax compliance and weaken investment incentives. In Pakistan, the overall tax system is rendered complex by several factors:

- There are a wide range of different taxes.
- Exemptions and tax rate slabs are used extensively.
- The tax regime is fragmented, with some taxes being administered at provincial level and set differently by different provincial governments.
- Frequent changes are made by federal and provincial governments.

The IMF finds that “relative to comparator developing countries, Pakistan’s tax system is complex and fragmented”.⁶² Similarly, the World Bank and PwC have found that the number of tax payments⁶³ and the time required to comply are very high in Pakistan both globally and relative to its regional neighbours, as reflected in the overall rankings of the Paying Taxes index.

Source: Paying Taxes 2016, PwC / World Bank, 2016

31 Paying Taxes Index rankings for selected Asian countries, 2016

31	Malaysia
70	Thailand
84	Myanmar
86	Bangladesh
89	Afghanistan
95	Cambodia
115	Uzbekistan
123	Iran
124	Nepal
126	Philippines
132	China
148	Indonesia
157	India
158	Sri Lanka
168	Vietnam
171	Pakistan

59 Unlocking Pakistan’s Revenue Potential, IMF Working Paper, August 2016

60 Economic Survey 2012-13, Ministry of Finance, 2013

61 For example, the Ministry of Finance notes that international outgoing traffic for traditional operators was declining “mainly due to the rising trend in using over-the-top (OTT) services for international calls such as Skype, WhatsApp, Viber, Facetime, Line etc”. (Economic Survey 2015-16, Ministry of Finance, 2016)

62 Unlocking Pakistan’s Revenue Potential, IMF Working Paper, August 2016

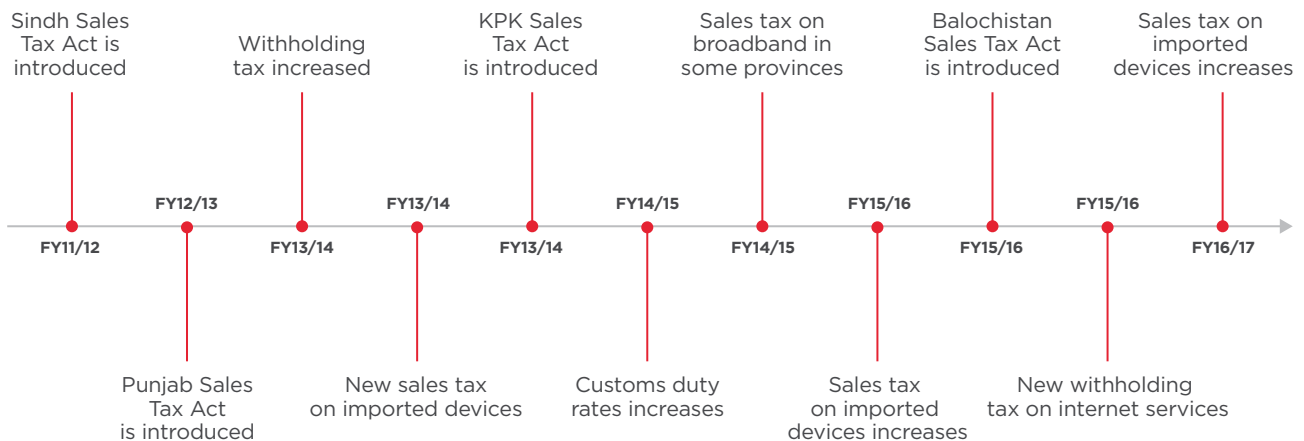
63 This is calculated as the frequency with which a company has to file and pay different types of taxes and contributions, adjusted for the manner in which those filings and payments are made.

The mobile sector demonstrates tax complexity with an array of different taxes faced by mobile operators, many of which vary between provinces and have changed over time. Operators report that the devolution of sales tax administration to provinces has greatly increased the volume and complexity of compliance work, and the IMF recommends that fragmentation is addressed, with greater reliance on centralised tax collection. Tax reform efforts in India may be a useful reference point, where a fragmented system of indirect taxes is to be replaced with a streamlined, centralised system.⁶⁴

Tax complexity may make it more difficult and riskier to make sound investment decisions. Mobile operators' decisions to invest in new spectrum licences and physical infrastructure depend on expectations about future profitability. Frequent tax changes and lack of clarity about the application of taxes may mean that investments are made on the basis of incorrect expectations, or that businesses take an excessively cautious approach to investments, which may ultimately harm both businesses and consumers.

Source: Sales Tax Acts, Federal Budgets, PwC Worldwide tax summaries, operator datas

32 Summary of tax changes affecting the mobile sector



The mobile sector in Pakistan has seen many tax changes over time, which may create an uncertain environment for investment decisions. Taxes were introduced and increased after operators committed to making substantial investments in acquiring 3G/4G licences and upgrading networks, while there also appears to have been a lack of clarity regarding the 10% advance income tax that was applied to auction fees. If operators did not anticipate all these developments, they could have made inefficient investment decisions.

The link between tax complexity and tax compliance is also highly relevant for Pakistan. According to Pakistan's Labour Force Survey, around 73% of non-agricultural workers are in the informal economy; the State Bank of Pakistan notes that the informal sector appears to be expanding.⁶⁵ Reducing tax complexity appears to be critical in order to reduce the costs of compliance and achieve the government's target of bringing at least half the businesses currently in the informal economy into the formal economy by 2025.⁶⁶

64 For example see: All About GST in India, EY, 2016
 65 National Financial Inclusion Strategy, State Bank of Pakistan, May 2015
 66 National Financial Inclusion Strategy, State Bank of Pakistan, May 2015

3

Supporting mobile's contribution to Vision 2025: promoting investment, affordability and economic growth*

By reforming the fiscal treatment applied to the mobile sector in line with that of other sectors, Pakistan can reduce economic distortions and unlock potential benefits for society and the economy. In the medium term this approach could also improve total tax revenue collection for the government. The World Bank recommends that “countries need to look at the digital economy as a source of growth and jobs and not just as a source of revenue” and believes that “in general, the higher revenue buoyancy in the medium term can more than make up for short-term revenue shortfall from reduced tariffs”.⁶⁷

Pakistan’s Vision 2025 strategy includes a number of commitments and targets that are particularly relevant when considering tax reform on the mobile sector:

- increasing internet penetration to 50%
- strengthening the IT infrastructure
- encouraging investment in new technologies and innovation through tariffs and tax reductions
- leveraging high mobile penetration for the agricultural sector.

The mobile sector is an important driver of internet use and innovation through mobile applications in sectors such as finance and agriculture. However, the current tax treatment of the sector may be hindering such investment and innovation. Mobile and internet penetration remain low in Pakistan by international standards and the State Bank of Pakistan has acknowledged that “heavy taxation on mobile services in Pakistan does not bode well for economic growth in the country”.⁶⁸

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Digital Dividends, World Bank, 2016
The State of Pakistan’s Economy - First Quarterly Report 2015-2016, State Bank of Pakistan, 2015

3.1 Impact of tax reform on mobile affordability and investment

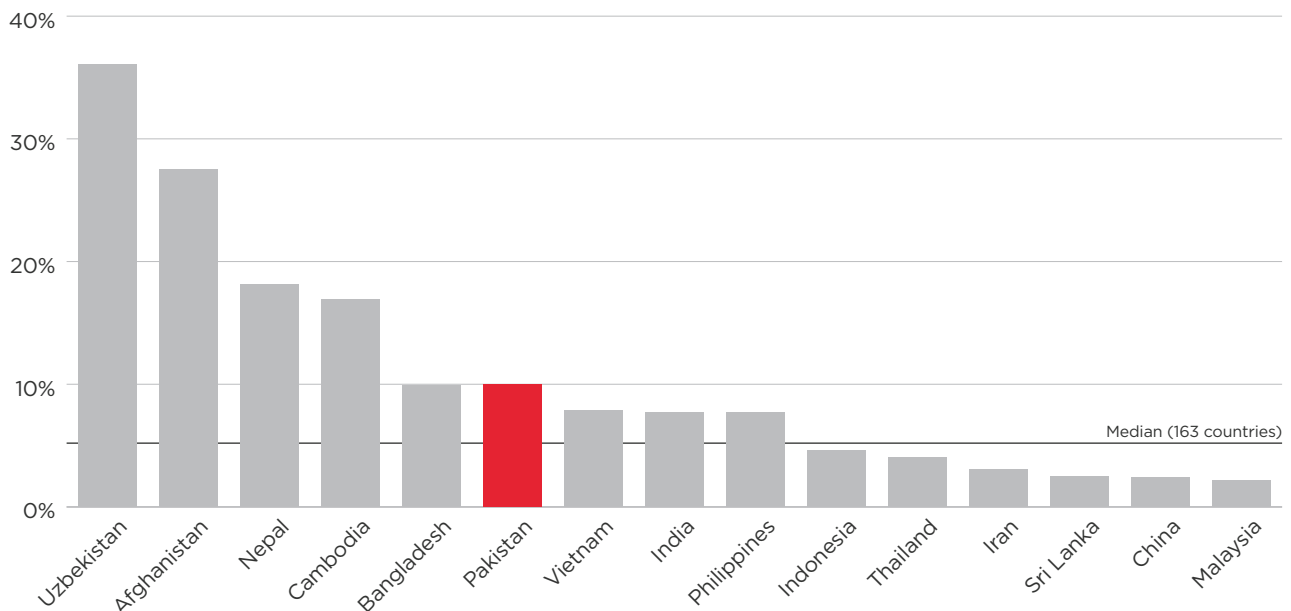
3.1.1 Tax reform may make mobile ownership and usage more affordable

Mobile users in Pakistan have historically benefitted from low pricing in a competitive market. This is reflected in the consistently low average revenue per user (ARPU), which is a common proxy for prices: in 2016 this was \$1.96 in Pakistan, compared to averages of \$3.94 in South Asia and \$10.94 across Asia.⁶⁹ Further benefits have come from pricing strategies for mobile broadband following the award of 3G and 4G spectrum.⁷⁰

Despite competitive pricing by operators, affordability continues to be a barrier to broader adoption of mobile services. While precisely comparable data is not available for mobile device prices in Pakistan and similar countries, it is available for the price of telephony and data services. It is possible to approximate the total cost of mobile ownership and usage by combining ITU data on prices of voice, SMS and data with a fixed representative cost of handset ownership.⁷¹ Based on this estimate, and in spite of very low ARPU levels, the costs of mobile ownership and usage may account for 10% of average income in Pakistan.

Source: Measuring the Information Society 2015, ITU, 2015; World Bank; Deloitte analysis

33 Approximate total cost of mobile phone ownership and usage as a proportion of average income in selected Asian countries, 2014



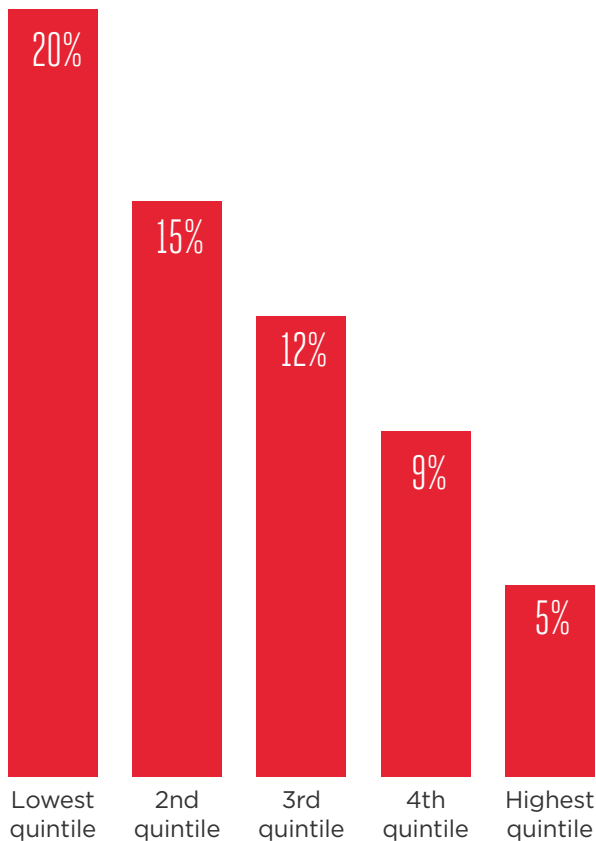
69 ARPU by connection, source: GSMA Intelligence

70 For example, in 2014 operators offered a data bundle of 1 GB for less than \$2 per month, which was the lowest price worldwide. (Measuring the Information Society 2015, ITU, 2015)

71 A representative handset cost of \$4 per month is used, following the approach used in the Alliance for Affordable Internet's Affordability Report 2015/16. This is an approximation due to limited data availability and therefore does not take into account differences in handset prices across countries. The other components of the approximated total cost of ownership and usage are the costs of a representative voice/SMS basket and of 500 MB of data, reported by the ITU.

Source: Measuring the Information Society 2015, ITU, 2015; World Bank; Deloitte analysis

34 Approximate total cost of mobile phone ownership and usage in Pakistan as a proportion of mean income by quintile, 2014



A quintile represents 20% of the population.

Affordability remains a particularly important issue for those at the bottom of the pyramid. For the poorest 20% of the population, the estimated cost amounts to over a fifth of average income.

High taxes and regulatory fees may be a barrier to mobile ownership and usage if they significantly increase consumer costs. An analysis of annual tax and regulatory fee payments per mobile subscriber shows that this is equal to around \$13 in Pakistan, equivalent to around a week's income for the poorest 20% of the population.⁷² Changes to these taxes could directly improve affordability:

- Reducing Pakistan's taxes on imported handsets and on SIM card activation may lower the barrier to accessing mobile services. The SIM card sales tax amount of PKR250 exceeds the daily income of around 40% of Pakistan's population⁷³ and is higher than the monthly cost of a typical voice and SMS bundle.⁷⁴ The flat rates of customs duty (PKR250) and sales tax (PKR300-1,500) on imported devices further increase the costs of accessing mobile services.
- Reducing the relatively high rates of sales tax and withholding tax levied on subscribers' usage fees may enable consumers to make more extensive use of valuable mobile services. Payments for these taxes amount to around \$700 million, which is approximately equal to \$8 per subscriber.⁷⁵ Addressing the sales tax on mobile broadband, applied by provinces that include some less developed regions, may help to make internet usage more affordable for poorer citizens and bring connectivity to remote areas.

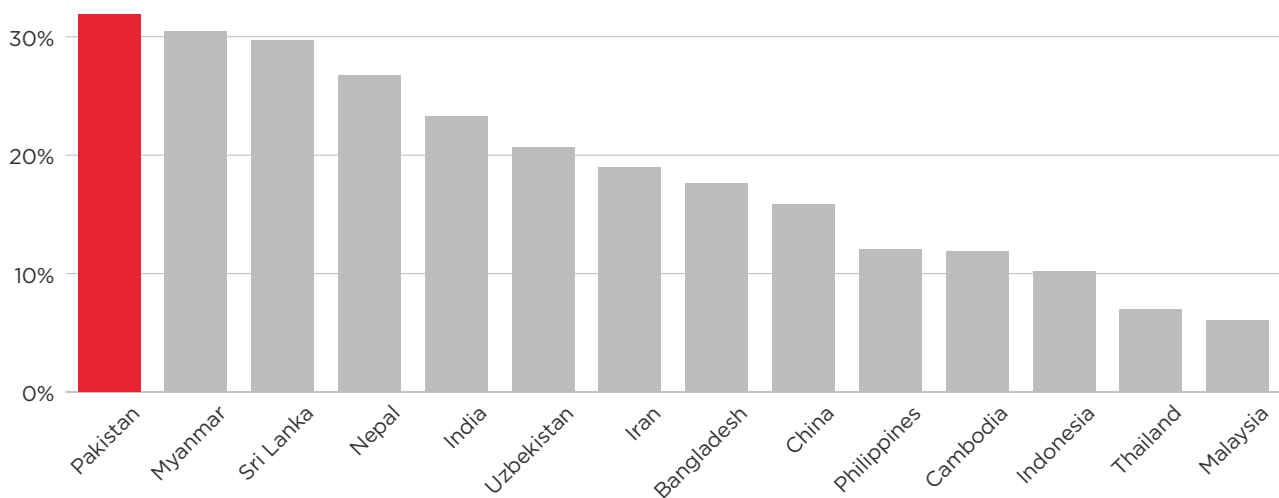
72 Deloitte analysis of operator data, GSMA Intelligence and World Bank
 73 World Bank
 74 Measuring the Information Society 2015, ITU, 2015
 75 Operator data, GSMA Intelligence

Countries around the world are increasingly recognising the importance of consumer tax reductions aimed at improving affordability. For example, Sri Lanka's telecoms minister recently requested the removal of taxes imposed on

smartphones.⁷⁶ A comparison across countries shows that Pakistan has a higher level of tax as a proportion of estimated cost of mobile ownership than other countries in the region, based on 2014 data.

Source: Digital inclusion and mobile sector taxation 2015, Deloitte/GSMA, 2015

35 Taxes and fees as a proportion of cost of mobile ownership in selected Asian countries, 2014



3.1.2 Tax reform may facilitate greater investment

Mobile operators invested a total of over \$14 billion in Pakistan between 2003 and 2015. The sum amounts to more than half of mobile sector revenue over the same period. In the last five years, mobile operators have been responsible for 97% of investment made by the telecoms sector as a whole.⁷⁷

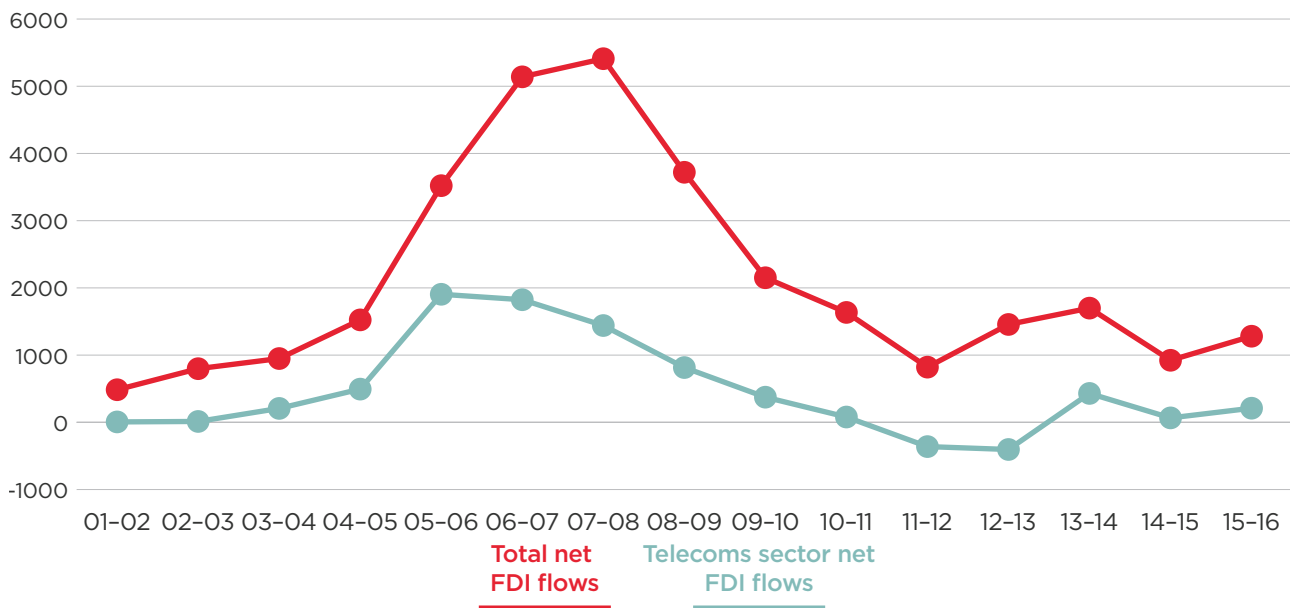
The telecoms sector has been the single largest contributing sector to net foreign direct investment

(FDI) flows since 2003, accounting for over 23% of total net FDI over that period.⁷⁸ However, as overall FDI into Pakistan dipped from 2007, so did FDI in the telecoms sector, briefly reaching negative levels before recovering in 2014 when 3G and 4G licences were awarded. Various factors may have contributed to lower levels of overall FDI post-2007, including the global financial crisis, security issues, energy shortages and the business climate in Pakistan.⁷⁹

76 Sri Lankan telecoms minister calls for the removal of taxes on smartphones, Telegeography, September 2016
 77 PTA Telecom Indicators
 78 State Bank of Pakistan
 79 For example see: US Bureau of Economic and Business Affairs, Investment Climate Statements.

Source: State Bank of Pakistan

36 Net FDI flows over time in Pakistan (\$ million)



The low levels of FDI in recent years may be dampening Pakistan's economic growth prospects. Research has broadly found a positive relationship between FDI and growth in developing countries,⁸⁰ many empirical studies of Pakistan's economy support the notion that FDI is a significant contributor to economic growth.⁸¹ For example, one study finds that FDI has a positive effect on economic growth in Pakistan, including by stimulating human resource development.⁸²

Pakistan's Vision 2025 has set an ambitious target of increasing total FDI to over \$15 billion. Tax reform could play a major part in stimulating an increase in FDI, as reductions in both tax complexity⁸³ and tax rates⁸⁴ would be expected to create a more attractive environment for potential foreign investors.

The telecoms sector is a key contributor to FDI, and tax reform could be critical in order to support the Vision 2025 objective. Current tax rates may be a barrier to investment; for example, one multinational operator

announced that it would invest around \$600-700 million less in Pakistan in 2016 than in the previous year due to high taxation levied on the sector.⁸⁵ While any tax reduction on the sector is likely to facilitate investment, operator taxes such as regulatory fees and import taxes on network equipment could have the strongest impact on investment as they are less likely to be passed on to consumers in full.

Promoting investment in the telecoms sector is also important because of the positive knock-on effects that improved telecoms networks may have on FDI in other sectors. The availability of adequate infrastructure, including telecoms infrastructure, can be a significant factor when attracting foreign investment. One academic study estimates that a 1% increase in telecoms infrastructure availability in Pakistan leads to a 0.58% increase in FDI,⁸⁶ whereas another study estimates this effect as 1% in the short run and 1.3% in the long run.⁸⁷

80 Foreign capital inflows and economic growth of developing countries: a critical survey of selected empirical studies, Waheed, 2004

81 Several studies find a positive relationship between FDI and growth in Pakistan:

The Impact of FDI on Economic Growth under Foreign Trade Regimes: A Case Study of Pakistan, Atique et al, 2004;

The dynamic of financial development, imports, foreign direct investment and economic growth: cointegration and causality analysis in Pakistan, Shahbaz and Rahman, 2012;

The causal links between foreign direct investment and economic growth in Pakistan, Ahmad et al, 2012;

Role of Foreign Direct Investment in Economic Growth of Pakistan, Zeb et al, 2013;

Assessment of Key Determinants for Economic Growth in Pakistan (1980-2009), Ullah et al, 2013;

Impact of Foreign Direct Investment on Economic Growth: A case study of Pakistan, Gudaro et al, 2012;

Impact of Foreign Direct Investment on Economic Growth of Pakistan, Malik, 2015;

Empirical relationship between foreign direct investment and economic output in South Asian countries: A study on Bangladesh, Pakistan and India, Hossain and Hossain, 2012;

Foreign Direct Investment and Economic Growth in Pakistan: A Sectoral Analysis, Khan and Khan, 2011.

82 The Impact of FDI on Economic Growth under Foreign Trade Regimes: A Case Study of Pakistan, Atique et al, 2004

83 For example see: Tax structures and FDI: The deterrent effects of complexity and uncertainty, Edmiston et al, 2003

84 For example see: Taxation and foreign direct investment: a synthesis of empirical research, De Mooij and Ederveen, 2003

85 Zong announces over \$300m investment during 2016, The Express Tribune, February 2016

86 Telecommunication Infrastructure and Foreign Direct Investment in Pakistan: An Empirical Study, Zeb et al, 2014

87 The impact of infrastructure on foreign direct investment: The case of Pakistan, Rehman et al, 2011

Pakistan's telecoms infrastructure could benefit from additional investment, as shown by the World Economic Forum's Network Readiness Index, which estimates an 'infrastructure pillar' to measure the development of ICT infrastructure in each country. Pakistan's ICT infrastructure is currently ranked 126th in the world, having fallen from 108th place in 2012.

Source: The Global Information Technology Report 2016, World Economic Forum, 2016

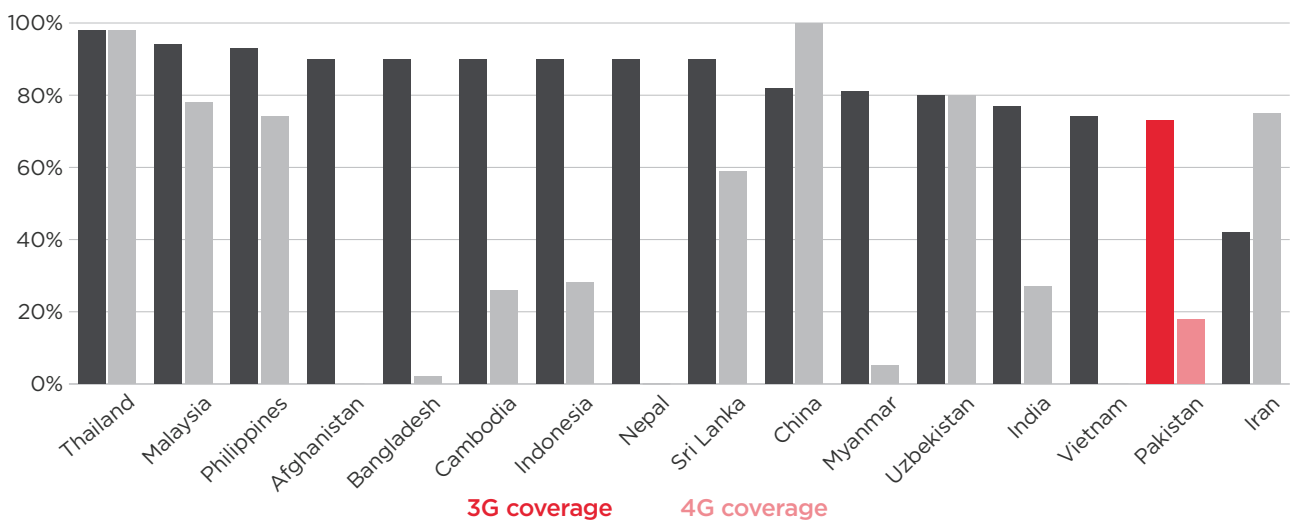
37 Networked Readiness Index ranking, infrastructure pillar, in selected Asian countries, 2016



Despite 3G and 4G networks being rolled out since 2014, Pakistan still lags behind many other comparable countries in the extent of rollout of these services.

Source: GSMA Intelligence

38 3G and 4G network coverage by population for selected Asian countries, 2016



Note: 4G data not available for Afghanistan, Vietnam and Nepal

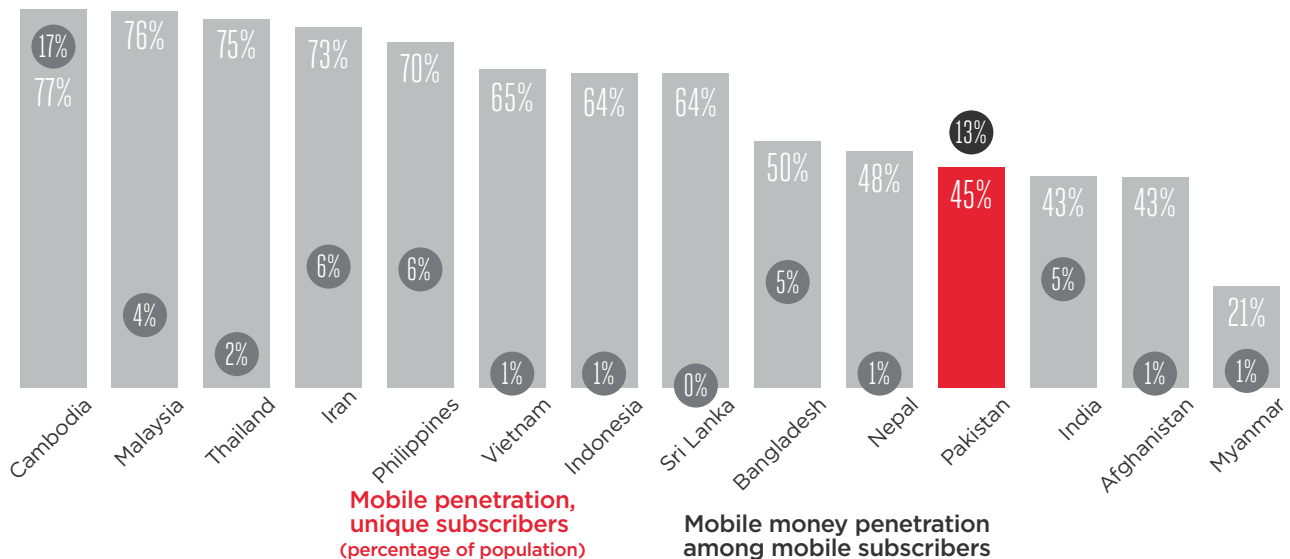
3.1.3 Tax reforms may increase mobile money usage and financial inclusion

Tax and regulatory fee reductions for the mobile sector may increase affordability of mobile use and facilitate investment to improve and extend mobile infrastructure. As a result, many more consumers may be able to use value-added services such as mobile money, which could bring important social and economic benefits.

Pakistan has a small base of mobile subscribers compared to similar countries, but high rates of mobile money usage among its mobile subscribers. Despite being one of the fastest growing markets for branchless banking in the world and benefiting from interconnected services across operators, low mobile penetration could constrain further growth.

Source: World Bank Global Financial Inclusion Database⁸⁸; GSMA Intelligence; Deloitte analysis

39 Mobile penetration and mobile money penetration in selected Asian countries, 2014



Pakistan's National Financial Inclusion Strategy sets a target of achieving 50% financial inclusion, recognising that promoting digital transactions is a key area and that ICT infrastructure is a key enabler. However, financial inclusion was only 13% in 2014.⁸⁹ Tax reforms on the mobile sector could support the financial inclusion strategy by increasing affordability of

mobile use and facilitating investment in the enabling infrastructure. A study by BCG estimates that mobile financial services in Pakistan are suitable to address up to 71% of those citizens who are currently unbanked, and that these services would increase GDP and government revenue by 3% by 2020.⁹⁰

88 Mobile money penetration is based on the Global Findex database's 'mobile account' indicator, which captures the number of survey respondents reporting at least one type of use of mobile money.
 89 World Bank Global Findex data
 90 The socio-economic impact of mobile financial services, BCG, 2011

Greater usage of mobile money services may have benefits in terms of tax compliance:

- The European Bank for Reconstruction and Development (EBRD) argues that “cash is the most important enabler of the shadow economy”, whereas mobile payment systems may make participating in the shadow economy more difficult, boosting transparency and reducing fraud.⁹¹ Similarly, the World Bank⁹² and the International Growth Centre⁹³ recognise the potential of digitalisation in this area.
 - The spread of mobile money services offers the opportunity to introduce mobile tax payments, which may reduce the costs of tax compliance.⁹⁴ Compliance may improve due to the reduced need for interaction with tax officials, which might entail perceived risks of corruption or harassment.⁹⁵
 - Tanzania saw significant take-up of mobile tax payments one year after launch, which appears to be linked to reduced tax avoidance; Mauritius saw a marked increase in electronic tax returns once mobile filings were introduced.⁹⁶
-

91 Mobile Money Services Study, European Bank for Reconstruction and Development, January 2013

92 Digital Dividends, World Bank, 2016

93 Improving Tax Compliance in Developing Economies, International Growth Centre, 2012

94 Tanzania Economic Update, World Bank, 2015

95 Taxing the Informal Economy, Joshi et al, 2014

96 Paying taxes through mobile money: Initial insights into P2G and B2G payments, GSMA, December 2014

3.2 The impact of specific tax and fee changes

In this section the quantitative impact of specific tax and regulatory fee changes is estimated:

A reduction in the sales tax/FED rate on mobile services, from 18.5–19.5% to 17%.

The removal of the annual licence fee, currently set at 0.5% of revenue.

The removal of the SIM card sales tax, currently set as PKR250 per SIM card.

Other possible tax changes in the mobile sector are also discussed, along with measures that the government may take to make up for revenue shortfalls in the short term.

3.2.1 Quantifying the impact of tax and fee changes

To estimate the quantitative impacts of these reforms, an economic model of Pakistan's economy and mobile sector was constructed, using sector-specific data from the GSMA and mobile operators in Pakistan, together with macroeconomic data from the IMF and the World Bank. This allows the model to represent both the mobile sector and its gross impacts on the economy as a whole. This approach also enables comparison between a base case that uses current projections for the sector and the tax reduction scenarios.⁹⁷

The modelling involves several steps, which are discussed in detail in the Appendix methodology, and summarised here:

- 1 The model first computes the impact on prices. The level of taxation and regulatory fees applied to the mobile sector are reflected in the retail prices operators charge for using their services. Therefore, a change in taxation or regulatory fees will lead to a change in the retail price of mobile services. A pass-through rate represents the percentage of the tax and regulatory fee payments that is reflected in the retail price of mobile services.
- 2 The amount that is not passed through to prices can either be reinvested into the network or retained as profit for the operators. The amount that is reinvested into the network can be used to either build new sites or upgrade sites to mobile broadband.
- 3 The model then computes the impact of the price change on demand. 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; defined as the percentage change in demand resulting from a given percentage change in price.
- 4 Changes in the level of consumption of mobile services lead to a new level of revenue generated by operators, which changes the level of taxes and regulatory fee payments and labour demand accordingly.
- 5 These changes to the mobile sector lead to direct impacts on value-added and employment and, through spillover effects, on the wider economy, in particular on real GDP, tax revenue, employment and investment.
- 6 An elasticity determines the impact of a change in mobile penetration on GDP growth. Multipliers allow changes in mobile sector employment to affect the wider labour force in Pakistan. Productivity is calculated using the total factor productivity impact.

⁹⁷ Other potential impacts on the sector that may arise from current reform programmes are not explicitly modelled but may have been considered in projections by the GSMA or third-party sources and would therefore be taken into account in the base case. The policy reform scenarios were estimated separately and their interactions are not considered.

Reducing the rate of sales tax/FED on mobile services

The sales tax/FED on mobile usage is an excise tax that is likely to be passed on to consumers to a large extent, having a direct effect on the price of mobile services. The tax rates for mobile services are higher than for other sectors and higher than the equivalent tax rates in other countries in the region.

Reducing the tax rate could improve affordability of mobile services, especially for the poorest consumers. Given that these consumers are typically the most price-sensitive, even small changes in price may significantly increase usage.

International experience of similar tax reforms suggests that this reform has the potential to drive higher penetration and usage:⁹⁸

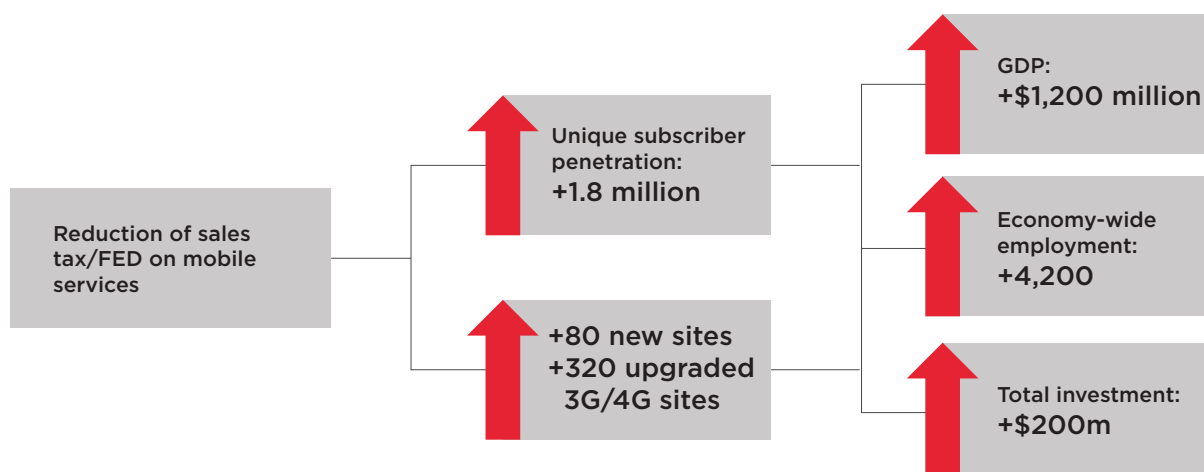
- Uruguay abolished an excise tax on airtime. In the years following the tax abolition, call prices fell by two thirds and usage increased by more than three times. Mobile penetration also more than doubled.⁹⁹
- Ecuador abolished a tax on mobile usage. In the years following the tax abolition, penetration increased from 70% to over 110% and usage per user more than doubled between 2008 and 2011.¹⁰⁰

Assuming that 75% of tax savings are passed through to consumers and 50% of the remaining tax savings are invested, this reform could have the following impacts:

- New connections: increased demand through the reduction in cost of mobile use may result in an additional 1.8 million subscriptions over the four-year period to 2021.
- Additional investment in the sector: increased investment by mobile operators could lead to the installation of 80 new sites in rural areas and the upgrade of more than 300 sites for mobile broadband over the four-year period to 2021.
- Increase in economic growth: the increase in mobile ownership and usage may increase GDP by \$1,200 million in 2021.
- Increase in total tax revenue: as a result of increased economic activity, tax revenue for the government could grow by \$60 million in 2021.
- Increase in total investment: total investment in Pakistan could increase by \$200 million in 2021 and by a combined \$480 million over the four-year period to 2021.
- Job generation: increased activity in the mobile sector may increase employment in the sector by 1,000 employees, and by 3,200 employees in the wider economy.

Source: Deloitte analysis using GSMA, World Bank and operators' data

40 Estimated economic impact of reduction in sales tax/FED on mobile services, 2021



98 Other developments in these countries may have affected the mobile sector at the same time as the tax changes.
 99 Mobile telephony and taxation in Latin America, GSMA/Deloitte, 2012
 100 Mobile telephony and taxation in Latin America, GSMA/Deloitte, 2012

Removing the SIM card sales tax

The SIM card sales tax is a consumer tax that is likely to increase costs of mobile ownership. As a flat-rate tax, it is especially likely to be regressive and significantly increase the barrier to accessing mobile services for the poorest consumers.

Previous reductions in this tax have been accompanied by rapid growth in penetration in Pakistan. Eliminating the tax could drive penetration further and enable the poorest consumers to benefit from mobile connectivity and value-added services such as mobile money. International experience of similar tax reforms suggests that there could be a strong impact:¹⁰¹

- In July 2012, in Turkey M2M SIM cards were exempted from a connection tax. The number of cellular M2M connections in Turkey increased from 1.3 million in March 2012 before the tax exemption to 1.8 million connections in the first quarter of 2013, representing an overall increase of 38%. As at the end of 2015, there were 3.1 million M2M SIM cards.¹⁰²
- In Brazil, tax reductions on M2M SIM cards took place in April 2014. Between the second quarters of 2014 and 2015, the number of M2M SIM cards grew by 1.9 million connections, an increase of 21%.¹⁰³

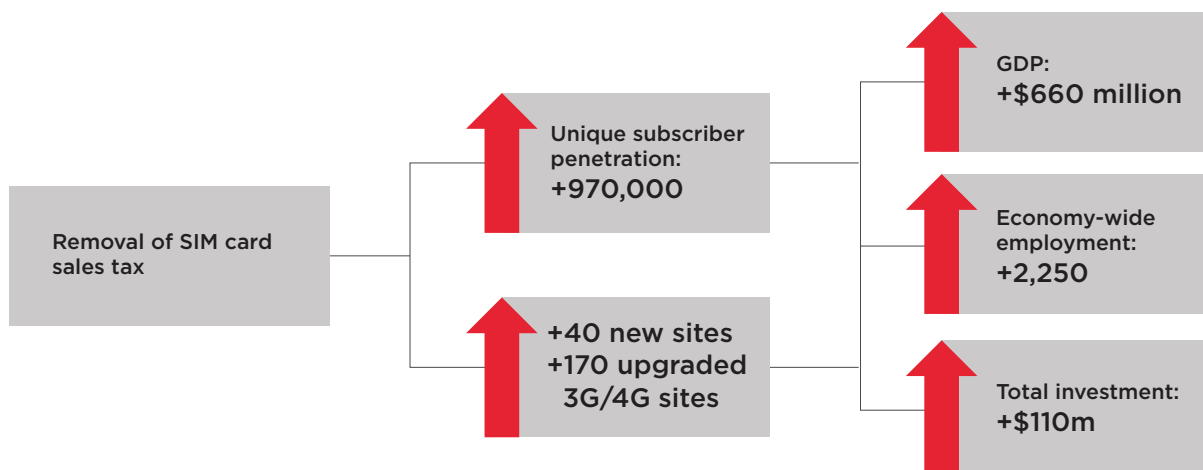
The tax is currently the subject of a court dispute in Pakistan, and some operators are retaining payments. For this tax, therefore, representative tax payments were calculated based on a combination of operator data and data on new connections to which the SIM card tax would apply.

Source: Deloitte analysis using GSMA, World Bank and operators' data

Assuming that 75% of tax savings are passed through to consumers and 50% of the remaining tax savings are invested, this reform could have the following impacts:

- New connections: increased demand through the reduction in cost of mobile use may result in an additional 970,000 subscriptions over the four-year period to 2021.
- Additional investment: increased investment by mobile operators could lead to the installation of 40 new sites in rural areas and the upgrade of 170 sites for mobile broadband over the four-year period to 2021.
- Increase in economic growth: the increase in mobile ownership and usage may increase GDP by \$660 million in 2021.
- Increase in total tax revenue: as a result of increased economic activity, tax revenue for the government could grow by \$70 million in 2021.
- Increase in total investment: total investment in Pakistan could increase by \$110 million in 2021 and by a combined \$260 million over the four-year period to 2021.
- Job generation: increased activity in the mobile sector may increase employment in the sector by 550 employees, and by 1,700 employees in the wider economy.

41 Estimated economic impact of removal of SIM card sales tax, 2021



101 Other developments in these countries may have affected the mobile sector at the same time as the tax changes.
 102 Digital inclusion and mobile sector taxation 2016, Deloitte/GSMA, 2016
 103 Digital inclusion and mobile sector taxation 2016, Deloitte/GSMA, 2016

Removing the annual licence fee

The annual licence fee is one of several regulatory fees levied on operators in Pakistan. Operators also pay an annual spectrum administrative fee and make contributions to an R&D fund and a universal service fund. Together, these fees draw payments of over \$70 million, not including the substantial sums paid by operators for spectrum licences. These fees are likely to have some impact on consumer prices but may especially affect investment.

Regulatory fees are sector-specific and best practice for effective taxation supports the reduction of such fees in order to minimise distortions. While mobile operators in most countries pay licence or regulatory fees, the number of different regulatory fees in Pakistan means there is potential to simplify and rationalise the current framework, as suggested by the IMF in relation to Pakistan's overall tax policy.¹⁰⁴ One of the possible reforms to achieve this could be the reduction or removal of the annual licence fee, which would still leave several other regulatory fees in place and would only reduce the total amount collected from regulatory fees by around one fifth. As an indication, a removal option is presented as an example of the possible reduction and rationalisation of regulatory fees, but similar reforms of the other regulatory fees may be considered.

International experience suggests that reducing taxes and fees on operator revenue could drive faster growth in penetration, due to both price reductions and increased investment in extending networks:

- In Senegal, a rural telephony tax levied at a rate of 3% of revenue was removed. Subsequently, unique subscriber penetration grew by 8 percentage points between Q1 2012 and Q1 2013 to reach 47.3%, compared to a growth of 2 percentage points a year earlier.¹⁰⁵
- Increases in taxes on revenue suggest the opposite effect. When Sri Lanka increased the telecoms levy on revenue in 2014, the growth of minutes used fell from 6–7% to around 2% year-on-year.¹⁰⁶ Similarly, after Cameroon introduced a Special Fund for Telecommunications, levied at 3% of revenue, the level of connections penetration fell by 0.4%.¹⁰⁷

Assuming that 33% of savings from the elimination of the licence fee are passed through to consumers and 50% of the remaining amount is invested, this reform could have the following impacts:

- New connections: increased demand through the reduction in cost of mobile use, and extension of networks, may result in an additional 190,000 subscriptions over the four-year period to 2021.
- Additional investment: increased investment by mobile operators could lead to the installation of 50 new sites in rural areas and the upgrade of 200 sites for mobile broadband over the four-year period to 2021.
- Increase in economic growth: the increase in mobile ownership and usage may increase GDP by \$140 million in 2021.
- Increase in total tax revenue: as a result of increased economic activity, tax revenue for the government would broadly rebalance by 2021.
- Increase in total investment: total investment in Pakistan could increase by \$20 million in 2021 and by a combined \$50 million over the four-year period to 2021.
- Job generation: increased activity in the mobile sector may increase employment in the sector by 500 employees, and by 1,600 employees in the wider economy.

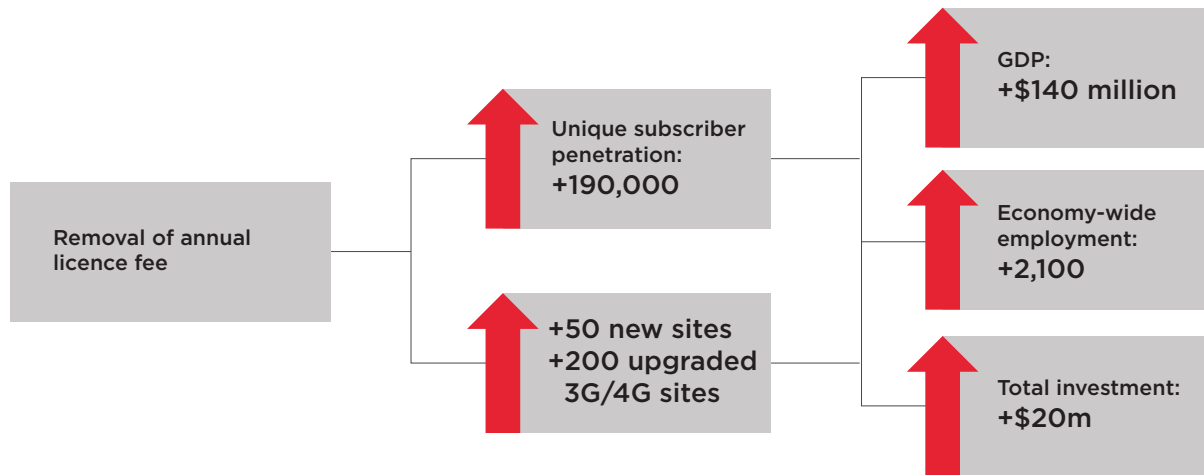
¹⁰⁴ Unlocking Pakistan's Revenue Potential, IMF Working Paper, August 2016

¹⁰⁵ Taxes and fees on the mobile sector, Principles, best practice and options for reform, Deloitte/GSMA, Forthcoming

¹⁰⁶ Taxes and fees on the mobile sector, Principles, best practice and options for reform, Deloitte/GSMA, Forthcoming

¹⁰⁷ Taxes and fees on the mobile sector, Principles, best practice and options for reform, Deloitte/GSMA, Forthcoming

Source: Deloitte analysis using GSMA, World Bank and operators' data

42 Estimated economic impact of removal of annual licence fee, 2021

3.2.2 Potential tax reform alternatives

The three scenarios illustrate the potential economic gains from reforming three particular taxes and fees in line with best-practice principles. Other options are available that may generate similar positive impacts.

Reduction in withholding tax rate on mobile services

As mobile operators are unable to reclaim the withholding tax paid on mobile services, due to most subscribers' incomes falling below the taxable limit, this tax effectively acts as an excise duty. As with the sales tax, the withholding tax rate for mobile services is markedly higher than the rate for other sectors, which may have a distortionary effect on consumer and business decisions. The tax rate is also higher for mobile telephony and internet services than for fixed-line equivalents. Reducing the withholding tax rate could produce very similar impacts to a reduction in sales tax/FED on mobile services.

Reduction in import taxes on network equipment

The PTA has proposed that mobile operators should be granted industrial undertaking status.¹⁰⁸ A consequence of this change would be to make operators exempt from income tax on imports, as well as granting certain other tax advantages.¹⁰⁹ The differential treatment of sectors according to this status adds to the complexity of taxation in Pakistan and may be distortionary. Given the need for further investment in Pakistan, granting industrial undertaking status could be effective in enabling further investment in extending networks and upgrading base stations to 3G and 4G.

Similarly, a reduction in customs duty rates for network equipment – which were increased recently – could help operators to deliver important investments.

108
109PTA Proposes Tax Cuts to Increase Revenue from Telecom Sector, ProPakistani, 2015
Other benefits may include exemption from certain withholding taxes and changes in tax liability.

Reduction in import taxes on mobile devices

Import taxes on mobile devices may have an impact on affordability. Currently, the flat rates of customs duty and sales tax applied to mobile handsets amount to a total of PKR550–1,750 depending on handset specification. These flat rate taxes are particularly regressive; for the lowest 20% of earners in Pakistan this amount is equal to approximately 3–10 days' income.¹¹⁰

Similarly to the SIM card activation tax, these taxes increase the barrier to mobile ownership to the extent that they are passed on to consumers. Reducing or removing these taxes could allow many of the poorest consumers to benefit from mobile connectivity and access life-enhancing mobile services.

Changes to the universal service fund

Operators in Pakistan currently contribute 1.5% of revenue to a universal service fund (USF). The contribution differs from other types of tax and regulatory fee in that it is paid to an independent organisation that manages the fund, rather than the government. Such funds can play a role in delivering investment in network expansion and improvement in rural areas, where the commercial incentives for investment may be limited.

However, USFs may not always be the most efficient way of promoting investment. A study by GSMA

has found that USFs typically have large volumes of unused funds¹¹¹ and another study by the ITU has found that less than 40% of USFs are enabled to fund broadband deployment.¹¹²

There may be a case for reducing the USF contribution to make more resources available to operators for investment in network expansion and further rollout of 3G and 4G services. In general, the reliance on USFs may be reduced as networks evolve and when rollout conditions are included in spectrum licences, as with the licences awarded in Pakistan in 2014.

3.2.3 Options for rebalancing taxation revenues

The mobile industry recognises the importance of the current revenue that Pakistan's government obtains from taxes on the mobile sector. In the medium term, tax reductions on the mobile sector are likely to increase total tax revenue for the government, due to the positive economic impact from increased mobile usage and increased investment.

In the short term, the tax changes in each of the three scenarios create a temporary tax revenue shortfall. The government may consider alternative ways to cover the shortfall. Marginal changes to general taxation, such as the general sales tax (GST), may be sufficient to cover the shortfall from reductions in distortionary sector-specific taxation, in line with the IMF recommendation to broaden the tax base.

The size of temporary tax revenue shortfalls is small relative to revenue from general taxation

The tax revenue shortfall from reductions in taxes on the mobile sector would be small compared to the total tax revenue generated from general taxation. Based on tax receipts for 2015–16, the tax revenue shortfall from each proposed tax reform option is estimated below relative to total GST revenue and total direct tax revenue collected by the Federal Board of Revenue.

110 Deloitte analysis of World Bank data
 111 Survey of Universal Service Funds, GSMA, 2013
 112 Universal Service Fund and digital inclusion for all, ITU, 2013

Source: FBR; operator data; Deloitte analysis

4 Tax revenue shortfall in each scenario relative to total general tax revenue in 2015–16

Tax change	Tax revenue shortfall relative to total GST revenue	Tax revenue shortfall relative to total direct tax revenue
Reduction in sales tax/ FED on mobile services	0.38%	0.42%
Removal of SIM card sales tax	0.40%	0.45%
Removal of annual licence fee	0.11%	0.13%

Small changes in general tax rates may be sufficient to cover temporary tax revenue shortfalls

Based on total GST collection in 2015–16, a small increase in the GST rate may be sufficient to cover the tax revenue shortfall in each scenario.

- Reduction in sales tax/FED on mobile services: an increase in the GST rate from 17% to 17.13% may be sufficient to cover the tax revenue shortfall. Based on budget estimates for 2016–17, an increase to 17.12% may be sufficient.
- Removal of SIM card sales tax: an increase in the GST rate from 17% to 17.13% may be sufficient to cover the tax revenue shortfall. Based on budget estimates for 2016–17, an increase to 17.12% may be sufficient.
- Removal of annual licence fee: an increase in the GST rate from 17% to 17.04% may be sufficient to cover the tax revenue shortfall. Based on budget estimates for 2016–17, an increase to 17.03% may be sufficient.

The above estimations take into account that various goods are subject to alternative rates of sales tax and therefore would not be affected by a change in the general rate. The estimations do not take into account the impacts that these increases may have on the wider economy;¹¹³ they however illustrate the marginal impact of mobile sector-specific taxes on general taxation.

The above estimates are intended to give perspective on the scale of general tax changes potentially required to cover tax revenue shortfalls; it is acknowledged that in practice it may not be feasible to set GST rates using decimals. It may be possible to use other taxes or a combination of taxes, such as direct taxes, in a similar way to cover the revenue shortfall from each scenario. Estimations for other possible tax changes cannot be provided due to the lack of data on tax revenue from different types of taxes.

Other alternative approaches to make up for tax revenue shortfalls may be possible. The IMF recommends specific tax reforms for Pakistan that could improve tax revenue collection:¹¹⁴

- simplifying the corporate income tax regime and reducing concessions and exemptions
- introducing presumptive taxes on agricultural turnover and land-based tax rates
- modernising recurrent property taxes
- eliminating general sales tax exemptions, zero-ratings and special schemes
- changing the structure of federal and provincial excises to ad valorem rates.

¹¹³ The representative general tax rate increases are estimated through a static analysis and subject to the following stringent assumptions. For these estimated increases in general taxation to be able to recover the sector-specific taxation revenue, it is assumed that the increases in general taxation do not have any impacts on the economy's consumption, incomes, pre-tax profit and investment. Increases in general taxation could have direct impacts on the tax revenue raised from that specific tax but also indirect impacts on the revenue collected from other general taxes. For example, a rise in the income tax could directly cover the lost tax revenue but then reduced expenditure could reduce VAT and corporate tax revenue. As such, increases in general taxation may need to be higher than estimated. A macro-economic model of the Pakistani economy would be required to estimate these effects. For a methodology on estimating the effect of fiscal policy of short-term economic output, see A Simple Method to Compute Fiscal Multipliers, IMF, 2014. For tax-specific evidence, see Djankov, 2014 on corporate taxes and investment, or Feldstein, 1986 on income tax rate and taxable income or the OECD, 2014 on the distributional impact of consumption taxes.

¹¹⁴ Unlocking Pakistan's Revenue Potential, IMF Working Paper, August 2016

4

An agenda for reform: an enabling environment for mobile consumers and operators

A close-up photograph of a person's hand holding a black mobile phone to their ear. The entire image is overlaid with a semi-transparent red filter. The person's face is partially visible in profile, looking towards the right. The background is dark and out of focus.

As outlined in Section 2.3, Pakistan is an emerging digital society, with services focused on digital and financial inclusion. Mobile is well positioned to make a significant contribution to Vision 2025 and help Pakistan move up the digital value chain.

Progressing to a more advanced digital society, Pakistan could see more engagement between citizens, governments and institutions, improved provision of essential services, and ultimately the development of interconnected and interoperable digital technologies between sectors.

A first step to building a digital society is putting in place a robust and scalable digital infrastructure, providing as many people as possible with the opportunity to get online. However, it is also essential to develop a flexible and forward-looking regulatory regime that can build on ubiquitous connectivity and create an environment that not only promotes affordability for those at the bottom of the pyramid, but also incentivises investment in services that can help Pakistan's digital society fulfil its potential.

4.1 The current taxation of the mobile sector

Mobile penetration and internet usage in Pakistan is notably lower than in other comparable markets, and a key factor in this is taxation, which may impact on consumers and the wider mobile ecosystem.

Source: Deloitte analysis

5 Summary of taxation in the Pakistani mobile sector

	Consumers	Mobile operators
Taxes	Devices <ul style="list-style-type: none"> • Customs duty – PKR250 • Sales tax – PKR300–1,500 for handsets, or 17% for tablets • Income tax – 5.5% • VAT – 3% <hr/> SIMs <ul style="list-style-type: none"> • Fixed rate – PKR250 per card 	Corporation tax <ul style="list-style-type: none"> • 31% of taxable profit, 17% of accounting income, or 1% of revenue (whichever is largest) <hr/> Regulatory fees <ul style="list-style-type: none"> • USF contribution – 1.5–2% • R&D fund – 0.5% • Annual licence fee – 0.5% • Annual spectrum administrative fee – proportional to spectrum holding • PKR0.50 per number allocated <hr/> Spectrum licence fees <ul style="list-style-type: none"> • 2014 auction generated \$1.1 billion, 35% of annual sector revenue <hr/> Import taxes <ul style="list-style-type: none"> • Customs duty – up to 25% • Sales tax – 17% • Income tax – 5.5% • VAT – 3%
Effects	Taxes may ultimately be reflected in the prices consumers pay, potentially limiting uptake and usage of mobile devices and services, particularly among the poorest segments of the population.	Taxes may not only affect the final prices paid by consumers, but could also impact the financial resources available for investment in infrastructure.

While taxation from the mobile sector remains critical to continue financing public expenditure in Pakistan, taxes and fees on mobile operators remain relatively high, discriminatory compared to other sectors, and subject to special usage excises and operator fees.

Taxes and fees on mobile operators – in particular the sales tax/FED on mobile services, the SIM card sales tax, and regulatory fees such as the annual licence fee – are levied in ways that do not recognise some of the key investment and economic features of the mobile industry in Pakistan. The current approach may be creating a number of distortions that in the medium term can act to reduce the levels of investment, harm consumers and constrain the expansion of mobile connectivity to the millions who remain unconnected. Half of Pakistan’s population still remain without a mobile subscription.

Reforming mobile taxation could help meet the recommendations that the IMF has provided to the government in relation to taxation. Based on best-practice principles and evidence from a series of studies that have examined mobile taxation in numerous countries worldwide, a number of potential areas for tax reform could be considered by the Pakistani government:

- Harmonising and simplifying the taxation framework on the industry could reduce the burden and negative impacts of taxation. To this end, the government could seek to reduce sales taxes and withholding taxes on the mobile sector, and remove sector-specific taxes such as the SIM card sales tax, in order to align consumer taxes on mobile services to the tax framework applied to other services.
- Taxation could be designed in a way that is consistent with the Vision 2025 policy objectives

of leveraging mobile usage and increasing internet penetration. Potential tax policies to improve affordability and network rollout that the government could consider include reductions in regulatory fees to increase the resources available for investment, and changes to the import tax regime to reduce the cost of importing network equipment needed for network rollout and smartphones needed for mobile broadband services.

- Sector-specific taxes and fees could be substituted with reforms in line with the principle (suggested for example by international organisations such as the World Bank¹¹⁵) that low rates on wider tax bases are to be preferred to higher taxes on narrow bases. If properly designed, taxation on wider bases could allow governments to collect equivalent tax revenue in simpler and more efficient ways while reducing compliance costs for mobile operators, and has the potential to stimulate sector-wide investment. This approach would allow the Pakistani government to reduce or over time eliminate airtime duties, such as the sales tax on mobile services, that target mobile services at higher rates than other standard services.

As the sector develops further, the focus should turn to enabling innovative mobile services and addressing sector-specific taxation. The rapid growth of mobile data platforms across numerous sectors of the economy is already increasing the economic value delivered by the mobile sector through value-added services ranging from finance and healthcare to education and agriculture applications. These innovative products can generate economic and social benefits. The Pakistani government could avoid reducing their uptake through imposing any sector-specific taxes and fees, i.e. over and above general taxation, that increase the price of such goods.

4.2 Projected benefits of tax reform towards Pakistan's Vision 2025 objectives

Section 3.2 estimates the impact of three tax reform proposals for the mobile sector, all of which would contribute to align with international best practice and reduce distortions to the economy. The implementation of these reforms has the potential to improve total tax revenues in the medium term. Pakistan may also benefit from improved affordability, increased internet penetration and greater investment in the sector, all of which are fundamental elements of the government's Vision 2025 strategy.

The Vision sets out 25 key strategic goals for Pakistan to achieve by 2025, and the reforms proposed in this report have the potential to make significant contributions to a number of those. All three tax reforms (reducing the sales tax/FED on mobile services to 17% and removing the SIM card sales tax and the annual licence fee) may make important contributions by increasing investment, GDP and tax revenues, and driving additional mobile internet penetration growth.

In particular, and focusing on the impacts of the proposed reduction of sales tax/FED on mobile services:¹¹⁶

- The reduction of the sales tax/FED on mobile service alone may contribute nearly \$1 billion of additional GDP to the Pakistani economy by 2021, making an important contribution to Goal 8 of the Vision of Pakistan to 'become one of the 25 largest economies in the world'.
- The reduction in sales tax/FED may add more than 1 million additional mobile internet connections to Pakistan, helping the country move towards meeting Goal 22 in the strategy to "Improve Pakistan's score on the World Bank Institute's Knowledge Economy Index from 2.2 to 4.0, and increase internet penetration to over 50%".
- Goal 10 in the strategy is to "Increase Foreign Direct Investment from \$600 million to \$15 billion". The proposed reduction in sales tax/FED may result in additional investment by the sector of approximately \$150 million, some of which is FDI.

4.3 Options for tax reform

In the medium term, all three proposed tax reforms have the potential to increase the total tax revenue raised by the government. In the short term however, they are likely to result in a decrease in total tax revenues.

This shortfall could be met by implementing changes to general taxation. In particular, under a set of assumptions described in Section 3.2, relatively small changes to indirect taxation rates may be sufficient to generate a compensatory effect. This change would be in line with recommendations by the IMF and consistent with the Vision 2025 proposals to broaden the tax base.

As highlighted in Section 3.2.3, the short-term tax revenue shortfall could be met in each of the three scenarios below.¹¹⁷

Other reforms are also possible in line with the IMF recommendations and the Vision 2025 objective of improving tax revenues while supporting inclusive economic growth, and these would also help increase tax revenues in Pakistan. According to the IMF, these could include the modernisation of recurrent property taxes; introducing presumptive taxes on agricultural turnover and land-based tax rates; and simplifying the corporate income tax regime and reducing concessions and exemptions.

Tax reform scenario	Current general sales tax rate	General sales tax rate required to cover the shortfall
Reduction in sales tax/FED on mobile services	17%	17.12%
Removal of SIM card sales tax		17.12%
Removal of annual licence fee		17.03%

4.4 A forward-looking regulatory framework

The telecoms market has changed significantly since the industry was first privatised and the first set of regulations applied. With the emergence of new digital technologies and the blurring of boundaries between the once-distinct sectors of telecoms and internet services, competition has increased.

Telecoms regulation, however, does not yet reflect this dynamic digital marketplace, causing market distortions that threaten to delay or even halt coverage expansion and improvements to quality of service.

This new digital ecosystem requires a more flexible regulatory approach, a competition law framework

considering all elements of the market, clear and simplified licensing practices, and a new framework for physical network cooperation. Without policy reforms that reflect this changed digital landscape, markets will become further distorted and investment and innovation will be put at significant risk, negatively impacting consumer welfare.

Competition policy in the digital ecosystem

Growth in today's digital market is fuelled by continuing innovation and changing consumer tastes, implying a market in which market share is volatile and not necessarily indicative of market power. In such dynamic markets, determining significant market power based on market share alone offers an incomplete and inaccurate assessment. Market power is more properly defined by considering all types of substitutable services, enduring bottlenecks and barriers to entry. Relevant factors include the company's ability to influence the market, its turnover relative to the size of the market, its control of the means of access to end-users, its access to financial

resources and its experience in providing products and other services in the market. The presence of OTT service providers certainly plays a role in assessing those factors as well.

Rules for market assessment should be technology-neutral and must recognise market dynamism, evaluating the conduct of all market players, not just telecommunications service providers.¹¹⁸ Rather than setting specific thresholds for SMP determinations, rules should be refocused with the goal of preventing enduring bottlenecks and exclusionary conduct.

Licensing framework

To fit the realities of the new digital ecosystem, regulation must be based on function rather than on technology or legacy industry structures, maintaining flexibility to accommodate the rapidly changing market and to encourage investment and innovation. Discriminatory, sector-specific regulation creates an imbalance in competition. IP voice and messaging communication services now compete directly with traditional communications services, yet are not subject to the same rules, such as those relating to

the collection and usage of customer data. In many cases, changes in technologies and markets have eliminated the need for certain regulations, or at least call for changes to their application, such as prohibitions on the cross-border transfer of data by telecommunications service providers. Reviewing existing market structures, reforming outdated regulation and eliminating discriminatory regulation will foster dynamic competition, protect consumers and spur innovation.

Network sharing and trading framework

Network sharing and spectrum sharing/trading enable operators and regulators to reduce spectrum inefficiencies and enhance flexibility, allowing spectrum rights to flow to their highest-valued use.¹¹⁹ Critical to the optimal use of limited spectrum resources, network sharing and trading mechanisms allow operators to ensure greater coverage, customer mobility and higher quality of service.

Both passive and active infrastructure sharing allow operators to gain more timely access to coverage in strategically important locations and make it more feasible for them to cover otherwise unprofitable areas by reducing the capital and operating expenditure required for launch, but operators

must be allowed flexibility to set the terms of these sharing arrangements with minimal regulatory interference. Similarly, spectrum sharing helps operators to fill spectrum gaps in their coverage networks or to mitigate potential demand peaks, so long as operators are allowed to negotiate the terms themselves without significant regulatory hurdles.¹²⁰ Furthermore, spectrum trading, which provides a secondary mechanism for the most efficient allocation of spectrum rights, will function optimally only in the absence of excessive administrative oversight and fees that would otherwise distort the market. Regulators should thus rely on light-touch regulation for the advancement of sharing and trading, focusing on general competition principles and transparency.

Regulation for a modern digital ecosystem

The forward-looking Telecommunications Policy 2015 offers the Ministry of IT and Telecommunications and the Pakistan Telecommunications Authority, working together with the GSMA's operator members, a real opportunity to make these regulations a better fit for

the modern digital ecosystem. Without policy reforms that recognise the changed landscape and dynamism of digital ecosystems, markets will become further distorted, and investment and innovation will be at significant risk.

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NERA
The Impact of Licensed Shared Use of Spectrum, GSMA, February 2014



Appendix: methodology*

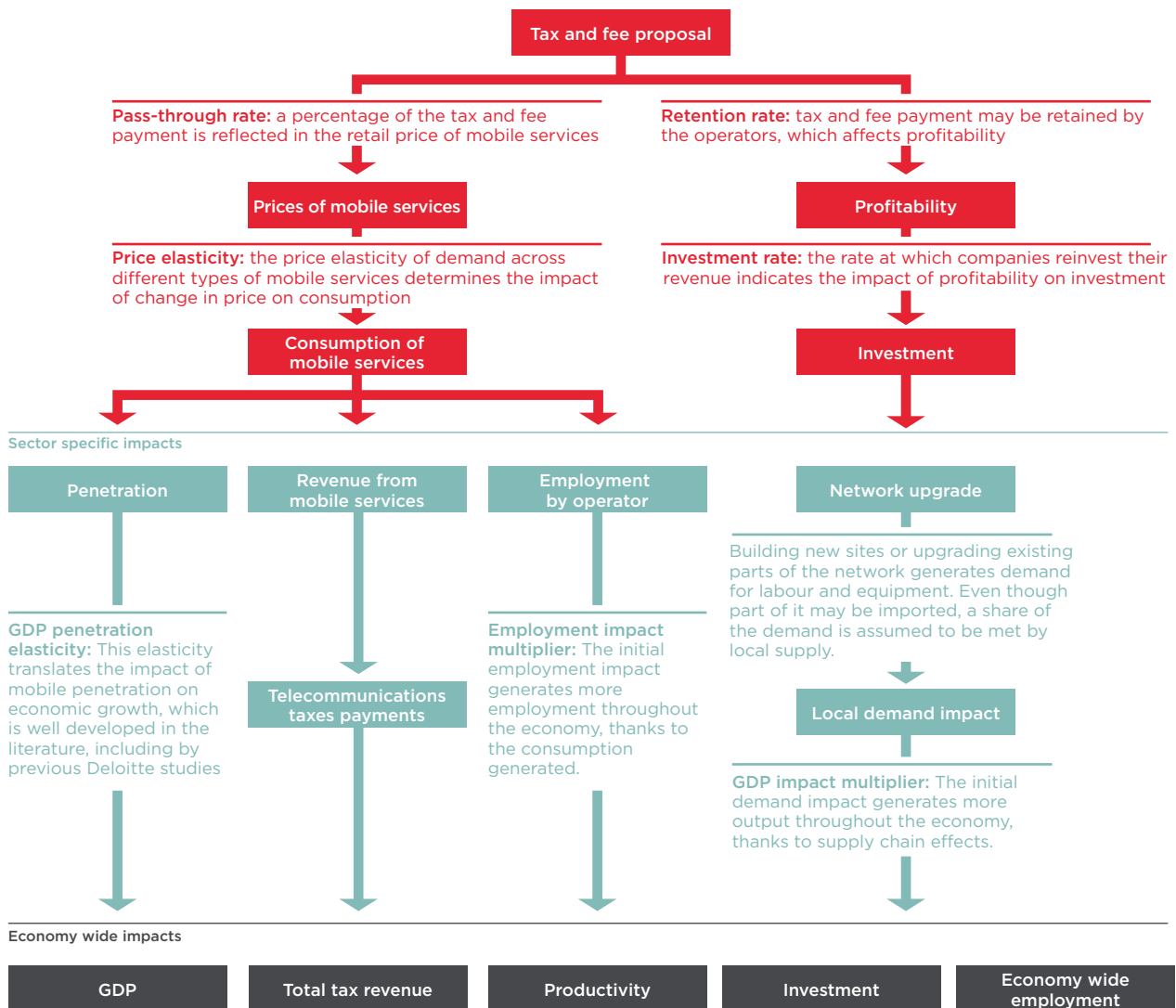
Estimation of the economic impact of a tax change

An economic model was created to describe the impacts that taxation on the mobile sector has on the sector itself and the macro-economy of Pakistan. This model estimates forecasts for the impacts of more than 25 sector-specific and macroeconomic variables up to 2021, which can be driven either by removing or changing current taxes and regulatory fees or by the introduction of a new tax or regulatory fee.

Firstly, a base case scenario is developed for the mobile sector and economy, where taxes and regulatory fees remain at their current rate throughout the period to 2021. Then, a simulation of alternative tax policy scenarios quantifies the economic impact of reformed mobile sector taxation. It is assumed that the tax policy is implemented in tax year 2017/18 and the model estimates the effects up to 2021. The impacts of each policy are estimated independently and their interaction is not considered.

Source: Deloitte analysis

43 Schematics for modelling the economic impacts of mobile taxation changes



Modelling the impact of changes to mobile taxation on the telecoms market in Pakistan

As illustrated in Figure 43, the model evaluates the demand and supply effect of the change in mobile taxation on the telecoms market. On the demand side, a tax or fee reduction may be partly passed through to consumers as lower prices. Savings can also, on the supply side, be partly reinvested to expand the network or upgrade current sites to newer technologies.

Data collection

The inputs for the model have been provided by operators in Pakistan and the GSMA as well as publicly available statistics from the World Bank and the IMF. These include forecasts for future years. 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.

Data from each operator is collected using a consistent methodology and analysed in order to identify any potential errors. Where necessary, further research and engagement with the operators is used in order to ensure a correct understanding of the data provided.

Demand side

The tax or regulatory fee change may affect 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 regulatory 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.

Changes to the price of mobile services affect their consumption. In order to estimate this, assumptions are made on the price elasticity of demand,¹²¹ which measures how much demand for mobile services will change in response to a price change.

Changes in prices and consumption alter the amount of revenue generated from mobile services. Increased demand generates additional employment opportunities in the sector, and increases mobile technologies' penetration in the country.

These sector impacts lead to economy-wide effects, which are estimated through assumptions that describe the impact of the mobile sector on the wider 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 telecommunications sector. The proliferation of mobile services is captured by an increase in productivity, quantified through the change in total factor productivity (TFP).

As a result of additional GDP growth from reformed taxation on mobile, the potential short-term loss of tax revenue from the mobile industry may be offset by tax revenue from more broad-based consumer and operator taxes.

Supply side

The model also considers instances in which some or all of the tax/fee savings are not passed through to consumers but reinvested in extending or upgrading mobile networks in the country. Investment resulting from tax/fee savings is determined using a reinvestment rate assumption. Using data, informed by discussions with mobile operators, on the construction cost of a new site and on costs to upgrade existing sites, the model estimates the number of additional sites and upgrades that the reform may translate into by 2021.

A significant proportion of the cost of network investment relates to the cost of network equipment, much of which is imported into Pakistan. However, some of this additional investment is domestic value added – for example, local labour. This additional value added can then have wider economic impacts, which are calculated using a GDP multiplier that captures the knock on economic effects of the incremental economic activity generated as a result of the additional investment. These economic impacts may also translate into job creation. Due to the temporary nature of construction work, the jobs creations in the model are assumed to be non-cumulative.

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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.

Key assumptions

The assumptions underlying the model have been developed on the basis of a review of academic literature and previous studies in this area.

Pass-through rates

Changes in taxes and regulatory 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 regulatory fees to final prices typically depends on numerous market factors: for example, it may depend on overall competition levels, on operators' market power, on the price elasticity of demand, as well as on operators' commercial strategies. As such, it is expected that each operator will determine how to pass through any tax/fee savings in different ways. Academic literature has found considerable variability in pass-through rates, which may be negligible, close to 100% or even above 100% in certain instances.¹²² Having considered this evidence, as well as a number of market-specific conditions in Pakistan, the following illustrative assumptions on pass-through rates have been employed: an average pass-through rate of 75% is assumed for taxes that fall directly on retail prices, such as the sales tax/FED on mobile services and the SIM card activation tax. For taxes or regulatory fees on operator revenue, such as the annual licence fee, it is assumed that the pass-through rate is 33%.

Price elasticity of demand

A change in the price of mobile services may lead 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. Based on evidence from the empirical literature,¹²³ the elasticity of demand for mobile usage is assumed to be -0.97 . The elasticity of demand for mobile ownership is assumed to be -0.84 . The finding that demand is more elastic for those that already own mobile devices is supported by a number of studies within the field.¹²⁴

122 Estimating VAT Pass Through, IMF Working Paper, 2015

123 Price elasticity of demand is based on Tax and the digital divide, Frontier/GSMA, 2005, which includes an estimate for a group of Asia Pacific emerging markets, including Pakistan and neighbouring countries. A Pakistan-specific estimate was not available.

124 See, for example: Mobile telecommunications and the impact on economic development, Gruber and Koutroupis, 2010; Price elasticities for telecommunication services with reference to developing countries, Wheatley, J. J., 1998; Tax and the digital divide: How new approaches to mobile taxation can connect the unconnected, GSMA, 2005

Reinvestment rate¹²⁵

The literature highlights that a company's cash flow is a strong predictor of its investment; the strength of this response is stronger in economies in which firms have less access to financial markets.¹²⁶ To illustrate the potential for new investment through the tax reduction, the reinvestment rate is assumed to be 50% of the value not passed through to consumers. This illustrative assumption was based on a review of market characteristics in Pakistan showing that investment/revenue for Pakistan's operators can reach or exceed 50% during periods of network rollout; and on a review of academic papers discussing pass-through rates from tax changes.

Part of the investment effort is spent on network coverage expansion, and the rest is spent on network upgrade; the shares were determined through discussions with the operators and reflect the fact that upgrading networks is a current priority given the relatively recent 3G and 4G awards.

Based on a review of cost benchmarks in the literature and discussions with local operators on the cost of installing sites, the cost of a new site is assumed to be \$250,000 and the cost of network upgrades for mobile broadband is \$60,000.¹²⁷ This takes into account differences in the cost of rural sites and other non-site costs that are necessary for each site.

Employment and GDP multiplier

The employment multiplier is used to estimate the effect of a change in employment in the sector on total employment in the economy. The magnitude depends on the economic characteristics of the sector, such as the degree of interconnection across the supply chain and the openness of the economy. Based on the characteristics of the Pakistan mobile sector and the general economy, the employment multiplier is

assumed to be 4.0.¹²⁸ That is, for every additional job created within the mobile sector, an additional four jobs are generated in Pakistan's wider economy.

The GDP multiplier is used to estimate the wider economic impacts of the additional network investment. Based on the structure of Pakistan's economy and how telecoms services are used, this is estimated to be 1.49.¹²⁹ This means that for every additional \$1 of expenditure in the telecommunications sector, GDP increases by \$1.49.

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.¹³⁰ 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.¹³¹ This model does not consider switching between 2G and 3G services, so these impacts are treated separately.¹³²

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:

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

where it is assumed that $\alpha = 0.3$ and $\beta = 0.7$.¹³³

125 The definition of reinvestment rate used in this context differs from that used in the finance context, where it designates the interest payments that can be earned when money is reinvested out of a fixed income investment to another. In this report, the reinvestment rate is the proportion of the tax change that is invested.
 126 Evidence on the role of cash flow for investment, Gilchrist and Himmelberg, 1995
 127 Deloitte analysis of operators' data; Unlocking broadband for all, APC, April 2015; Preventing a Growing Mobile Network from Becoming a CAPEX/OPEX Drain, Ericson, 2012; A broadband network cost model, FCC, 2010; Infrastructure sharing as an opportunity to promote competition in local access networks, Pereira and Ferreira, 2012; The momentum behind LTE worldwide, Analysis Mason, 2011
 128 This estimate is from a comparable country (India) as a specific estimate for Pakistan was not available. Indian IT/ITES Industry: Impacting Economy and Society 2007-08, Deloitte/Nasscom, 2008
 129 This estimate is produced by the OECD from a comparable country (India). A specific estimate for Pakistan was not available.
 130 This is based on a study of 40 economies over the period 1996-2011; for full details of the methodology, see What is the impact of mobile telephony on economic growth?, Deloitte, GSMA, Cisco, 2011
 131 Economic Impacts of Broadband, Qiang, C. Z. W., Rossotto, C.M., 2009, in Information and Communications for Development 2009, World Bank, Washington, DC
 132 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.
 133 The Driving Forces of Economic Growth: Panel Data Evidence for the OECD countries, Bassanini A and Scarpetta S, 2001

Scenario estimations

The tables below show the estimated cumulative impacts of the tax changes simulated in this report on a number of macroeconomic and industry variables, compared against the base case scenario in the specified year, where there is no change in policy; and on the assumption that the change in policy is implemented in tax year 2017/18 (this is denoted as 2018 in Table 6).

Source: Deloitte analysis of GSMA, World Bank and operators' data

6 Annual impacts of removing the sales tax/FED on mobile services on selected macroeconomic and industry variables

Criterion	2018	2019	2020	2021
Macroeconomic impacts				
Incremental GDP	\$175 million	\$547 million	\$958 million	\$1,209 million
Additional employment	2,450 jobs	3,300 jobs	3,750 jobs	4,200 jobs
Labour productivity, % increment	0.04%	0.11%	0.19%	0.23%
Investment	\$28 million	\$91 million	\$163 million	\$196 million
Sector-specific impacts				
Incremental connections: total (broadband)	830,000 (360,000)	1,690,000 (790,000)	1,750,000 (920,000)	1,820,000 (1,060,000)
Incremental unique subscribers: total (broadband)	550,000 (240,000)	1,130,000 (530,000)	1,170,000 (610,000)	1,210,000 (710,000)
Increase in mobile penetration total, by connections	0.41%	0.83%	0.84%	0.85%
Cumulative number of new sites (site upgrades)	18 (73)	36 (151)	56 (234)	77 (321)

Source: Deloitte analysis of GSMA, World Bank and operators' data

7 Annual impacts of removing the SIM card sales tax on selected macroeconomic and industry variables

Criterion	2018	2019	2020	2021
Macroeconomic impacts				
Incremental GDP	\$95 million	\$298 million	\$521 million	\$658 million
Additional employment	1,300 jobs	1,750 jobs	2,000 jobs	2,250 jobs
Labour productivity, % change	0.04%	0.11%	0.19%	0.23%
Investment	\$15 million	\$49 million	\$89 million	\$107 million
Sector-specific impacts				
Incremental connections: total (broadband)	440,000 (180,000)	900,000 (400,000)	940,000 (470,000)	970,000 (540,000)
Incremental unique subscribers: total (broadband)	290,000 (120,000)	600,000 (270,000)	620,000 (310,000)	650,000 (360,000)
Increase in mobile penetration total, by connections	0.22%	0.44%	0.45%	0.46%
Cumulative number of new sites (site upgrades)	9 (39)	19 (81)	30 (125)	41 (171)

Source: Deloitte analysis of GSMA, World Bank and operators' data

8 Annual impacts of removing the annual licence fee on selected macroeconomic and industry variables

Criterion	2018	2019	2020	2021
Macroeconomic impacts				
Incremental GDP	\$21 million	\$63 million	\$109 million	\$138 million
Additional employment	1,350 jobs	1,600 jobs	1,850 jobs	2,100 jobs
Labour productivity, % change	0.00%	0.01%	0.02%	0.02%
Investment	\$3 million	\$10 million	\$18 million	\$22 million
Sector-specific impacts				
Incremental connections: total (broadband)	90,000 (40,000)	180,000 (80,000)	180,000 (90,000)	190,000 (110,000)
Incremental unique subscribers: total (broadband)	60,000 (30,000)	120,000 (50,000)	120,000 (60,000)	130,000 (70,000)
Increase in mobile penetration total, by connections	0.04%	0.09%	0.09%	0.09%
Cumulative number of new sites (site upgrades)	11 (47)	23 (96)	36 (149)	49 (204)

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