Digital inclusion and mobile sector taxation in India

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CONTENTS

Executive Summary

With one billion connections, mobile plays a crucial role in creating a Digital India

With the second largest population in the world and a rapidly growing economy, India also has the second largest mobile market. The Indian mobile market constitutes a remarkable success story: it has developed innovative network sharing solutions that have led to investment in over 500,000 towers spread across the country, delivered affordable service prices that are amongst the lowest worldwide, and incubated a thriving ecosystem of device producers and sellers, airtime distributors, mobile Value Added Services creators, and other service providers.

With combined revenues of nearly US$ 30 billion, or approximately INR 1.8 lakh crore, in 2014 among the twelve mobile operators, the industry is a key contributor to the national economy:

- The GSMA estimates that the mobile ecosystem contributed directly to 2.2 million jobs in India in 2014, while the combined contribution of the mobile sector amounted to 6.1% of GDP. Estimates suggest that mobile could contribute INR 14 lakh crore by 2020, approximately US$ 230 billion, to the economy.[1]

- This contribution to the economy is not confined to the mobile operators. As mobile communications enable numerous other economic and social activities, the Indian Council for Research on International Economic Relations has estimated that Indian states with higher mobile penetration grow faster, and for every 10% increase in mobile penetration, growth in GDP increases by 1.5 percentage points. The impact of internet penetration is similar: in India, for every 10% increase in the number of internet subscribers, growth in output is estimated to increase by 1.08 percentage points.[2]

- In 2014, the industry paid US$ 9.3 billion in tax and fee payments to the government, or approximately INR 57,000 crore, in addition to the recent spectrum auction in March 2015 which resulted in INR 1.1 lakh crore, approximately US$ 18 billion being committed in bids.[3]

- Mobile applications are helping to deliver previously inaccessible services to large portions of the population, for example in financial services, healthcare, education and agriculture. Mobile operators have recently been granted licences to provide banking services and the GSMA has estimated that mobile financial services could serve up to 250 million people in India by 2020. In addition, it estimates that mobile applications for agriculture could help to raise the profits of farmers by as much as 15% and reduce consumer prices by 5%.[4]

- Mobile services are also helping to address key social issues such as gender equality. Mobile operators have pioneered schemes to improve mobile use by women and educate users about mobile money, whilst apps have been developed to address women's safety concerns. A GSMA survey indicated that 58% of women feel more autonomous and independent with a mobile phone.[5]

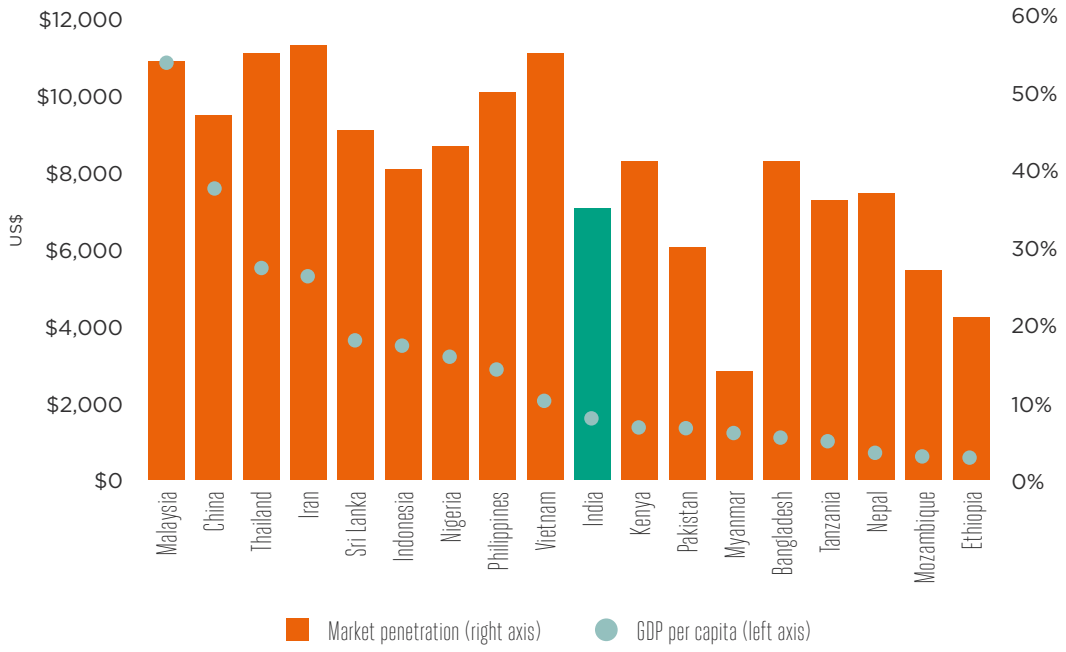
Building upon these types of benefits from digital inclusion through greater mobile penetration would further support the realisation of a number of government objectives, including the vision set out in India's Twelfth Five Year Plan (2012-2017) and the Digital India programme.

1. GSMA (2015), The Mobile Economy India 2015.
2. Kathuria, and Kedia Jaju (2011), India: The Impact of Internet.
3. Operator data and Deloitte analysis. Provisional spectrum auction results available at: http://www.dot.gov.in/sites/default/files/u8/Provisional%20Auction%20results%20and%20court%20order.pdf.
4. GSMA (2013), The Mobile Economy India 2013.
5. GSMA (2015), Connected Women – Bridging the gender gap: Mobile access and usage in low- and middle-income countries.

There are opportunities to further extend connectivity and digitalisation in India

Mobile penetration remains lower than in some other emerging markets. Unique mobile subscriber penetration was at 38% of the population in June 2015. This is more than ten percentage points lower than the world average of 51%. Countries such as Vietnam and Kenya, which have a similar GDP per capita to India, have a higher mobile penetration, while even lower income countries such as Bangladesh, Tanzania and Nepal outperform India.

GDP per capita and unique subscriber mobile penetration in 2014 in a sample of 18 countries



Source: GSMA Intelligence and World Bank World Development Indicators

Figure 1

Both the rural-urban and the gender digital divide remain high. Looking more broadly at the number of connections as a proportion of the population, mobile penetration was 144% of the urban population compared to 48% of the population in rural areas by the end of Q2 2015.[6] A marked gender divide also exists, with only 28% of women owning a mobile connection, compared to 43% of men.[7]

Digital connectivity is less developed than voice connectivity. 88% of connections in India today are 2G, with only 12% at 3G providing the connectivity required for good access to mobile internet. Global averages for 2G, 3G and 4G connections as shares of total connections are 57%, 33% and 11% respectively, suggesting there may be scope for further improvement of digital infrastructure to the benefit of the Indian economy.

6. TRAI (23 November 2015), The Indian Telecom Services Performance Indicators, available at: http://trai.gov.in/WriteReadData/PIRReport/Documents/Performance_Indicator_Report_Jun_2015.pdf
7. GSMA (2015), Connected Women – Bridging the gender gap: Mobile access and usage in low- and middle-income countries.

Extending digitalisation further faces a number of challenges

Affordability of services remains critical for those at the bottom of the pyramid and those living in rural areas. The price of devices relative to average annual incomes hinders the development of both basic connectivity and the spread of access to mobile internet. The poorest must spend over 10% of their annual income just to afford a basic mobile phone, and even for the richest a premium phone is estimated to cost 8.5% of their annual income. In addition, less than 70% of rural population have access to electricity, which places a limit on the level of penetration and connectivity that can be reached and especially limits the spread of mobile in rural areas.

Incentives for investment in the sector are affected by a number of factors. While mobile coverage is available to over 90% of the population in India, and 3G coverage to 70% of the population, especially in rural areas coverage remains low. A number of factors specific to India exacerbate these challenges, such as the strong rural-urban divide, the high costs of rights of way, low average revenue per user (ARPU) by international standards and spectrum availability issues.[8]

To address some of these challenges, operators have created solutions, such as cost minimisation and transformation of the tower management, leading the Indian mobile market to become an example for other countries.[9] In addition, policy makers have recognised the need for change by allowing infrastructure sharing and spectrum sharing and trading. Additional incentives, however, could be provided through reformed taxation policy.

Availability of local content and digital literacy remain a barrier for many Indians. There may be a lack of content and relevance to Indians' everyday lives that may also be preventing further increase in mobile penetration.

Mobile operators and consumers in India are subject to a host of taxes and fees, and the tax framework risks deterring further investment

The tax policy framework in India has been identified by mobile operators as a key challenge to further investment. In 2014, tax and fee payments on mobile operators and consumers represented around 31% of market revenues.[10]

In addition, mobile operators also incurred a large cost when they purchased spectrum, and the total bid amount across the five spectrum auctions between 2010 and 2014 was INR 1.5 lakh crore, approximately US$ 25 billion.[11] This adds to the auction that ended in March 2015, which resulted in a record INR 1.1 lakh crore being bid, approximately US$ 18 billion.

While discussions with mobile operators have suggested that they recognise the importance of mobile tax payments to the government, mobile operators have also indicated that a number of taxes that are specific to the industry are creating economic distortions and reducing the mobile sector's potential to enhance economic growth. In particular, mobile operators in India are subject to two types of regulatory fees that appear misaligned with best-practice principles of taxation identified by organisation such as the IMF, as these mobile-specific taxes are not broad-based and do not account for the sector externalities:[12]

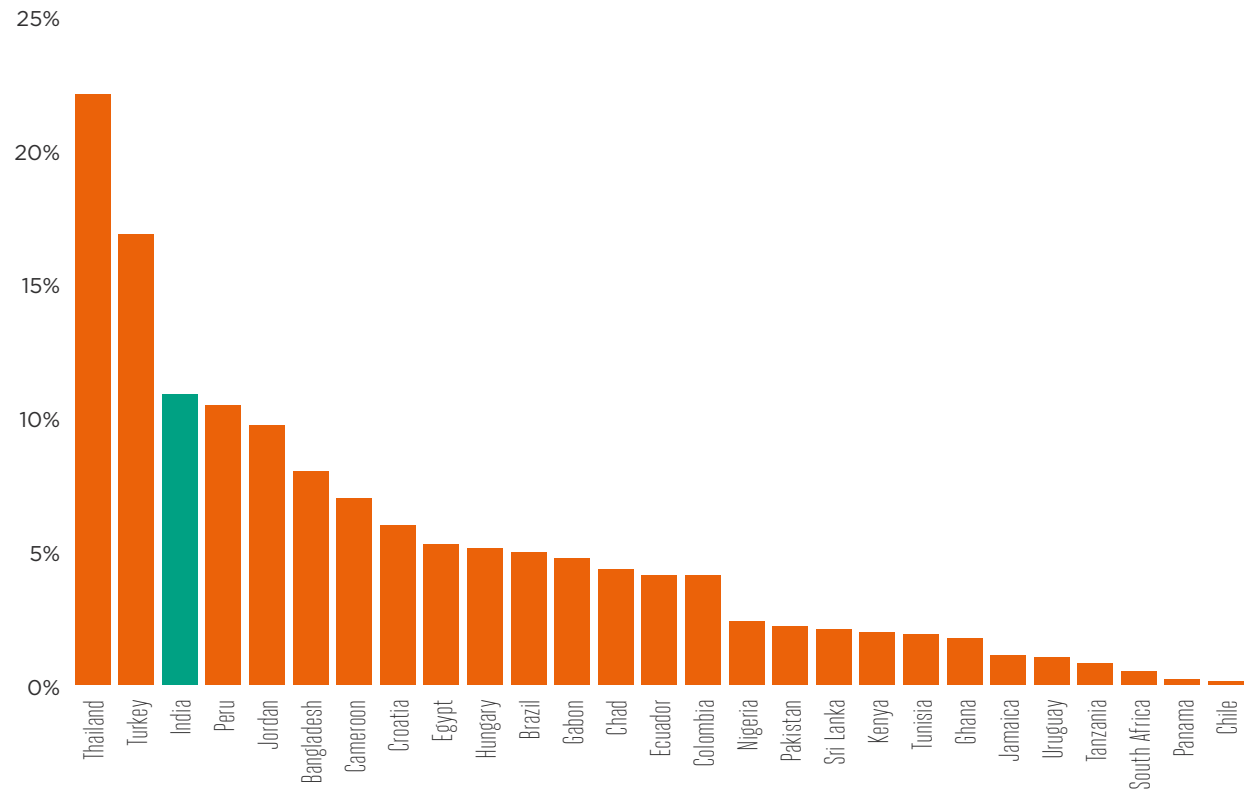
- The Licence fee is charged at 8% of Adjusted Gross Revenue (AGR), which includes a contribution to the Universal Service Obligation Fund (USOF) levied at 5%.

- Spectrum Usage Charges are levied at various rates between 3%-8% on AGR, and the average rate for operators, including microwave access and backhaul fees, in 2014 is estimated to be around 5.6%. Administrative spectrum allocation was in use when spectrum usage charges were first implemented, and since then spectrum auctions have become the standard allocation mechanisms in India.[13]

8. The large number of operators providing mobile services in a given area means the amount of spectrum allocated per operator is lower than in other countries.
9. See Bain & Company (2011), How global telcos can profit from India's wireless experience, and Deloitte (2015), India Tower Industry: The future is data.
10. Tax payments estimated based on operator data, total market revenues come from GSMA Intelligence.
11. TRAI (2015), Recommendations on Definition of AGR for the Reckoning of Licence Fee and Spectrum Usage Charges, table 1.2, see http://www.trai.gov.in/WriteReadData/Recommendation/Documents/Reco-AGR-Final-06.01.2015.pdf .
12. See IMF (2001), Tax policy for developing countries, and ITU (2014), ICT Regulation Toolkit, http://www.ictregulationtoolkit.org/5.5.

The licence fee and spectrum usage charges amounted to US$ 3.3 billion, equivalent to INR 20,000 crore, and comprised 35% of the total tax and fee payments, and 11% of total mobile revenue. Analysis conducted by GSMA and Deloitte[14] indicates that Indian regulatory fees in terms of fees relative to revenues are higher than in other South Asian countries such as Bangladesh, Pakistan and Sri Lanka. International comparisons suggest that such high taxes and fees are not common in developed economies, such as the United States or Europe. For example, Ofcom, the communications regulator in the UK, charges a fee of 0.0861% on turnover and only levies spectrum fees on spectrum that has not been auctioned or which has been converted to a perpetual licence once its initial fixed term has expired.[15] Such taxes and fees, coupled with the competitive landscape in India relative to other markets, may reduce incentives to operators to invest.

Regulatory fees as a percentage of revenue[16] in a sample of 27 countries



Source: Deloitte analysis based on Indian operator data for 2014 and GSMA/Deloitte: "Digital inclusion and mobile sectortaxation."[17]

Figure 2

In practice, mobile-specific taxes and fees such as the licence fee and the Spectrum Usage Charges affect consumers directly and/or indirectly. Some taxes and fees may be absorbed by mobile operators in the form of lower profits which in turn can reduce investment incentives for mobile operators, whilst others may be passed through in terms of higher prices for consumers, or a combination of the two.

13. For spectrum that was allocated administratively Spectrum Usage Charges are levied at 3%-8% of AGR, whereas for spectrum auctioned after 2014 the levy is 5% of AGR. To find the overall rate applied to AGR the weighted average based on the spectrum access held is calculated.
14. GSMA (2015), Digital inclusion and mobile sector taxation 2015, available at: http://www.gsma.com/mobilefordevelopment/wp-content/uploads/2015/06/Digital-Inclusion-Mobile-Sector-Taxation-2015.pdf.
15. Ofcom (26 March 2015), Ofcom's Tariff Tables 2015/16, available at: http://www.ofcom.org.uk/content/about/annual-reports-plans/tariff-tables/Tariff_Tables_2015_16.pdf.
16. Revenues refer to total market revenues from GSMA Intelligence. Total market revenues are the sum of total operator revenues for the period including both recurring and non-recurring revenue. This data is originally taken from operator financial reports and is modelled by GSMA Intelligence where not available.
17. GSMA (2015), Digital inclusion and mobile sector taxation 2015.

Uncertainty surrounding the proposed changes to taxation in India could deter greater investment in the mobile sector. The mobile sector has seen many tax changes in recent times, the Swachh Bharat cess,[18] for example, was introduced in November 2015 and is levied at 0.5% on the sale of telecommunication and other services, and further taxes have been proposed. In addition, the Indian government is planning to introduce a national Goods and Services Tax (GST) in 2016, although the rate is as yet undecided. This will replace the Service tax payable on mobile services, as well as the Value Added Tax (VAT) and Central Sales Tax (CST) on other goods. Although the details of the GST and other tax reforms have not yet been decided and it is still uncertain when exactly the new taxes will be introduced, operators are concerned that the GST could initially increase the tax and fee payments payable by the sector and as such risks having a negative impact on sector investment.

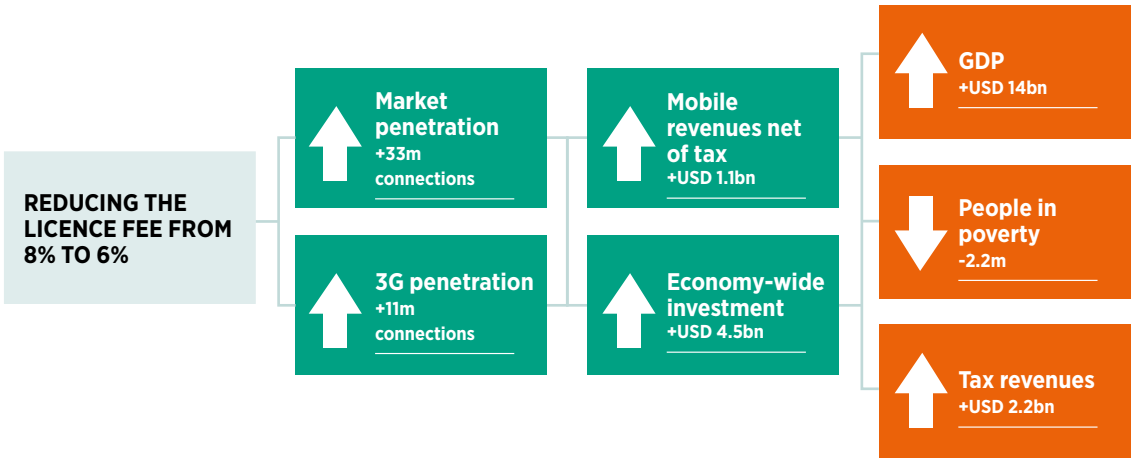
Reducing regulatory fees could allow the mobile sector to reach its full potential in achieving digital inclusion whilst delivering revenue-neutrality to the government

A model of the Indian mobile sector has been developed to estimate the impacts of changes to taxation on mobile penetration, economic growth and tax revenues. The quantitative impacts of potential reforms are estimated for this report and compared with a base case scenario where the tax and fee rates from 2014 continue on to 2020. These scenarios are considered independently and the impacts are not cumulative, that is, they are likely to overstate the total impacts if these reforms were all implemented together.

The figures represent the difference in 2020 between scenario estimates and those forecast for the base case where no reform occurs after 2014, that is, these estimates do not take into account the possible impacts of any other proposed reforms.

Reducing the licence fee from 8% to 6%. This has been recommended by the TRAI.[19] The licence fee includes a 5% contribution to the USOF, and reducing the licence fee could also include a phased reduction of this contribution. Figure 3 shows the possible effects of reducing the licence fee on the mobile sector and the wider economy.

Potential economic impact in 2020, relative to the base case scenario, of reducing the licence fee payable by operators



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

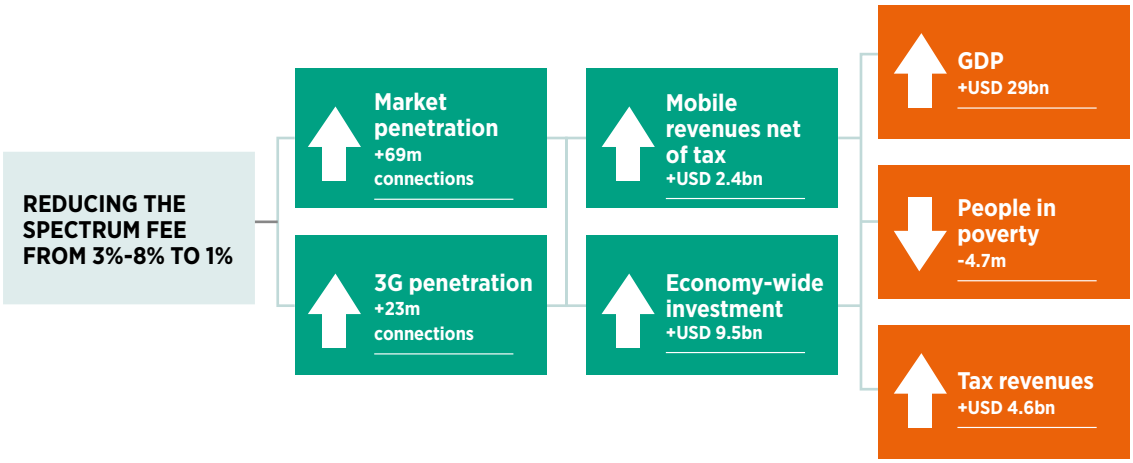
Figure 3

18. Cesses are additional levies on income (corporate and individual) implemented so that the government can fulfil its commitment to provide and finance education services.
19. TRAI (2015), Recommendations on Definition of AGR for the Reckoning of Licence Fee and Spectrum Usage Charges, paragraph 2.46.

A reduction in the licence fee could allow operators to lower prices for consumers, which could potentially boost penetration by as much as 33 million connections by 2020. Further, the increase in 3G connections could be as high as 11 million. This could lead to wide-ranging economic benefits, and it is estimated that GDP could potentially be higher by as much as 0.5%, with an additional INR 27,000 crore in economy-wide investment in 2020. An additional INR 14,000 crore could be raised in government revenue in 2020 compared to the base case, with tax neutrality[20] shortly following the reforms.

Reducing spectrum usage charges from 3%-8% to 1%. This could reduce the payments made by mobile operators who are already incurring large spectrum acquisition costs, and could potentially stimulate investment and increased mobile penetration.

Potential economic impact in 2020, relative to the base case scenario, of reducing the spectrum usage charges payable by operators



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

Figure 4

Market penetration could potentially be 5.4% higher in 2020 relative to the base case, including a 4.8% increase in 3G penetration. This could lead to a 1.1% increase in GDP in 2020 compared to the base case, increasing economy-wide investment in the Indian economy by as much as INR 58,000 crore. In addition, tax revenues could be higher in 2020 by as much as INR 28,000 crore, representing a 0.9% increase over the base case. Tax neutrality following the policy reform could be achieved shortly following the reforms.

By rebalancing mobile-specific licence and spectrum usage charges, the Indian government can promote digital inclusion, economic growth and fiscal stability

Reducing the level of taxation and regulatory fees on the Indian mobile sector may only have a limited impact on government revenues in the short-term as the government may be able to reach tax revenue neutrality shortly following the reduction by increasing mobile penetration and promoting economic growth.

20. Tax neutrality is achieved when the tax revenues for a given year in the scenario are equal or higher than the tax revenues in the base case.

There are a number of reforms the government could consider in order to reduce the burden on the mobile sector and facilitate its development in order to achieve its economic and social development goals:

- **Reduce existing revenue-based taxes and regulatory fees on the mobile sector:** By directly affecting prices, taxes and fees on revenue tend to distort production and consumption behaviour which may limit usage of digital services by creating a cost barrier for the digital inclusion of the poor. Revenue taxes and fees reduce the ability of mobile operators to finance investment in digital infrastructure, and may in the long term reduce government revenues.

- **Align the tax framework to that of developed economies:** The GST reform will align India's consumer taxation framework to that of developed economies. In these economies, taxes and fees on revenues are very rare. Reducing taxation and regulatory fees on revenues could contribute to further evolution of the tax framework.

- **Reconsider the balance between spectrum payments of different nature:** When spectrum is auctioned, the price paid by operators captures the benefits obtained by the operator having access to this scarce resource. However, in addition to this price, operators also pay the spectrum usage charges. As spectrum auctions become the norm in allocating spectrum, there is scope to reduce the revenue-based spectrum usage charges.

- **Apply phased reductions of taxes and regulatory fees:** A phased reduction of mobile-specific taxes and regulatory fees offers the government the opportunity to benefit from the economic contribution from mobile whilst limiting short-term fiscal costs.

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

- **Reduce taxation complexity and uncertainty of mobile taxation:** There is a history of disputes between mobile operators and the Indian authorities, for example, regarding interpretation of the basis on which licence fee and spectrum usage charges are levied. To foster an environment that encourages investment in mobile service provision, simpler taxation is needed.

Connecting over 480 million people, the mobile market in India is currently the second largest in the world

1. The mobile industry in India

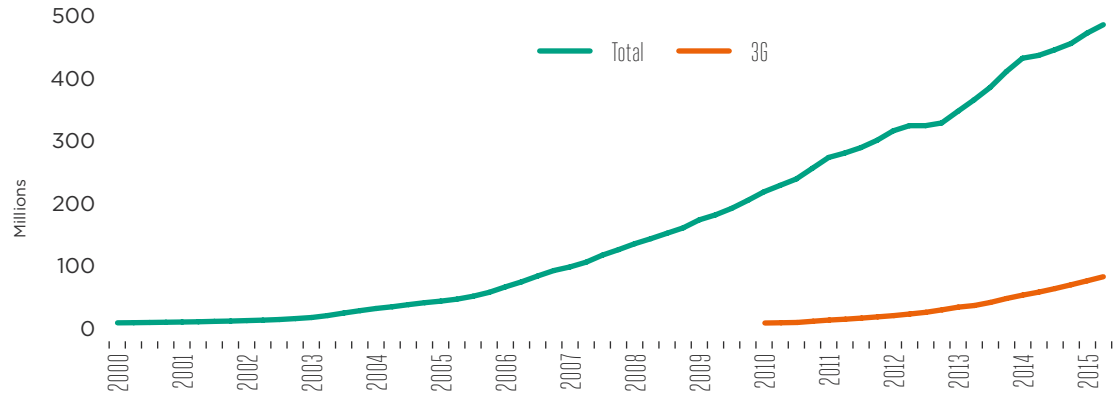
India is the second largest country in the world by population behind China and it is forecast to become the largest by 2021. By GDP, India's economy is the ninth largest in the world at US$ 2.1 trillion (in current US$), and is growing rapidly.[21]

1.1 There are nearly 1 billion mobile connections in India

Connecting over 480 million people, the mobile market in India is currently[22] the second largest in the world behind China both in terms of connections and unique subscribers.[23]

The market has around twelve operators currently active across India, with a maximum of ten operating in any given circle.[24] The three largest operators are Airtel, Vodafone, and Idea with market shares of 23%, 19%, and 17% of connections respectively.[25]

Total mobile and 3G unique subscribers in India



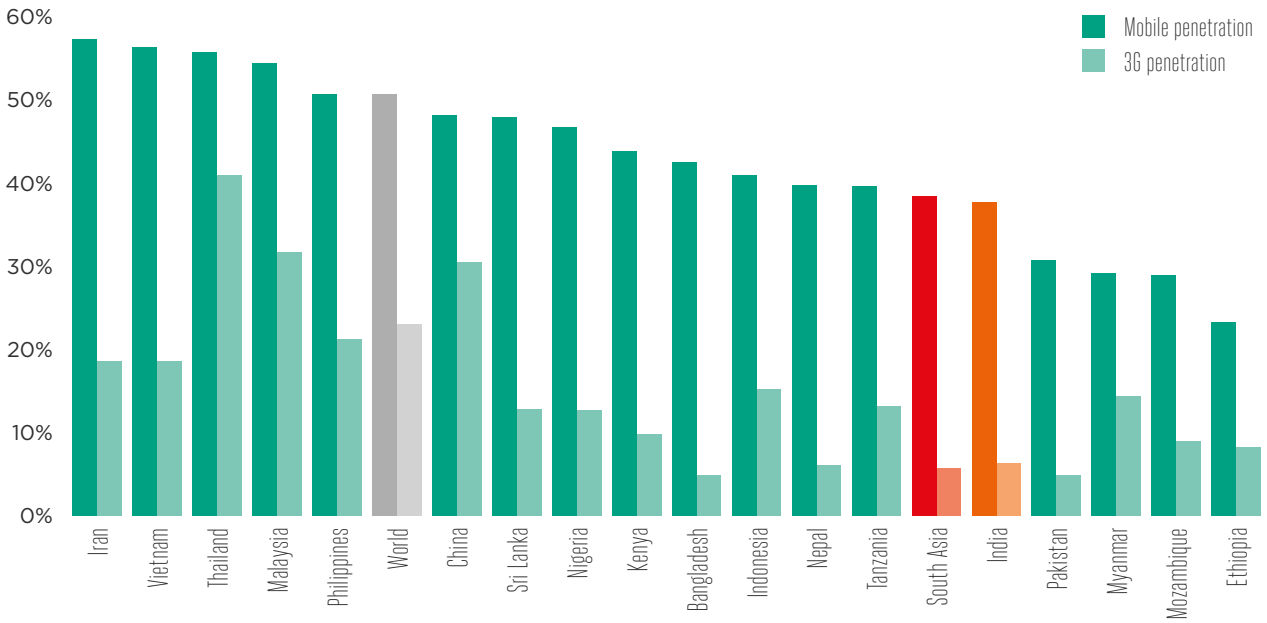
Source: GSMA Intelligence

Figure 5

While the number of mobile connections has grown rapidly, the penetration rate in India is still low given the scale of its population. In Q2 2015, India had a unique subscriber penetration of 38%, below the world average of 51%. 3G penetration stood at 6%, while the world average was 23%. A comparison between India and regions such as Europe and the US, where mobile penetration stands at 78% and 72% respectively, shows an even greater divide.[26]

21. All figures are from the World Bank World Development Indicators (WDI) database except for population projections.
22. Current figures in this report pertain to Q2 2015 unless otherwise stated.
23. Unique subscribers refer to the number of individual users of mobile services. This is distinct from the number of connections, with unique subscribers often having multiple connections.
24. India's territory is divided into a number of 'circles' for the telecommunication sector which define where mobile operators are allowed to provide services based on the permission they have.
25. GSMA Intelligence.
26. In addition, 3G penetration in Europe and the US is 41% and 53% respectively.

Mobile and 3G unique subscriber penetration[27]



Source: GSMA Intelligence

Figure 6

Countries such as Vietnam and Kenya which have a similar GDP per capita to India have a higher mobile penetration, while even lower income countries such as Bangladesh, Tanzania and Nepal outperform India.

GDP per capita and unique subscriber mobile penetration in 2014

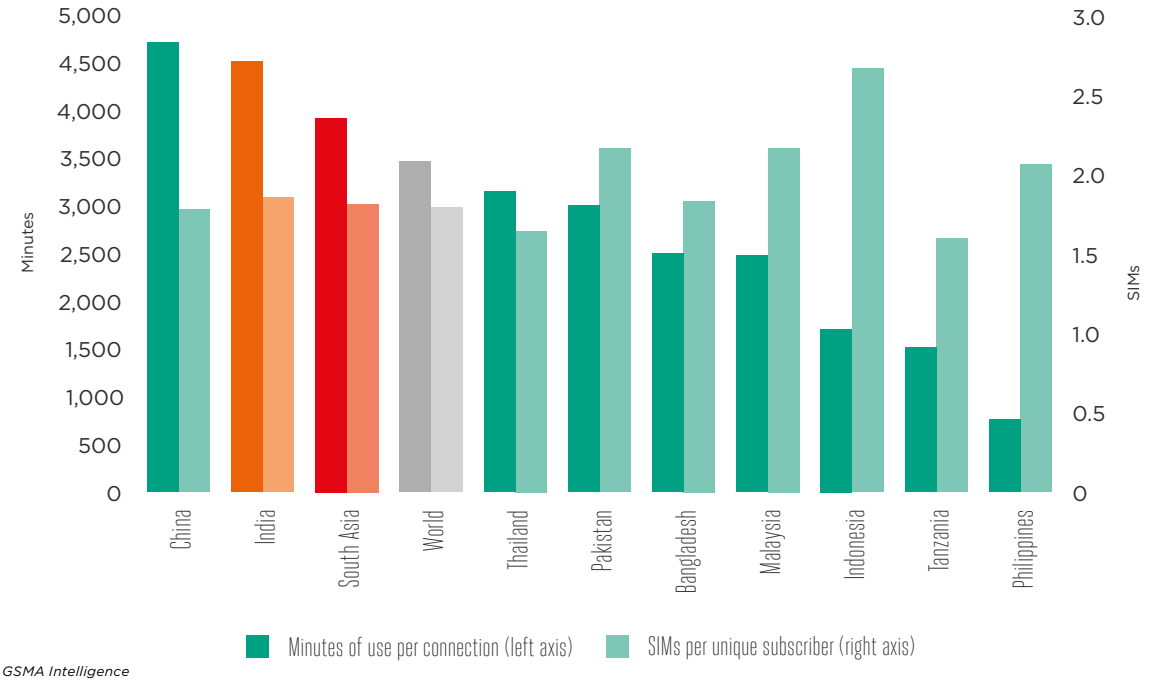
Source: GSMA Intelligence and World Bank World Development Indicators

Figure 7

However, for those individuals with a connection, the success of the industry is reflected in Indians being among the highest users of voice services in the South and South East Asia. In 2014, minutes per connection for the year in India stood at around 4,500, above both the regional and global averages of 3,900 and 3,500 respectively.

27. The benchmarking group has been chosen based on income, population and geographic region. It includes Bangladesh, China, India, Indonesia, Iran, Kenya, Malaysia, Mozambique, Myanmar, Nepal, Nigeria, Pakistan, Philippines, Sri Lanka, Tanzania, Thailand and Vietnam. The South Asia region is defined by GSMA Intelligence as Bangladesh, India, Pakistan and Sri Lanka.

Minutes of use per connection and SIMs per Unique Subscriber, 2014

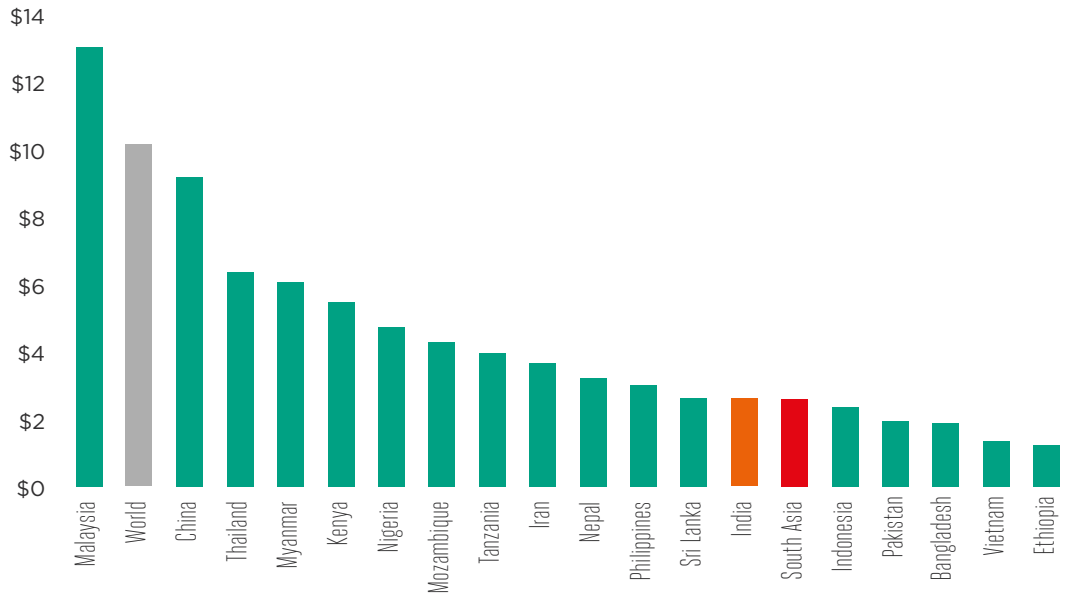


Source: GSMA Intelligence

Figure 8

India's success in extending mobile connectivity results from relatively low market prices compared to international benchmarks, as illustrated below.

ARPU per connection, by country,[28] Q2 2015



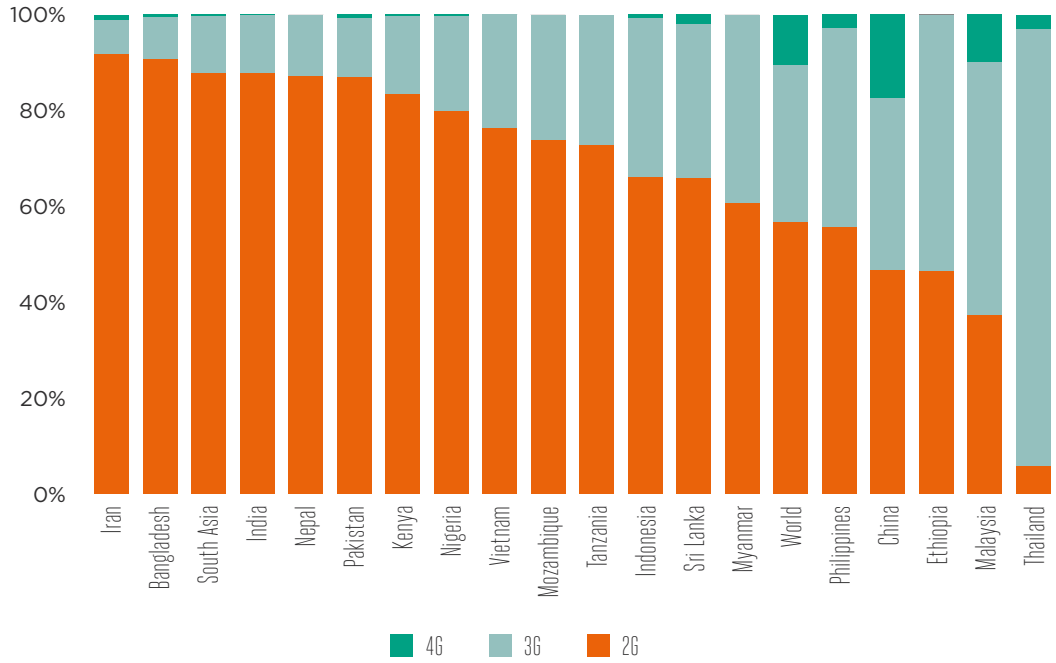
Source: GSMA Intelligence

Figure 9

28. Figure displayed is ARPU per connection per month for Q2 2015.

As voice services become more widespread, the next challenge in India will be to extend digital connectivity with 3G and 4G technology. Today, 88% of connections in India are 2G, and the remaining 12% are 3G, the world averages for 2G, 3G and 4G connections as shares of total connections are 57%, 33% and 11% respectively. This suggests there is scope for further improvement of digital infrastructure to the benefit of the Indian economy.

Composition of total connections by generation



Source: GSMA Intelligence

Figure 10

1.2 Mobile services are a key driver of social and economic development

The development of mobile services has brought an extensive range of benefits to both consumers and businesses in India. Mobile has the potential to make an even greater contribution with the growth of 3G and 4G mobile broadband, which could help India extend its 'information society'.[29]

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

Digital inclusion means that the benefits of Information and Communications Technology (ICT) should be available to all, regardless of location or socioeconomic status. Mobile services provide the most cost-effective way of achieving digital inclusion and, by facilitating the

29. An information society is a society where the creation, distribution, use, integration and manipulation of information is a significant economic, political, and cultural activity.

exchange of ideas and information, can support a move towards a knowledge-based economy.

The World Bank[30] has stated that the movement towards a knowledge-based economy should be the aim of all governments, as knowledge becomes increasingly crucial to preserving national competitiveness. It identifies four pillars of knowledge-based economies, one of which is information infrastructure, with technology such as mobile phones required to facilitate effective communication and the dissemination and processing of information.

2. Mobile services enhance productivity, innovation and social development

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

Mobile services also create opportunities for investment, innovation and employment in the mobile sector and in a variety of other jobs that form part of the mobile ecosystem, such as equipment providers, workers in the network engineering and maintenance industry, and providers of related business services. A GSMA report[31] found that the mobile ecosystem contributes directly to 2.2 million jobs in India and this figure rises to 4 million when considering jobs in other industries indirectly supported.

A recent report by the GSMA[32] investigating the gender differences in access to and usage of mobile finds that mobile phones offer great benefits to empower women. Results from interviews[33] conducted for the report include at least 68% of women reporting that they feel safer with a mobile phone, and at least 58% of women said they felt more autonomous and independent.

Mobile operators have partnered with bodies such as non-governmental organisations to help women overcome technical literacy issues:

- Airtel Money has partnered with Accion and Swadhaar, organisations with large microfinance client bases and expertise in training end users in finance and mobile money, to educate clients on how to manage their finances and use mobile money.

- Vodafone has partnered with the Digital Empowerment Foundation (DEF) to educate communities through information services and digital literacy. This is done through 20 Digital Community Information Resource Centres (dCIRCs) across nine states in India. The initiative focuses on women and aligns with the Digital India agenda. The dCIRCs will act as centres for knowledge sharing, skill building, English learning, information on government schemes and training for youth and women. Vodafone estimates that over two years, at least 40,000 women across the nine states will gain access to critical information and rights.

- Telenor (India) is piloting a combo-SIM plan product that aims to increase mobile ownership among rural women.[34] Two paired SIMs are sold together, with one of the SIMs used by a woman while the other is to be used by another household member. Benefits are provided to incentivise up-take, for example if one SIM is refilled then the other automatically receives an equivalent free refill. Five months after launch, Telenor reported that combo-SIM sales represented over 30% of total new subscribers.[35]

There have been many sector specific initiatives and applications launched in India and around the world that harness the potential of mobile to support social development, innovation and productivity. For example:

- In healthcare, a recent GSMA[36] report noted that Apollo Telemedicine Networking Foundation, a non-profit organisation, enabled 69,000 consultations to be carried out in Indian rural areas by linking patients with hospitals via a web-based telemedicine programme. In addition, mDhil provides health and wellness advisory in multiple Indian languages via online videos accessible through mobile device. mDhil videos reach over 100,000 views a day, more than 70% of which are accessed via mobile devices.[37]

30. World Bank (2009), The four pillars of a knowledge-based economy.
31. GSMA (2015), The Mobile Economy India 2015, available at: http://gsmamobileeconomy.com/india-new/.
32. GSMA (2015), Connected Women – Bridging the gender gap: Mobile access and usage in low- and middle-income countries.
33. 11,000 face-to-face interviews were conducted in eleven countries including India, values reported here represent the minimum value of the proportion of respondents agreeing with the statements in countries.
34. Initial research in the target area revealed that 76% of men, but only 29% of women, use mobile phones.
35. Both the Airtel and Telenor examples are projects funded by the GSMA Connected Women Innovation Fund.
36. GSMA (2013), The Mobile Economy India 2013, available at: http://www.gsmamobileeconomyindia.com/GSMA_Mobile_Economy_India_Report_2013.pdf.
37. More information available at: http://www.mdhil.com/about-us1/.

- To address women's safety concerns, FightBack enables users to instantly send an SOS alert via SMS and emails containing GPS coordinates and location maps to pre-selected contacts in an emergency. The app has had more than 100,000 downloads and won the TM Forum Digital Humanitarian Award in 2014.[38]

- A report by the GSMA estimated that mEducation could improve the affordability of education by 65%. For example, Zaya Labs develops apps and hardware designed for schools and students in low-income areas, with content including mathematics and science. Moreover, it supports in-school teachers through professional training and coaching.[39]

- Use of mAgriculture is estimated to raise farmers' profits by as much as 15%, while reducing consumer prices by as much as 5%. For example, Nano Ganesh allows farmers to use mobile phones to remotely operate irrigation pumps. This creates savings in electricity, water, fuel, time and labour. Nano Ganesh's user base has reached about 5,000 in the Maharashtra state and the project is now expanding into other Indian regions.[40]

- Vodafone partnered with the Cherie Blair Foundation and the Self Employed Women's Association (SEWA) to develop an app for rural female entrepreneurs called Rural Distribution Network (RUDI). The app helps women within the RUDI network to sell farm produce in their local markets and generate more business opportunities, while real time updates on price changes or market conditions reduces inefficiencies. Vodafone estimates that by 2015 25,000 RUDI women across 14 districts of Gujarat in more than 1,000 villages will use the app, thus indirectly reaching 2.5 million lives.[41]

- Selected mobile operators have recently been granted licences to set up payments banks, allowing them to provide banking services via mobile technology.[42] The GSMA estimates that only 2.4% of Indian adults currently have a mobile money account,[43] but that mobile financial services could serve up to 250 million people in India by 2020.[44] Examples of applications already available include mRupee, a pre-paid mobile phone-operated money transfer service allowing a customer to send money to a bank account anywhere in India. In addition, Pockets is a mobile-operated e-wallet launched by ICICI Bank. Users deposit money in the wallet from a bank account from which they can perform online transactions and transfers. Users can also add a zero-balance savings account to the wallet so they can earn interest.[45]

3. Mobile services promote long-run economic growth

A number of studies have already highlighted the economic growth potential of mobile. Table 1 summarises the impact of an increase in the penetration of mobile, internet and broadband services estimated in various studies using different levels of data. It is widely recognised that these services and technologies have a strong and positive effect on economic growth.

38. More information available at: http://www.fightbackmobile.com/.
39. More information available at: http://www.zaya.in/.
40. More information available at: http://www.nanoganesh.com/.
41. Operator data and http://timesofindia.indiatimes.com/tech/it-services/Rural-distribution-network-project-wins-140000-innovation-grant/articleshow/27689832.cms.
42. Reserve Bank of India (2015), Press release: RBI grants "in-principle" approval to 11 Applicants for Payments Banks, available at: https://www.rbi.org.in/Scripts/BS_PressReleaseDisplay.aspx?prid=34754.
43. GSMA (2015), The Mobile Economy India (2015).
44. GSMA (2013), The Mobile Economy India (2013)
45. More information available at: http://www.icicibank.com/aboutus/article.page?identifier=news-icicibanklaunchespocketsindiasfirstdigitalbankonamobilephone-20151002153927024.

Estimated economic impacts of changes in mobile, internet and broadband penetration

Study level of data	Technology	Penetration change	Impact on GDP growth rate
Developing countries	Mobile	1% increase	0.28 percentage point increase
Indian states	Mobile	10% increase	1.5 percentage point increase
Indian states	Broadband*	10% increase	0.31 percentage point increase
Indian states	Internet*	10% increase (in number of subscribers)	1.08 percentage point increase

Source: Deloitte analysis of developing countries based on a study of 40 economies over the period 1996-2011;[46] Qiang and Rossotto (2009);[47] ITU;[48]; ICRIER.[49]
**Internet refers to all forms of internet connection such as broadband and DSL.*

Table 1

The mobile sector also makes a large contribution to the Indian economy. Table 2 summarises the estimated contribution to Indian GDP made by the mobile sector, use of mobile technology, the wider telecommunications sector and the internet with the year for which these estimations were made.

Estimated contributions to the Indian economy for mobile, telecommunications and the internet

Source of contribution	Contribution to Indian GDP	Year
Direct and indirect impact from the mobile sector	6.1% (including 3.7% productivity increase in the whole economy)	2014
Mobile ecosystem	INR 14 lakh crore (US$ 230 billion)	2020
Telecommunications sector	3%	2012
Internet	3.2%	2013
Internet	4.6% (forecast)	2018

Source: GSMA;[50] TRAI;[51] BCG.[52]

Table 2

In addition, studies by ICRIER show how mobile in India can improve agricultural productivity through improving basic access to communications[53] and that developing the mobile sector will be important for India's SME sector,[54] which both the World Bank and the Indian government see as one of the economy's drivers of growth.[55]

46. For full details of the methodology, see http://www.gsma.com/publicpolicy/wp-content/uploads/2012/11/gsma-deloitte-impact-mobile-telephony-economic-growth.pdf.
47. Qiang, C. Z. W., Rossotto, C.M. (2009). Economic Impacts of Broadband, in Information and Communications for Development 2009: Extending Reach and Increasing Impact, World Bank, Washington D.C., 35-50.
48. ITU (2012), Impact of Broadband on the Economy.
49. Kathuria, and Kedia Jaju (2011), India: The Impact of Internet, available at: http://icrier.org/publications/reports/.
50. GSMA (2015), The Mobile Economy India 2015.
51. TRAI (2012), National Telecom Policy - 2012, available at: http://www.trai.gov.in/WriteReadData/userfiles/file/NTP%202012.pdf .
52. BCG (2015), India@Digital.Bharat.
53. Gandhi, Mittal and Tripathi (2009), The impact of mobiles on agricultural productivity, The Policy Paper Series Number 9, available at: https://www.vodafone.com/content/index/about/sustainability/research/impact_of_mobileondevelopmentinindia.html.
54. Kathuria and Uppal (2009), The impact of mobiles in the SME sector, The Policy Paper Series Number 9.
55. For World Bank, see: http://www.worldbank.org/en/news/feature/2010/03/10/small-and-medium-enterprises-indias-engines-of-growth; for Indian government refer to Twelfth Five Year Plan.

4. Mobile services support India's development objectives

Through these positive impacts, the mobile industry can support many of the Indian government's objectives:

- India's Twelfth Five Year Plan (2012-2017)[56] aims to boost economic growth of the country and develop its long term sustainability as well as ensure inclusive growth. Mobile is a key driver of growth and the relationship between mobile penetration and GDP growth is well established and widely recognised. Also, mobile is a useful platform for education, especially in developing countries, and for the access of information and services that empowers low income citizens.

- The government's Digital India programme,[57] which aims to provide digital services to every Indian citizen with the ultimate aim of ensuring digital empowerment of all, recognises the important role of mobile in achieving its ambitious goals. Increased penetration of mobile would aid the programme's objective of providing a mobile phone to enable participation in the digital space. In addition, mobile will play a key role in providing high speed internet to citizens. Mobile infrastructure will form a large part of the digital infrastructure that Digital India aims to provide as a utility to every citizen. Therefore, a large part of the scheme's success will depend on the investment environment for mobile operators at present and over the coming years. The aim of migrating government services on to digital platforms also has great benefits for reducing the administrative burden of public services and compliance on the economy. Mobile would offer a convenient and accessible medium to access government services and resources.

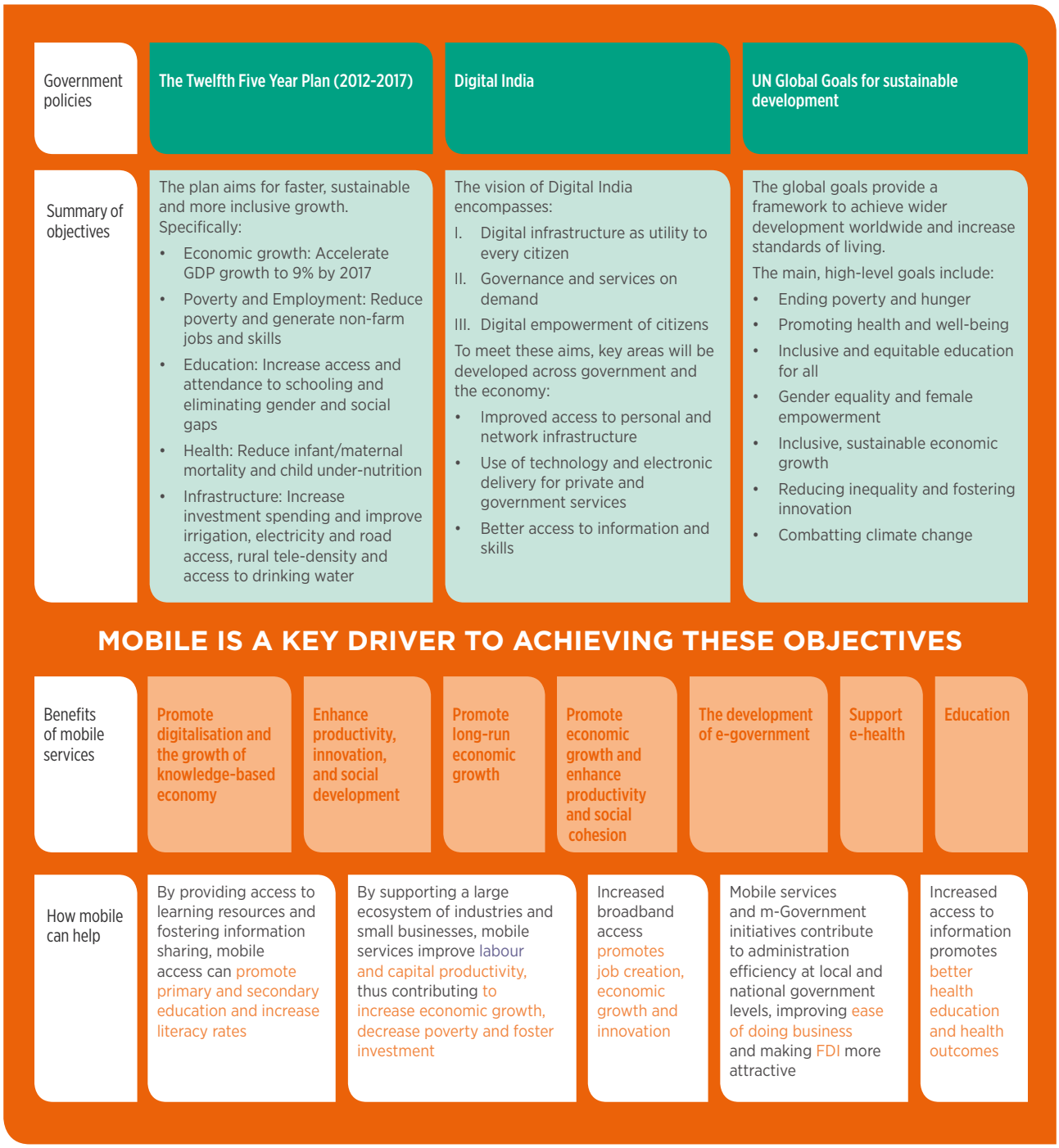
- The government's aim to create 100 Smart Cities will rely heavily on the use of mobile technology. Smart cities are dependent on effective use of machine-to-machine communication (M2M) and access to Cloud services which are delivered by mobile.[58]

- The government's Make in India programme aims to boost the country's manufacturing capabilities, requiring both investment and innovation. Mobile services will be important for facilitating business and investment and can also be an effective and accessible means for education, which is key to fostering innovation. Indian entrepreneurs also rely on mobile to help grow their businesses, so promoting growth in mobile may help bolster the start-up culture in India.

- The UN Global Goals for sustainable development[59] set out to end poverty and hunger, ensure inclusive and equitable economic growth and quality education, achieve economic and gender equality, improve well-being of people of all ages and promote sustainable development. The Global Goals include 17 objectives that were finalised and agreed upon in September 2015. They build on the UN Millennium Development Goals (MDGs) that expire at the end of 2015 with objectives to end extreme poverty, fight inequality and injustice and fix climate change.

56. Planning Commission Government of India (2013), Twelfth Five Year Plan (2012-2017) Volume 1, available at: http://planningcommission.gov.in/plans/planrel/12thplan/welcome.html.
57. Programme information available at: http://www.digitalindia.gov.in/.
58. Cloud services are those available via the Internet. Programme information available at: http://smartcities.gov.in/.
59. Global goal information available at: www.globalgoals.org.

The role of mobile in achieving national and international development objectives



Source: The Indian Government, the UN and Deloitte

Figure 11

1.3 Current gaps in digital inclusion

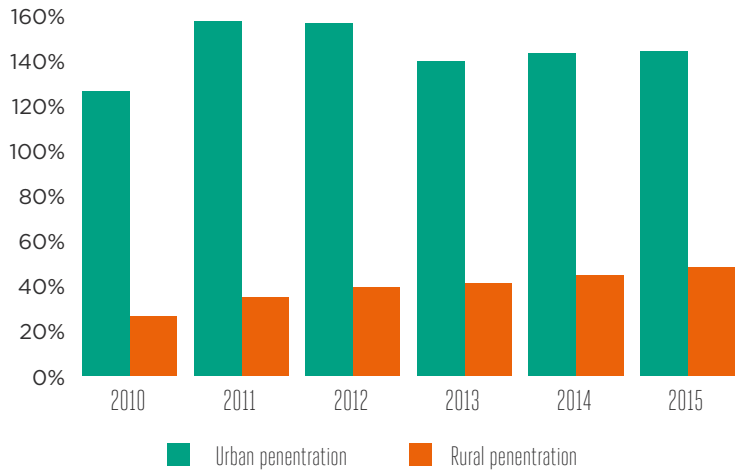
Mobile makes an important contribution to socioeconomic development in India and to the achievement of the government's objectives and initiatives. Despite the increased digital inclusion that mobile has enabled, gaps in access to and availability of mobile services, including mobile internet, remain.

Of the total Indian population, 62%, nearly 800 million people, do not have a mobile phone.[60]

This puts India above the world average of 50% of the total population remaining unconnected. There are also clear gender and rural-urban divides in India.

In 2015, the Indian population is estimated to be around 1.28 billion people with around 420 million people living in urban areas and 864 million people in rural regions.[61] Figure 12 shows how mobile ownership is higher in urban than in rural areas, with mobile penetration at 144% for 2015 compared to 48% in rural areas.[62]

Rural and urban mobile penetration[63]



Source: TRAI, Indian Telecom Services Performance Indicators, Quarterly 2010-2015

Figure 12

This rural-urban gap is exacerbated by a network infrastructure divide between rural and urban regions. Geographical factors,[64] high energy costs and low income levels often make it uneconomical to extend network coverage to rural areas.[65] Lower penetration in rural regions may reduce the economic and social benefits of digitalising the agricultural sector,[66] which is among the biggest sectors in India in terms of GDP.

According to a GSMA report,[67] there is also a large gender gap in the Indian mobile market, with unique subscriber penetration for women at 28% compared with 43% for men. The difference between these rates is larger than in other developing countries such as China, Indonesia and Turkey.

60. GSMA Intelligence.
61. Estimated from forecast of rural percentage of the total population based on World Bank WDI.
62. The latest figures from the TRAI for September 2015 estimate urban penetration to be 147% and rural penetration to be 48%. TRAI (2015), Highlights of Telecom Subscription Data as on 30th September 2015, available at: http://trai.gov.in/WriteReadData/PressRealease/Document/PR_No.65_TSD_Sep_15.pdf.
63. Penetration here refers to connections per capita rather than unique subscribers per capita, it is to be expected that penetration in terms of connections is higher than unique subscribers as unique subscribers own at least one connection and sometimes more when they have multiple SIM cards. The dip in urban subscribers from 2011 to 2013 is due to the mobile operators unsubscribing inactive users.
64. Rural areas are often characterised by mountainous regions and sparsely populated farmlands.
65. GSMA (2015), Rural coverage: strategies for sustainability, country case studies.
66. Gandhi, Mittal and Tripathi (2009), The impact of mobiles on agricultural productivity, The Policy Paper Series Number 9, outlines a number of impacts of mobile on agricultural productivity: easily accessible and customised content, mobility of usage, and convenience, time and travel savings.
67. GSMA (2015), Connected Women.

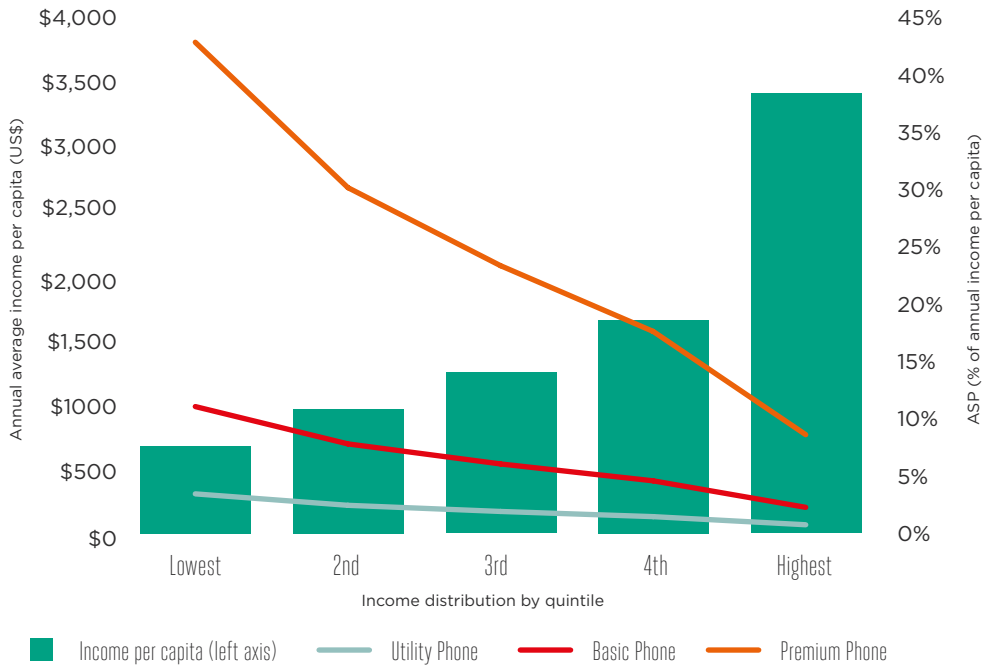
Affordability of mobile services for the poorest sectors of the population is a key issue in India.

While the mobile market is characterised by relatively low prices, the socioeconomic characteristics of the Indian population means affordability of services remains a key issue. India is a lower middle income country with GDP per capita at US$ 1,600 in 2014 and 22% of its population living below the national poverty line in 2011.[68] While price competition has resulted in relatively low prices and a significant proportion of the Indian population has become connected, there are still areas where incomes are very low and as such mobile services have remained unaffordable for many at the bottom of the pyramid.

A recent survey conducted by the GSMA[69] indicated that, of 14 barriers to mobile access and usage discussed with both men and women in India, handset cost and credit cost were ranked first and third respectively. For women, 50% agreed that handset cost was a barrier preventing them from owning and using a mobile phone, and 39% agreed that credit cost was a barrier. For men, these figures were 45% and 36% respectively. In addition, ownership of basic phones compared to more expensive types is high even relative to other developing countries,[70] further reflecting the barrier to owning a handset.

Figure 13 shows the affordability of different types of handsets for different levels of income in India. A utility phone costs the poorest 20% of the population on average 3.4% of their annual income, and this rises to 11% for a basic phone. Even the richest 20% are estimated to be required to spend on average 8.5% of their annual income on a smartphone. Increased excise duties on imported handsets in 2015 are estimated to increase handset prices by between 5% and 7%,[71] further exacerbating affordability issues.

Average selling price (ASP) of mobile phones as a share of annual income per capita across the income distribution



Source: Deloitte analysis using World Bank World Development Indicators and industry sources. The horizontal axis shows the income distribution for the poorest to the richest 20%. The bars indicate average annual income per capita for each group on the income distribution. The lines represent the average annual selling price of each type of mobile device as a percentage of average annual income per capita for each income group

Figure 13

68. World Bank World Development Indicators.
69. GSMA (2015), Connected Women.
70. Ibid.
71. http://timesofindia.indiatimes.com/tech/tech-news/Handset-makers-to-increase-prices-after-Budget-raises-excise-duty/articleshow/46428865.cmsrs.

The issue of affordability has a disproportionate impact on rural households. A study found that per capita incomes were on average 2.6 times higher in urban areas than in rural areas in 2011-12,[72] and evidence shows that low income households in rural areas are less likely to own a mobile phone than those in urban areas.[73] The local mobile ecosystem has come up with innovative ways of overcoming these affordability barriers, such as budget smartphones and SIM deals.

Spectrum availability creates barriers to mobile access, especially in rural areas.

Mobile coverage is available to over 90% of the population in India, and 3G coverage to 70% of the population. However, investment in mobile in India is made more complex by spectrum availability issues.[74] The large number of operators providing mobile services in a given area means the amount of spectrum allocated per operator is lower than in other countries, and more base stations must be installed to cover the same area and population. Not only does this increase network costs, but it creates further constraints when accounting for land acquisition, right of way regulations and other municipal approvals. Mobile operators indicated that these factors place a large burden on their ability to expand coverage and that the TRAI has identified that they must be addressed in order to increase the reach of broadband, particularly mobile broadband, to achieve greater digital connectivity.[75]

As a result of these issues, which are recognised by the regulator and government,[76] operators are incentivised to prioritise investment in urban and more congested areas rather than rural rollout. To help operators overcome some of these challenges, spectrum sharing and spectrum trading has recently been approved by the government.[77] In addition, a number of studies have shown how the Indian mobile market and specifically operators have developed solutions to overcome these challenges. Such examples include cost minimisation[78] and transformation of the tower industry, which has been largely driven by operators.[79]

Further, basic infrastructure is a challenge in India. 79% of the Indian population had access to electricity in 2012. For the rural population this was lower, at 70%. This compares to the world averages of 85% and 72% for total and rural access to electricity respectively.[80] Lack of access to electricity places a natural limit on the level of penetration and connectivity that can be reached and tend to limit the spread of mobile in rural areas.

Availability of local content and digital literacy remain a barrier for many Indians.

There could be a lack of content and relevance to Indians' everyday lives that may also be preventing further increase in mobile penetration.[81] India is a country with many languages so a lack of content that is not in a specific local language may deter many from using mobile technology. In addition, those who suffer from low levels of digital literacy are also prevented from accessing mobile. Only 24% of women and 39% of men stated that they could use mobile internet without any help.[82]

72. Dholakia, Pandya and Pateriya (2014), Urban-Rural Income Differential in Major States: Contribution of Structural Factors, Indian Institute of Management working paper, available at: http://www.iimahd.ernet.in/assets/snippets/workingpaperpdf/18126171002014-02-07.pdf.
73. Note that in a given income quintile the absolute incomes of urban and rural households are not necessarily the same, they just occupy the same relative position in each area.
74. Kumar (2009), A policy overview, The Policy Paper Series, Number 9.
75. TRAI (2015), Delivering Broadband Quickly: What do we need to do?, available at: http://www.trai.gov.in/WriteReadData/Recommendation/Documents/Broadband=17.04.2015.pdf.
76. TRAI (2008), Measures to Improve Telecom Penetration in Rural India – The next 100 million subscribers; NITI Aayog (2015), Infrastructure: Powering Growth through Connectivity.
77. See the press release dated 12 August 2015: http://pib.nic.in/newsite/printrelease.aspx?relid=124945.
78. Bain & Company (2011), How global telcos can profit from India's wireless experience.
79. Deloitte (2015), Indian Tower Industry: The Future Is Data, available at: https://www2.deloitte.com/content/dam/Deloitte/in/Documents/technology-media-telecommunications/in-tmt-indian-tower-industry-noexp.pdf.
80. World Bank, World Development Indicators.
81. Grameen Foundation (2014), Women & Usability of Mobile Financial Services in India.
82. GSMA (2015), Connected Women.

1.4 Assessing the impact of taxation on digital inclusion in India

While the Indian government's strategies are important to improving the state of the economy and digital inclusion in India, the issue of mobile-specific taxation has not been addressed. Previous GSMA/Deloitte studies on mobile taxation[83] in other countries suggest that increased taxation may negatively impact mobile penetration, as poorer segments of the population may be priced out of the market. Promoting greater penetration of mobile services would have positive impacts on the wider economy: increased mobile penetration and data usage has been demonstrated to have positive effects on economies and the growth rate of GDP per capita.

The rest of this report assesses how mobile taxation impacts on digital inclusion and how addressing mobile-specific taxation could complement the government's development goals. The analysis utilises an economic model of the Indian mobile sector and economy to examine a number of options for the government to transition to a tax structure where mobile is taxed equally to other goods, in a way that promotes economic growth and protects the government's tax revenue position in the medium term.

- Section 2 describes the taxes and fees levied on the mobile sector in India, the implications of these taxes for the mobile sector and the wider economy, and discusses the economic and regulatory environment in India. It also compares the taxes levied in India with international benchmarks and with best practice on taxation principles as recommended by leading international organisations.

- Section 3 considers effective alternatives for rebalancing taxes and fees on the mobile sector. These policies can support the Indian government's ICT goals, while increasing economic growth and productivity.

- Section 4 concludes, illustrating the contribution to fiscal stability of the policies presented in Section 3 and presents guidelines to align mobile taxation to standard goods taxation.

An Appendix describes the economic model of the Indian mobile sector and economy that has been used in the analysis to estimate the impacts of rebalancing mobile sector taxes and fees.

83. These are available at: http://www.gsma.com/publicpolicy/tax/research-and-resources.

Total tax and fee payments made by Indian mobile operators and consumers in 2014 amounted to INR 57,000 crore, 31% of 2014 market revenues

2. Taxation on the mobile sector in India

The Indian mobile sector is subject to a number of taxes and fees levied both on operators and consumers. The extent to which these charges ultimately fall on operators or consumers depends on the type of tax and market conditions. Some taxes and fees may be absorbed by operators in the form of lower profits, whilst others may be passed through to consumers through retail prices, or there may be a combination of the two.

It is estimated that total tax and fee payments made by Indian mobile operators and consumers amounted to US$ 9.3 billion in 2014, approximately INR 57,000 crore. This equals 31% of market revenues in 2014, when excluding spectrum auction payments.

This section reviews the taxes and fees applied to mobile consumers and operators in India, focusing on those that are mobile-specific, that is, those which do not apply to other goods and services in the economy, or place a high burden on the mobile sector. It also compares the mobile taxation system with similar countries. Given the complexity of the Indian tax system and the regional differences, the review below focusses on the taxes and fees on consumers and mobile operators that are levied nationally or at least with some consistency across states.

2.1 Taxes on mobile consumers in India[84]

Consumer taxes in India apply to devices, to usage of services and to SIM cards.

Consumer taxes on mobile devices and services in India

Consumer taxes		
Payment base	**Type**	**Tax rate**
Mobile services including airtime vouchers, SIM card activation, calls, SMS and mobile broadband	Service tax	14%
	Swachh Bharat cess	0.5%
Devices	VAT/CST	Varies by state 0%-15%
	Customs duty	Varies by product
	Entry tax	Varies by state

Source: Mobile operator data

Table 3

84. Where figures have been converted from INR to US$ or vice versa the exchange rate from the World Bank was used. The 2014 exchange rate from here was INR 61 per US$ for 2014 which was used to convert the tax payments from INR into US$.

Taxes on mobile services

Mobile services including airtime vouchers, activation of SIM cards, calls, SMS and mobile broadband are subject to the Service tax, set at 14%. This rate of 14% has been in effect since 1 June 2015, before which the effective rate was 12.36%.[85]

The Service tax is the largest tax payment for the mobile sector. In addition to the Service tax, the Swachh Bharat cess is levied on all services at a rate of 0.5%. This tax was introduced in November 2015.[86]

Taxes on devices

Mobile devices are subject to a number of standard sales taxes for goods which are levied at the national or regional level. In addition to the taxes levied on the sale of handsets to consumers, manufacturers of handsets must pay excise duty of 12.5%.

- Value Added Tax (VAT) and Central Sales Tax (CST): VAT varies among the states from 0% to 15%, and the states collect and keep the tax revenue. CST is imposed on goods that have been sold and moved between states, and the movement of goods not arising from sale is not taxed. CST is levied at the same rate as the appropriate level of VAT of the selling state. Although CST is a central tax levied by the national government, the revenue goes to the government of the state of origin of the goods.

- Customs Duty: Customs duty is applicable on import of mobile handsets into India. The average rate of customs duty on mobile phones is around 17%.[87]

- Entry Tax: Entry tax is levied by states on the entry of mobile devices.[88]

85. Note that for modelling purposes it has been assumed that in the base case the service tax has not been changed from 12.36%.
86. This tax has not been included in the modelling in section 3 because the most recent available data refers to 2014, before the introduction of the tax.
87. Industry sources.
88. KPMG (2012), India Tax Profile.

2.2 Taxes and fees on mobile operators in India

Mobile operators in India are subject to general taxes such as the corporate tax as well as mobile-specific fees. Moreover, operators may subsidise part of the taxes that are applied to consumers in order to improve affordability and expand market demand. The taxes and fees discussed and analysed here do not include payments towards tower installation, right of way charges and other municipal costs which are themselves large liabilities for operators.

Taxes and fees levied on mobile operators in India

Operator taxes		
Payment base	**Type**	**Tax rate**
Imported network equipment, SIM cards and vouchers	VAT/CST	Varies by state 0%-15%
	Customs duty	Varies by product
	Entry tax	Varies state
Profits	Corporate tax	34.61%
Dividends	Dividend distribution tax	20.36%
Regulatory fees levied on Adjusted Gross Revenue	★ Licence fee	8% (including 5% for USOF)
	★ Spectrum usage charges	3%-8% for spectrum bought before February 2014, 5% after
	★ Microwave access fee	0.15%-0.8%

★ Mobile-specific tax/fee

Source: Mobile operator data

Table 4

Taxes on network equipment, SIM cards and vouchers

Similarly to mobile devices, the purchase of goods such as network equipment, SIM cards and vouchers is subject to VAT or CST, customs duty and entry tax depending on the movement of goods between the states. The customs duty on imported network equipment depends on the type of equipment, ranging from 17% to 30%. The customs duty on Long-Term Evolution (LTE) equipment, for example, is 30%.[89]

89. Mobile operator data.

Corporate tax

Corporate tax is levied at an effective rate of 34.61% of profit for companies with a total income that is greater than INR 100 million (approximately US$ 1.6 million). It includes a 12% surcharge as well as a 2% education cess and a 1% secondary and higher education cess.[90] The effective rate has increased from 33.99% in 2014 due to the surcharge being raised from 10% to 12%. In his budget speech the finance minister has committed to reducing the corporate tax from 30% to 25% over the next four years as well as removing exemptions, starting from financial year 2016/17.[91]

Dividend distribution tax

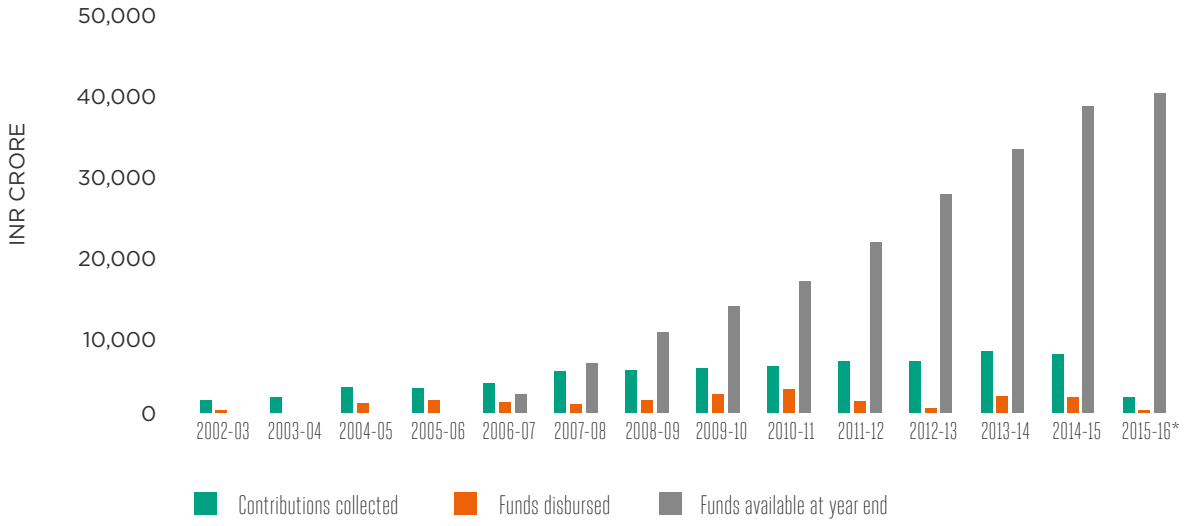
All dividends paid by operators are subject to a distribution tax, the effective rate of which is 20.36%.[92] This includes the application of a surcharge and education cesses, similar to corporate tax. Previous to 2015, the effective rate was 16.995% but changes to grossing up requirements for application of the constituent charges raised the effective rate.

Regulatory fees

Indian mobile operators are subject to two types of regulatory fees, a licence fee and spectrum usage charges. Both are calculated on Adjusted Gross Revenue (AGR), which represents net revenue after allowing permissible deductions from gross revenue[93] based on definitions issued by the Indian authorities.[94]

The licence fee is charged at 8% of AGR, and this rate has been in place since April 2013. The previous rates varied from 6%-10% based on the circle which the licence covers.[95] The licence fee includes a contribution to the Universal Service Obligation Fund (USOF) levied at 5%.[96] The GSMA has analysed similar funds in a number of countries including India and questioned their effectiveness.[97] The TRAI has noted that since 2011, the utilisation rate ranges from 9%-27%.[98] Further, Figure 14 shows the amounts in INR crore of the funds contributed, utilised and the final fund balance since its implementation in 2002. As of September 2015 the balance of the fund, or the funds unutilised, was nearly INR 41,000 crore, approximately 67% of total net contributions.[99]

USOF receipts, disbursements and total balance



*Source: Department of Telecommunications[100] and GSMA analysis. *Up to end Q1.*

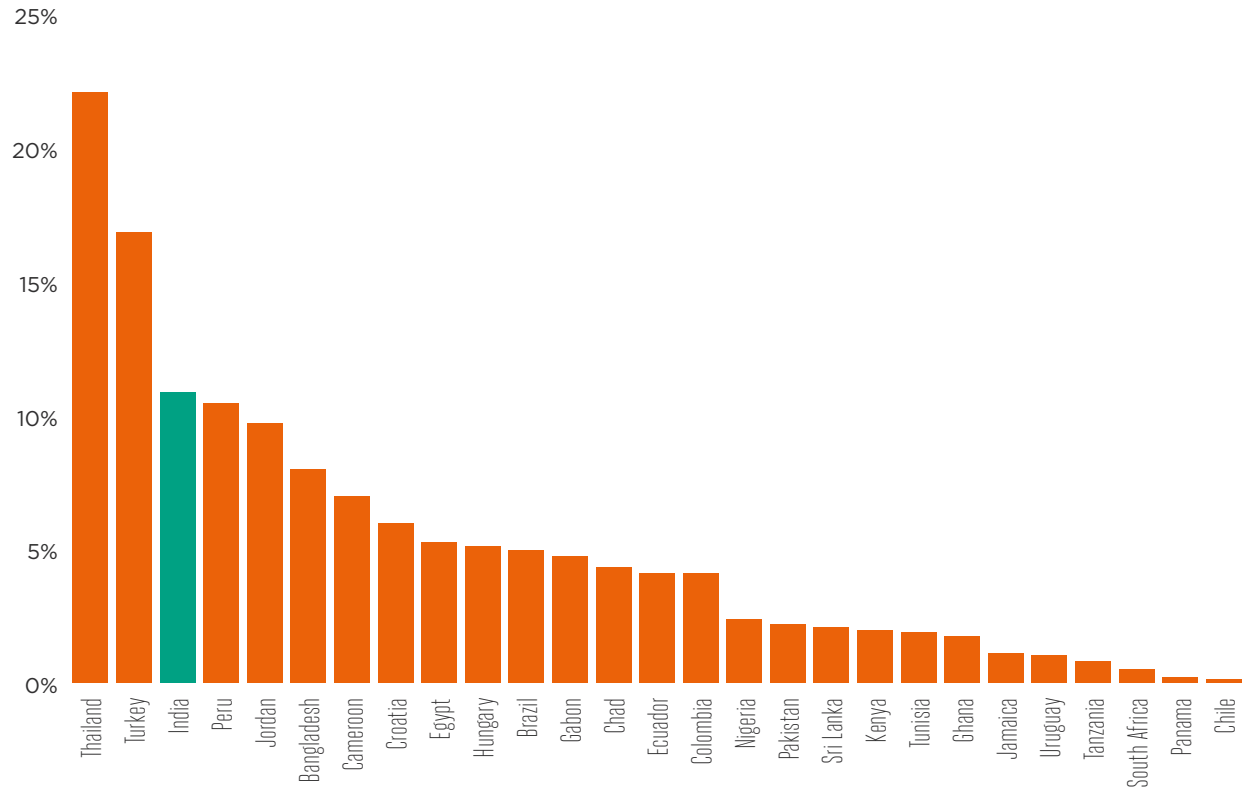
Figure 14

90. These cesses are additional levies on income (corporate and individual) implemented so that the government can fulfil its commitment to provide and finance education services.
91. http://www.ey.com/IN/en/Newsroom/News-releases/EY-budget-2015-reduction-in-corporate-tax-rates-to-ultimately-usher-in-job-opportunities.
92. Deloitte (2015), India Budget 2015, available at: https://www2.deloitte.com/content/dam/Deloitte/in/Documents/tax/in-tax-indiabudget2015-international-tax-alert-noexp.pdf.
93. TRAI (2015), Recommendations on Definition of AGR for the Reckoning of Licence Fee and Spectrum Usage Charges, paragraph 2.12, available at: http://www.trai.gov.in/WriteReadData/Recommendation/Documents/Reco-AGR-Final-06.01.2015.pdf.
94. The definition of AGR has been under challenge since 2003.
95. Ibid, table 2.1 and industry sources.
96. Note that this does not mean 5% of the licence fee is a contribution to the USOF, rather, five percentage points of the 8% is the contribution to the USOF and the remaining three percentage points is the remainder of the licence fee.
97. GSMA (2013), Survey of Universal Service Funds: Key Findings (April 2013), available at: http://www.gsma.com/publicpolicy/wp-content/uploads/2013/04/GSMA-USF-Key-findings-final.pdf.
98. TRAI (2015), Recommendations on Definition of AGR for the Reckoning of Licence Fee and Spectrum Usage Charges, paragraph 2.44. The utilisation rate is defined as the funds utilised in a year as a percentage of the contributions received in the same year.
99. Total net contributions are the total of contributions received since 2002 minus reimbursements which took place until 2006.
100. The figures are available at: http://usof.gov.in/usof-cms/usof-fund-status-table.jsp. Funds available at year end were not positive until 2006-07 due to reimbursements.

The spectrum usage charges are levied at various rates between 3%-8%[101] of AGR depending on the spectrum frequency band for which access was granted. The average rate for operators in 2014 was estimated to be around 5.6%, although this also included microwave access and backhaul fees, which are allocated administratively with AGR based charges. However, a number of changes were introduced by the government to the spectrum usage charges[102] such that any future spectrum usage charges on spectrum auctioned after February 2014 would be levied at a flat rate of 5%. Any spectrum auctioned before this date would still be charged at the old rates.[103]

These fees create large liabilities for mobile operators. In 2014, it is estimated that operators paid US$ 3.3 billion collectively for the licence and spectrum usage charges, equivalent to INR 20,000 crore.[104] This represents 35% of total tax payments paid by operators and consumers, and 11% of total mobile revenue in 2014.[105] Analysis conducted by GSMA and Deloitte indicates that, by international standards, regulatory fees in terms of revenue are higher than in other South Asian countries such as Bangladesh, Pakistan and Sri Lanka.

Regulatory fees as a percentage of revenue[106]



Source: Deloitte analysis based on Indian operator data for 2014 and GSMA/Deloitte (2015): "Digital inclusion and mobile sector taxation" which uses 2013 data

Figure 15

101. Ibid, table 2.2.
102. Press Information Bureau Government of India (2014), Spectrum Usage Charges, available at: http://pib.nic.in/newsite/PrintRelease.aspx?relid=103960.
103. For spectrum that was allocated administratively Spectrum Usage Charges are levied at 3%-8% of AGR, whereas for spectrum auctioned after 2014 the levy is 5% of AGR. To find the overall rate applied to AGR the weighted average based on the spectrum access held is calculated.
104. Based on mobile operator data.
105. Based on mobile operator data, GSMA Intelligence and Deloitte analysis. This metric measures total regulatory payments (based on operator data) as a percentage of total revenue (from GSMA Intelligence). This is different from the sum of the fee rates as the regulatory fees are levied on AGR which is less than total revenue according to GSMA Intelligence.
106. For countries for which data was available. Revenues refer to total market revenues from GSMA Intelligence. Total market revenues are the sum of total operator revenues for the period including both recurring and non-recurring revenue. This data is originally taken from operator financial reports and is modelled by GSMA Intelligence where not available.

From an economic standpoint, taxes and other charges levied on revenue, as opposed to profits, have a number of negative impacts:

- They may discourage investment by directly reducing the net profitability of all operators independently of their original level of gross profitability. So in a given year, these taxes have the same effect on operators with positive profits and operators with no profits due to recent network investment. This analysis does not take account the high number of operators in India relative to other markets which may exacerbate this reduction in incentives to invest.

- Unlike ad valorem taxes on sales, which are collected from consumers on behalf of the government, these are fees levied on mobile operators directly. As such, these fees cannot be itemised in prices or receipts and are therefore not transparent to consumers.

- Revenue taxes may generate allocative inefficiencies. Imposing taxation on firms' revenues leads to lower market volumes and higher prices than a revenue-equivalent[107] tax on profits.

Because of these effects, revenue taxes are not standard practice in developed countries such as in the EU and the US. For example, Ofcom, the communications regulator in the UK, charges a fee of 0.0861% on turnover and only levies spectrum fees on spectrum that has not been auctioned or which has been converted to a perpetual licence once its initial fixed term has expired.[108]

Spectrum auction payments

While mobile operators pay annual spectrum usage charges as discussed above, they also incur large costs when they purchase the spectrum, which in recent years has occurred through auctions. According to the TRAI, the total bid amount across the five spectrum auctions between 2010 and 2014 was INR 1.5 lakh crore, or approximately US$ 25 billion.[109] This adds to the auction that ended in March 2015, which resulted in a record INR 1.1 lakh crore being bid, approximately US$ 18 billion.[110] The total spent over period from 2010 to 2015 was approximately INR 2.6 lakh crore or US$ 43 billion, representing 26% of operator revenues[111] over the same time. While not the entire bid amount is payable up front,[112] operators note that these expenses may result in constraints on their ability to reinvest cash into their networks.

Taking these payments into account means that the total burden of payments to the government, both recurring and non-recurring, on the mobile sector is much higher than 31%.

Tax disputes between mobile operators and the government

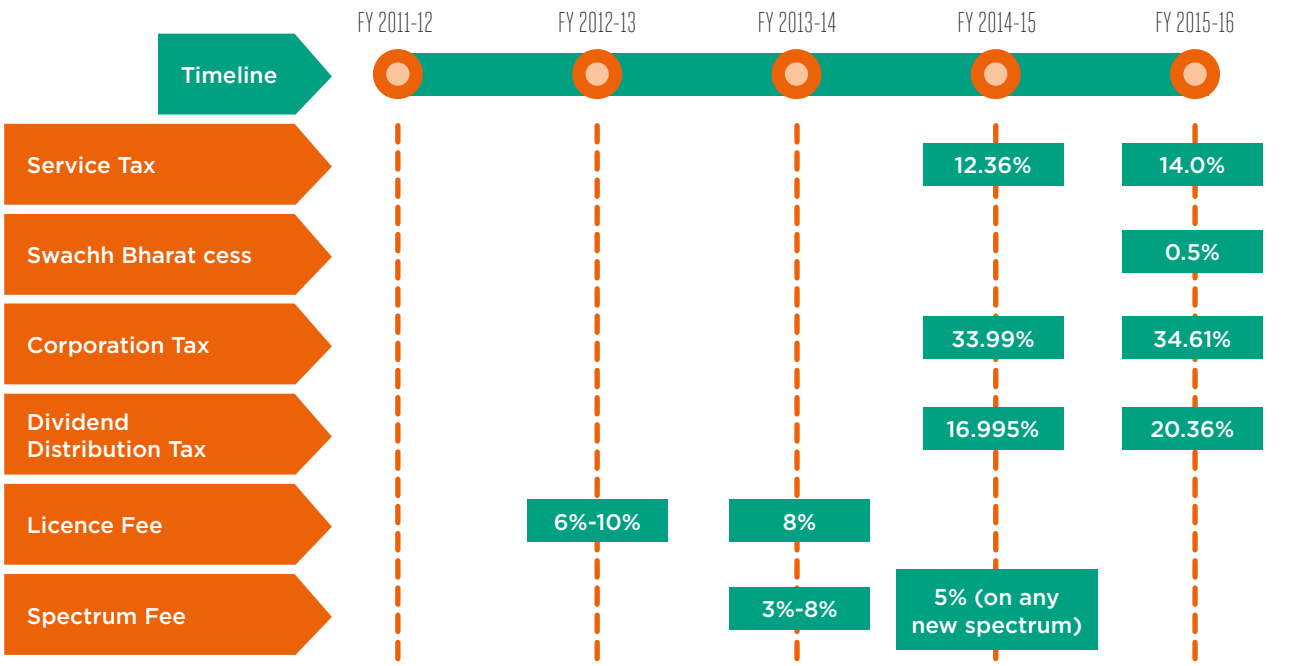
There have been disputes between mobile operators and the government over aspects of tax or regulatory fee payments. In relation to this, the TRAI notes that an area for concern is the calculation of AGR for spectrum and licence fee purposes.[113] Operators noted that the levy of entertainment tax in some states has been challenged in court. Combined with other disputes, including those over the 2012 spectrum auction, according to market analysts these factors have combined to increase uncertainty and investment risk in the countries, with potential negative effects on investment.

107. Two different taxation policies are revenue-equivalent when they raise the same amount of tax revenues for the government.
108. Ofcom (26 March 2015), Ofcom's Tariff Tables 2015/16, available at: http://www.ofcom.org.uk/content/about/annual-reports-plans/tariff-tables/Tariff_Tables_2015_16.pdf.
109. More information available at: http://www.trai.gov.in/WriteReadData/Recommendation/Documents/Reco-AGR-Final-06.01.2015.pdf
110. Provisional spectrum auction results available at: http://www.dot.gov.in/sites/default/files/u8/Provisional%20Auction%20results%20and%20court%20order.pdf
111. US$ values are converted based on the 2014 exchange rate.
112. Based on operator data 25% is payable up front.
113. TRAI (2014), Consultation Paper on Definition of AGR for the Reckoning of Licence Fee and Spectrum Usage Charges.

2.3 Tax reform in India

Taxes and fees levied on the mobile sector have recently been subject to frequent changes as shown by the timeline in Figure 16.

Timeline of tax and fee changes



Source: Indian tax legislation and Deloitte analysis

Figure 16

In addition to changes in general taxation, and licence and spectrum fees in the past 5 years, the government has most recently introduced a 'Swachh Bharat' (Clean India) cess in order to fund urban rejuvenation. An additional 0.5% charge is now levied on all services, including telecommunications services.[114]

Going forwards, VAT, CST and the Service Tax are expected to be replaced by GST by 1 April 2016.[115] A rate has not been set yet, but industry sources expect it to range between 18%-20%. This reform aims to simplify the taxation of goods and services and reduce tax compliance costs. Malaysia has recently introduced a GST as part of a broader relief package for businesses. The current rate is 6%,[116] and it has been seen as a broadly positive change that has improved transparency in pricing of goods and services.

Interviews with mobile operators as part of this project suggested that frequent changes to the taxes and fees levied on the mobile sector, as well as the uncertainty around each change from proposal to implementation, discourage greater investment in the sector.

114. Press Information Bureau, Government of India, Ministry of Finance (2015), Government decides to impose Swachh Bharat Cess.
115. Mobile operator data.
116. Laws of Malaysia, Act 762, Goods and Services Tax Act 2014, available at: http://www.federalgazette.agc.gov.my/outputaktap/20140619_762_BI_ACT%20762.pdf

32

2.4 Best practice in taxation policy

An effective tax policy should balance a number of potentially competing factors. These include the government's revenue needs, support to key sectors and the practicalities of enforcement and collection, as well as the desire to minimise any detrimental impact on the wider economy. Consequently, tax policy should aim to strike a balance between the theoretically correct response and the one that recognises the practicalities of taxation in a market.[117]

There are a number of principles that are generally recognised as contributing to an effective tax system, as outlined by international organisations such as the International Monetary Fund (IMF) and ITU.[118] These principles are intended to minimise the inefficiencies associated with taxation and regulatory fees and the distortive impacts that they may have on the wider economy. If applied in India, these principles have the potential to promote mobile penetration and expand investment in the mobile sector, promoting economic growth and increased tax revenues for the government.

Alignment of taxes and regulatory fees on the mobile sector in India with the principles of taxation

	Broad-based	Accounts for externalities	Simple and enforceable	Incentives for competition and investment	Equitable
VAT/CST	✓	✗	✓	✓	✗
Customs duty	✓	✗	✗	✗	✗
Entry tax	✗	✗	✗	✗	✗
Service tax	✓	✗	✓	✓	✗
Corporate tax	✓	✗	✓	✓	✓
Dividend distribution tax	✓	✗	✓	✓	✓
Licence fee	✗	✗	✗	✗	✓
Spectrum usage charges	✗	✗	✗	✗	✓

Source: Deloitte analysis

Table 5

117. IMF (2001), Tax policy for developing countries.
118. See IMF (2001), Tax policy for developing countries, and ITU (2014), ICT Regulation Toolkit, http://www.ictregulationtoolkit.org/5.5.

As shown in the table above, taxes and fees levied on the mobile sector in India do not appear to fully align with these key principles of efficient taxation, which has ramifications for the development of the sector and the wider economy. In particular, the revenue-based licence fee and spectrum usage charges have the highest negative impact and lack of alignment with the established principles of taxation:

- Mobile-specific taxes and regulatory fees may increase the affordability barrier to access and hit the poorest consumers: High regulatory fees are potentially passed through to mobile consumers in the form of higher prices. This may distort consumer purchasing decisions. By potentially increasing the final price of mobile services, these create a barrier to affordability and to mobile access. This barrier is greater for low income consumers and therefore risks excluding them from the benefits of mobile and the internet.

- Regulatory fees could distort operators' investment decisions: Regulatory fees represent a large part of operators' tax and fee payments and are a key determinant of investment in the sector. Excessive spectrum payments and other regulatory fees could negatively affect the roll-out of network infrastructure,[119] for instance through reduced incentives to invest due to lower returns on the capital employed and increased uncertainty on future tax liability. This is also likely to impact investment decisions and create distortions across industries and within the ICT sector due to higher costs for mobile operators, further driving (local and foreign) investment away from mobile.

- Fees that are subject to frequent changes increase uncertainty and discourage investment both domestically and internationally: When a licence or spectrum band is awarded, the final price paid reflects operators' expectations on future cash flows, including tax liabilities, at the time the investment decision is made. If new taxes are introduced or increased after the auction or during the duration of a licence, this negatively impacts the operators' business case and can have adverse effects on consumers if some operators were to hold off investment due to taxation uncertainty. In India, operators have pledged large amounts of money in spectrum auctions, and recently there have occurred material changes to the tax code and to mobile sector specific fees that may adversely impact the outcome of these investments for operators.

- Efficient, equitable and stable pricing of spectrum and licence fees has the potential to support government revenues: While ensuring the development of new technologies and encouraging mobile operators to invest in new spectrum and network roll-out. Appropriate pricing of spectrum appears a key issue if India is to embrace further uptake of mobile broadband services.

The potential inefficiencies created by these various mobile taxation issues may not only limit the development of the mobile sector, but also hinder economic growth and the realisation of the positive externalities created by mobile services. In the medium term, the Indian government has the potential to generate more tax revenue by complementing the wider economic reforms that are currently being implemented with a transition towards a more equitable and balanced taxation structure that treats mobile on similar terms to other industries. The next page discusses the economic theory of an optimal level of taxation.

119. Gorecki, Hennessy, Lyons (2011), How impact fees and local planning regulation can influence deployment of telecoms infrastructure.

The Laffer curve

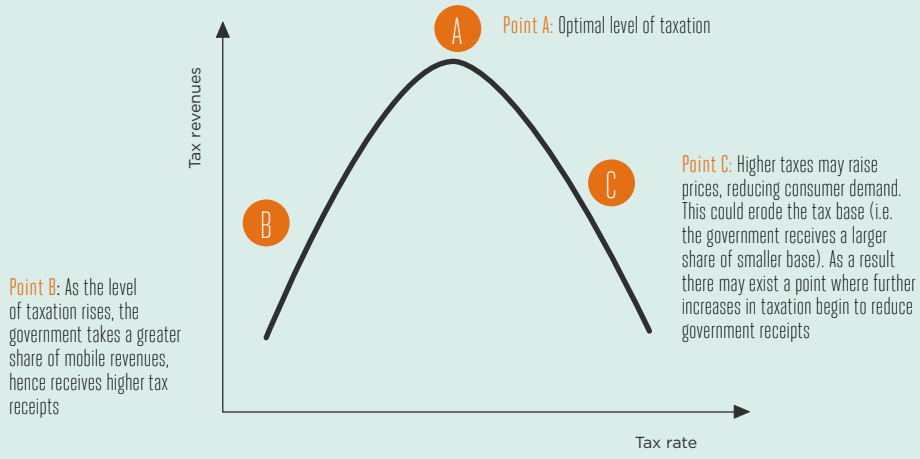
Economic theory suggests that there may exist an optimal level of taxation which will maximise government revenues (shown as point A below).

The theory suggests that

- At high levels of taxation (shown as point C below), it will be beneficial for government policy makers to reduce the burden of taxation in order to widen the tax base which will in turn increase government revenue; and
- At low levels of taxation (shown as point B below), demand for taxed goods and services may not be substantially affected by the change in price. At high levels of taxation however, buyers and sellers may substitute away from a given good or service.

This theory is widely known as the "Laffer curve", as shown in the figure below.

It is challenging to empirically estimate the optimal taxation point and the current position of the tax rate in a particular, i.e. whether India is currently at point A, B or C, and these exercises are beyond the scope of this report.



3. Economic impacts of reforming mobile taxation in India

This section discusses the impacts of reforming taxation through two policy changes, using a combination of qualitative evidence and a quantitative model of the mobile sector and its impact on the wider economy in India.

Following discussions with Indian operators and a discussion on the alignment towards international best practice of taxation, two model scenarios have been estimated. The first investigates a reduction in the licence fee and the second a reduction in the spectrum usage charges.

The quantitative impacts for the following alternatives of reform are estimated:

- Reduction in the licence fee from 8% to 6%, aligning with what was recently recommended by the TRAI.[120]
- Reduction in the spectrum usage charge from a variable rate between 3%-8% to a flat 1%.

3.1 How mobile taxation in India impacts the economy

By reforming mobile taxation and transitioning to a more balanced taxation structure where mobile is taxed at the same rate as standard goods and services, the Government of India can promote the agenda of the Digital India initiative and move towards an inclusive, knowledge-based competitive economy, while potentially benefitting from increased tax revenues in the medium term as a result of GDP growth.

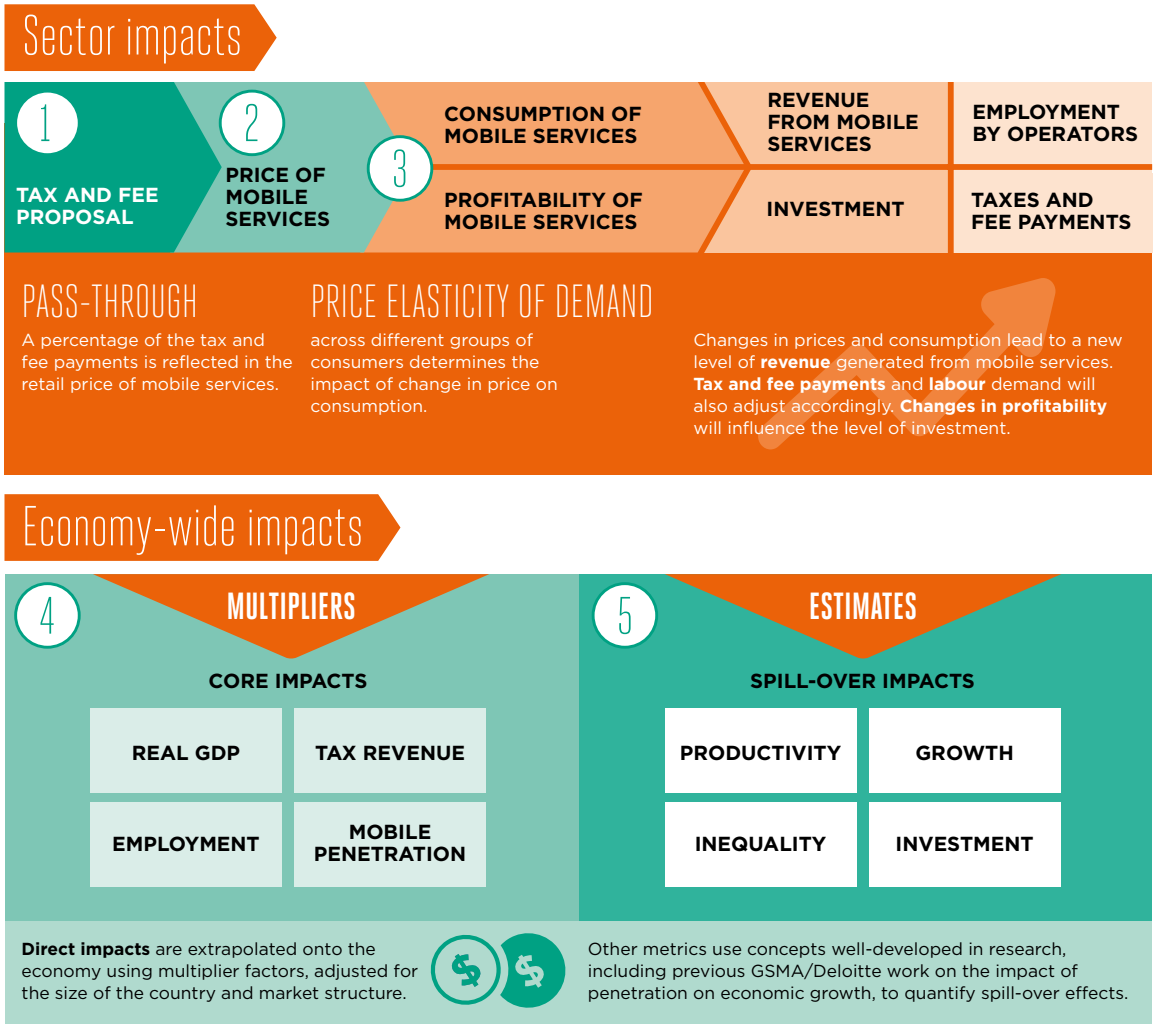
To estimate the quantitative impacts of reform, an economic model of the Indian economy and mobile sector was constructed, using sector-specific data from the GSMA and mobile operators in India, together with macroeconomic data from the IMF and the World Bank. This allows the model to represent both the mobile sector and its impacts on the economy as a whole. This approach also enables comparison between a base case that uses current projections for the sector and several tax and fee reduction scenarios; other potential impacts on the sector that may arise from the government's current reform programme 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.

120. TRAI (2015), Recommendations on Definition of AGR for the Reckoning of Licence Fee and Spectrum Usage Charges, paragraph 2.46.

The policy reform scenarios were estimated separately and their interactions are not considered quantitatively. In practice, if all reforms considered were introduced simultaneously, the total impacts estimated in this report would be an overstatement, due to overlapping effects of some of the reforms.

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

Schematics for modelling the economic impacts of mobile taxation changes



Source: Deloitte analysis

Figure 17

The modelling involves several steps, which encompass the impacts outlined in the figure above:

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

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

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

4 These changes to the mobile sector lead to direct impacts on value-added and employment and, through spill over effects, on the wider economy, in particular on real GDP, tax revenues, employment and investment.

5 An elasticity determines the impact of a change in mobile penetration on GDP growth. Multipliers are assumed which allow changes in mobile sector employment to affect the wider Indian labour force. Productivity is calculated using the total factor productivity impact, described in the appendix.

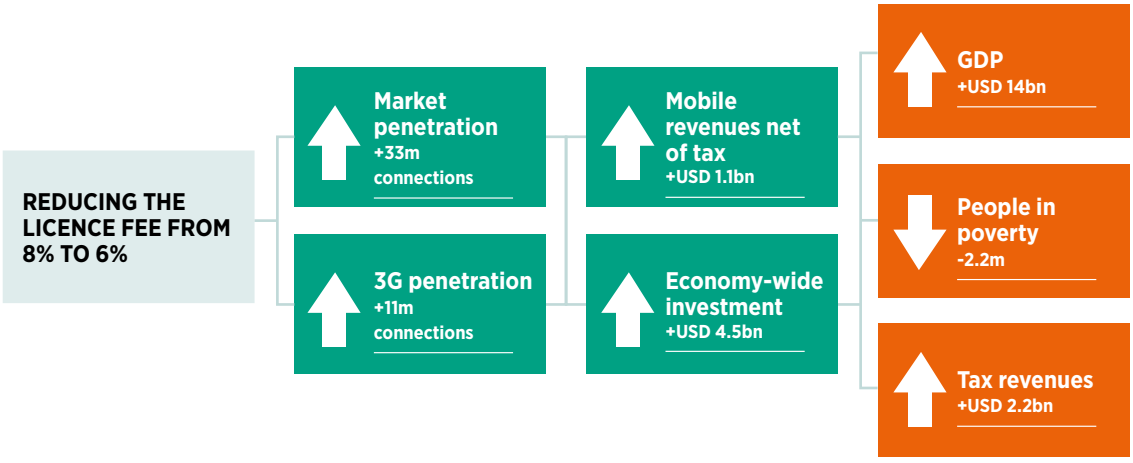
The analysis considers the impacts relative to the current situation in order to simplify comparison to the base case.

3.2 Reduction in licence fee from 8% of AGR to 6%

Regulatory fees, the majority of which is the licence fee, represent a large burden on mobile operators.

Figure 18 presents the estimated impacts in 2020 compared to the base case of reducing the licence fee from 8% to 6%. The TRAI suggested this change in a recent recommendation,[121] which they indicate could be achieved by reducing the amount of USOF contribution from 5% to 3% in a phased reduction.

Potential economic impact in 2020, relative to the base case scenario, of reducing the licence fee payable by operators



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

Figure 18

121. TRAI (2015), Recommendations on Definition of AGR for the Reckoning of Licence Fee and Spectrum Usage Charges, paragraph 2.46.

- In 2020, increased demand resulting from lower retail prices could increase the number of connections in 2020 by as much as 33 million, an increase of 2.6% relative to the base case. In addition, there could be 11 million more 3G connections, an increase of 2.3%.

- Net mobile sector revenues could be higher by US$ 1.1 billion, approximately INR 6,800 crore, an increase of 3.7% over the base case in 2020.

- GDP in 2020 could increase by as much as US$ 14 billion, approximately INR 84,000 crore, equivalent to an increase over the base case of 0.5%. Economy-wide investment could be higher in 2020 by as much as 0.5% or US$ 4.5 billion, approximately INR 27,000 crore. Further, the number of people in poverty could be reduced by 2.2 million.

- In addition, tax revenues in 2020 could be US$ 2.2 billion higher given the stimulus to the economy through increased mobile penetration. This represents a 0.4% increase compared to the base case. In addition, cumulatively over the period between 2016 and 2020 the government could collect an extra US$ 6.0 billion, approximately INR 36,000 crore, equivalent to an increase of 0.3% over the base case.

- It is estimated that tax revenue neutrality would be achieved shortly following reform, due to the large impact that mobile would have on economic growth, the government overall would have higher tax revenue in 2017 onwards than compared to the base case.

Further, if the licence fee was reduced to 4% instead, then the effect could be doubled:

- Total connections could be up to 5.1% higher and 3G connections 4.6% higher.

- This could lead to an increase in GDP of 1.0%, approximately INR 1.7 lakh crore and additional economy wide investment of approximately INR 55,000 crore.

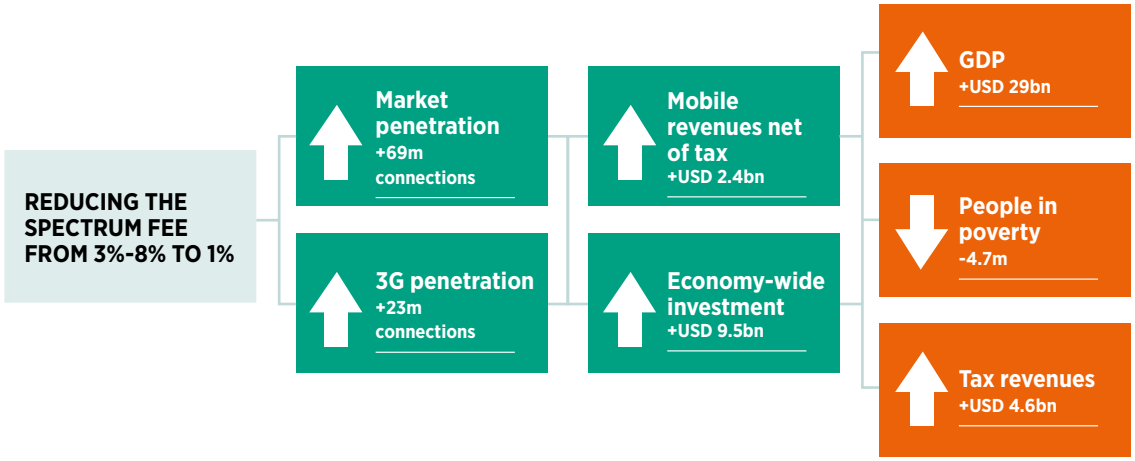
- Government tax revenue could be 0.8% higher in 2020 compared to the base case, with cumulative revenue being 0.5% higher over the period 2016-2020. Tax revenue neutrality would still be achieved by 2017.

3.3 Reduction in spectrum usage charges from between 3%-8% of AGR to 1%

A reduction of the spectrum usage charges from a variable rate to a flat 1% is modelled.[122] The estimated impacts in 2020 compared to the base case where no reform occurs beyond 2014 are displayed in Figure 19.

122. The model considers the spectrum charges as one average rate on all spectrum, the average based on operator data for 2014 and used in the modelling was 5.6%.

Potential economic impact in 2020, relative to the base case scenario, of reducing the spectrum usage charges payable by operators



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

Figure 19

- It is estimated that the number of connections could be up to 69 million higher, an increase over the base case in 2020 of 5.4%. Of this, it is estimated that the number of 3G connections could be higher by up to 23 million.
- Net mobile sector revenues could increase compared to the base case in 2020 by up to 7.9%, representing US$ 2.4 billion, or approximately INR 14,400 crore.
- GDP could be up to US$ 29 billion higher in 2020 relative to the base case, approximately INR 1.8 lakh crore, which represents an increase of 1.1% over the value forecast in 2020. Further, economy-wide investment could also be 1.1% higher relative to the base case, representing extra investment to the value of US$ 9.5 billion or approximately INR 58,000 crore. In addition up to 4.7 million people could be lifted out of poverty.
- Tax revenues for the government could be 0.9% higher in 2020 relative to the base, representing a value of US$ 4.6 billion or approximately INR 28,000 crore in additional revenue for that year. Further, cumulative revenue between 2016 and 2020 could potentially be increased by up to US$ 12 billion, or approximately INR 76,000 crore, an increase relative to the base case of 0.5%.
- Tax neutrality could be achieved shortly following implementation due to the large impact mobile is expected to have on the Indian economy.

Reducing spectrum usage charges could potentially increase GDP in 2020 by INR 1.8 lakh crore

4. Mobile Taxation in India: Potential for Reform

The mobile sector is of key importance to the Indian economy and bringing mobile connectivity to the nearly 800 million unconnected has been identified as a policy priority. There has historically been a strong link between increases in mobile penetration and economic growth, and increased mobile penetration often adds significantly to social development in terms of bridging inequalities in income and gender. Further, through the use of mobile applications, it can enable Indians to access life-enhancing services such as education and health applications and facilitating the country's transition to a knowledge-based economy.

Tax revenues from the mobile industry are important for the Indian government in the context of funding public expenditure. However, total taxes and fees on mobile consumers and operators add to the cost of owning and using a phone and investing in mobile networks, and contribute to increase the affordability barrier to mobile connectivity.

4.1 Contributing to fiscal stability

Interviews with mobile operators demonstrated recognition of the sector's role in supporting the Indian government revenues and contribute to public services. The policies explored in this report have been the reduction of the licence fee and spectrum usage charges which currently represent a large burden on operators: around 35% of total payments made to the government and 11% of revenue in 2014. Indeed, there was a record amount raised from the most recent spectrum auction, which brought the total amount raised at spectrum auctions for the period of 2010-2015 to INR 2.6 lakh crore or US$ 43 billion, or 26% of revenues over the same period. These large sums represent the transfer of rent accruing to operators from owning the scarce resource of spectrum to the government, and so could be seen as a substitute for the spectrum usage charges that are currently charged to operators.

Reducing the level of taxation on the Indian mobile sector may only have a limited impact on government revenues in the short-term. By increasing mobile penetration and promoting economic growth, reducing the tax burden on mobile has the potential to increase the tax base.

4.2 Suggestions for reform

Based on evidence from a series of studies,[123] the best practice principles outlined in 2.4,[124] and consultations with GSMA and mobile operators, a number of areas for reform have been identified. These could support the Indian mobile sector to further contribute to economic growth and government revenues over and above its current impact:

- **Reduce existing revenue-based regulatory fees on the mobile sector:** By affecting prices, taxes and fees on revenue tend to distort production and consumption behaviour and may limit usage of digital services by creating a cost barrier for the digital inclusion of the poor. Revenue taxes reduce the ability of mobile operators to finance investment in digital infrastructure, and may in the long term reduce government revenues.

- **Align the tax framework to that of developed economies:** The GST reform has the potential to align India's consumer taxation framework to that of developed economies such as those in Europe. In these economies, taxes and fees on revenues are very rare. Reducing taxation and regulatory fees on revenues could contribute to further evolution of the tax framework.

- **Reconsider the balance between spectrum payments of different nature:** When spectrum is auctioned, the price paid by operators reflects the benefits to the operator of having access to this scarce resource. However, in addition to this price, operators also pay the spectrum usage charges. As spectrum auctions become the norm in allocating spectrum, there is scope to reduce the revenue-based spectrum usage charges.

- **Apply phased reductions of taxes and regulatory fees:** A phased reduction of mobile-specific taxes and fees offers the government the opportunity to benefit from the economic contribution from mobile whilst limiting short-term fiscal costs.

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

- **Reduce taxation complexity and uncertainty of mobile taxation:** There is a history of disputes between mobile operators and the Indian authorities, for example regarding interpretation of the basis on which licence and spectrum usage charges are charged. To foster an environment that encourages investment in mobile service provision, simpler taxation is needed on the rules that govern the mobile sector.

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

4.3 Promoting economic and social development

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

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

- **Supporting businesses:** Development of the mobile sector can support manufacturing and small and medium enterprises (SMEs)[125] by providing the communications infrastructure that is not only essential to their business but allows them to access new opportunities as national and international interconnectedness grows. Indian entrepreneurs also rely on mobile to help grow their businesses, so promoting growth in mobile will help bolster the start-up culture in India.

- **Achieving the Indian government's strategic objectives:** With initiatives such as Digital India, the Indian government has placed a focus on the development of ICT use across the economy to promote sustainable growth. Easing the burden on the mobile sector will be a key driver to achieving these goals as mobile technology is integral to developing the use of M2M and Cloud technology in business and moving towards the development of smart cities.

- **Support in the transition towards a knowledge-based economy:** Reforming mobile sector taxation has the potential to encourage widespread use of mobile broadband and the development of mobile applications for use in agriculture, healthcare and education. The creation of local content can also promote higher-skilled employment and the transition to a knowledge-based economy.

- **Improved network infrastructure:** Ensuring an equitable structure of regulatory fees has the potential to increase the investment required to further improve mobile broadband network infrastructure, especially in rural areas. Further international investment could allow for economies of scale for mobile operators, potentially allowing reduced prices for consumers in the longer term and facilitating the spread of mobile broadband.

- **Sustainable government revenues:** Achieving the government's ICT objectives need not result in a reduction in government revenues in the medium to long term. By increasing productivity and economic growth, reducing licence fees and spectrum usage charges on mobile services and sales is associated with tax neutrality in 2017.

125. Uppal, M., and Kathuria, R., (2009), The impact of mobiles in the SME sector, the Policy Paper Series Number 9, outlines several advantages of mobile services. These advantages could in turn help SMEs and start-ups while M2M technology could support smart cities.

Appendix A Methodology

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

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

Firstly, a base case scenario is developed for the mobile sector and economy, where taxes and fees remain at their current level throughout the period 2016-2020. It is important to note here that taxes remain constant from 2014 so the base case do not take into account the increase in service tax from 12.36% to 14%, nor the introduction of GST in 2016; it assumes that the tax and fee regime remains the same to 2020. Then, a simulation of two alternative policy scenarios quantifies the economic impact of reformed mobile sector taxation. It is assumed that the tax policy is implemented in 2016 and the model estimates the effects up to 2020. The impacts of each policy are estimated independently and their interaction is not considered.

Modelling the impact of changes to mobile taxation in India

As illustrated in Figure 17, the following steps are involved in the modelling process:

- The tax or fee change affects the price of mobile services. This depends on the extent to which the tax reduction is passed on to consumers, modelled by a pass-through rate which determines the percentage of the tax and fee payments that is reflected in the retail price of mobile services. All assumptions in the model are described in more detail in the section below.
- Changes to the price of mobile services affect their consumption. In order to estimate this, assumptions are made on the price elasticity of demand,[126] which measures how much demand for mobile services might change in response to a price change. These are set out further below.
- Changes in prices and consumption alter the amount of operator revenue generated from mobile services. Increased demand generates additional employment opportunities in the sector, while increased operator revenues enable additional capital expenditure on the development of network infrastructure.
- These sector impacts lead to economy-wide impacts, which are estimated through assumptions that describe the impact of the mobile sector on the wider Indian economy. These effects include the impact on GDP, calculated through a multiplier that links mobile and 3G penetration rates to economic growth. Also included is the effect on employment, calculated through a multiplier, which estimates the number of jobs created across the economy for every job created within the telecom sector. The proliferation of mobile services 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 revenues from the mobile industry can be offset by tax revenues from more broad-based consumer and operator taxes.

The inputs for the model have been provided by operators in India, the GSMA and publicly available statistics from the World Bank and the IMF and include forecasts for 2015 and subsequent years. The outputs

126. 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.

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.

A.2 Key assumptions behind the model

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

Pass-through rates

Taxes and fees paid by mobile operators and consumers may be completely or partly passed-through to the end-consumer prices. The level of pass-through of taxes and fees to final prices will depend on operators' market power and the price elasticity of demand, among other factors. These assumptions were based on market characteristics and Deloitte analysis of telecoms markets worldwide.

For this analysis, an average pass-through rate of 75% has been assumed for taxes and fees. This rate has been assumed in consideration of the relative level of competition in the Indian market, which may suggest that tax and fee savings can be directly passed through to consumers. For tax rises in direct consumer taxes, it is considered that operators may be unwilling to absorb the whole burden of a rise in tax, especially one that can be itemised.

Price elasticity of demand

A change in the price of mobile services leads to a change in the consumption of these services, both in terms of ownership and usage. Consumption changes depend on the price elasticity of demand, that is, the responsiveness of consumers to price changes. The assumptions regarding elasticity of demand are based on a review of studies conducted in a number of developing markets on the elasticity rates observed.

Given the level of market penetration and historical price developments in India the price elasticity of demand for mobile subscriptions and for mobile services is assumed to be –2.12.[127] This is based on figures from a study by ICRIER[128] in India, which was compared to a number of studies within the field[129] and Deloitte analysis of the market characteristics. This study has also been cited by leading figures in academia, think tanks and international organisations such as the IMF.[130]

Employment multiplier

The employment multiplier is used to estimate the impact of a change in employment in the sector on total employment in the economy. The magnitude depends on the economic features of the sector, such as the degree of interconnection across the supply chain and the openness of the economy. Based on the characteristics of the Indian mobile sector and the general economy the employment multiplier is assumed to be 6.21. That is, for every additional job created within the mobile sector, an additional 6.21[131] jobs are generated in the wider Indian economy.

Market penetration Impact

There is substantial evidence in the literature on the impact of mobile penetration on GDP growth. Analysis conducted by the GSMA on the impact of mobile and 3G penetration on GDP growth estimated that a 1% increase in market penetration leads to an increase in GDP growth of 0.14 percentage points.[132] 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.[133] This model does not consider switching between 2G and 3G services and so these impacts are treated separately.[134]

127. Ibid.
128. Kathuria, Uppal and Mamta (2009), An econometric analysis of the impact of mobile, The Policy Paper Series Number 9.
129. See, for example: Gruber and Kontroupis (2010), Mobile telecommunications and the impact on economic development; Wheatley, J. J., 1998, Price elasticities for telecommunication services with reference to developing countries; GSMA, 2005, Tax and the digital divide: How new approaches to mobile taxation can connect the unconnected. London: GSMA
130. Hausman and Liu (2014), Mobile Phones in Developing Countries; West (2014), The State of the Mobile Economy, 2014: Its Impact and Future, available at: http://www.brookings.edu/~/media/research/files/papers/2014/09/10-state-of-mobile-economy-west/state-of-mobile-economy_v13.pdf; Andrianaivo and Kpodar (2011), ICT, Financial Inclusion, and Growth: Evidence from African Countries, IMF Working Paper, available at: https://www.imf.org/external/pubs/ft/wp/2011/wp1173.pdf.
131. This figure was based on a number of studies conducted in developing and developed countries; see, for example, Moretti, 2010; O2 for ONS, 2002; Ovum, 2010; Zain, Ericsson, 2009; Kaliba et al, 2006.
132. This is based on a study of 40 economies over the period 1996-2011; for full details of the methodology, see http://www.gsma.com/publicpolicy/wp-content/uploads/2012/11/gsma-deloitte-impact-mobile-telephony-economic-growth.pdf
133. Qiang, C. Z. W., Rossotto, C.M. (2009), Economic Impacts of Broadband, in Information and Communications for Development 2009: Extending Reach and Increasing Impact, World Bank, Washington D.C., 35-50.
134. 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.

Total Factor Productivity Impact

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

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

where it is assumed that a = 0.3 and β=0.7[135].

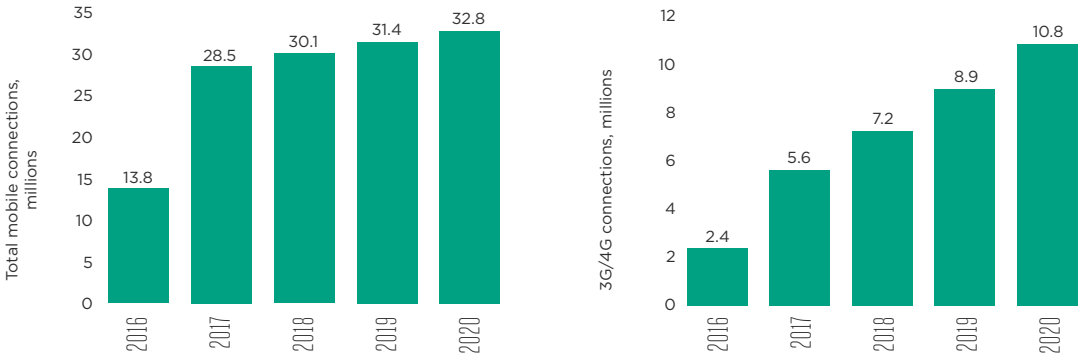
A.3 Scenario simulation results

This report uses a model in order to assess the impacts of a change in taxation policy on the mobile sector and the wider economy. Two scenarios were estimated and each compared against the base case scenario, where there is no change in tax policy. The overall findings of each scenario are described in more detail in the sections below, on the assumption that the change in tax policy is implemented in 2016.

Scenario 1

Scenario 1 estimates the impact of reducing the licence fee from 8% to 6%. Mobile and 3G connections are shown in Figure 20.

Potential impact on total mobile penetration (left) and mobile broadband penetration (right) in Scenario 1 relative to the base case



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

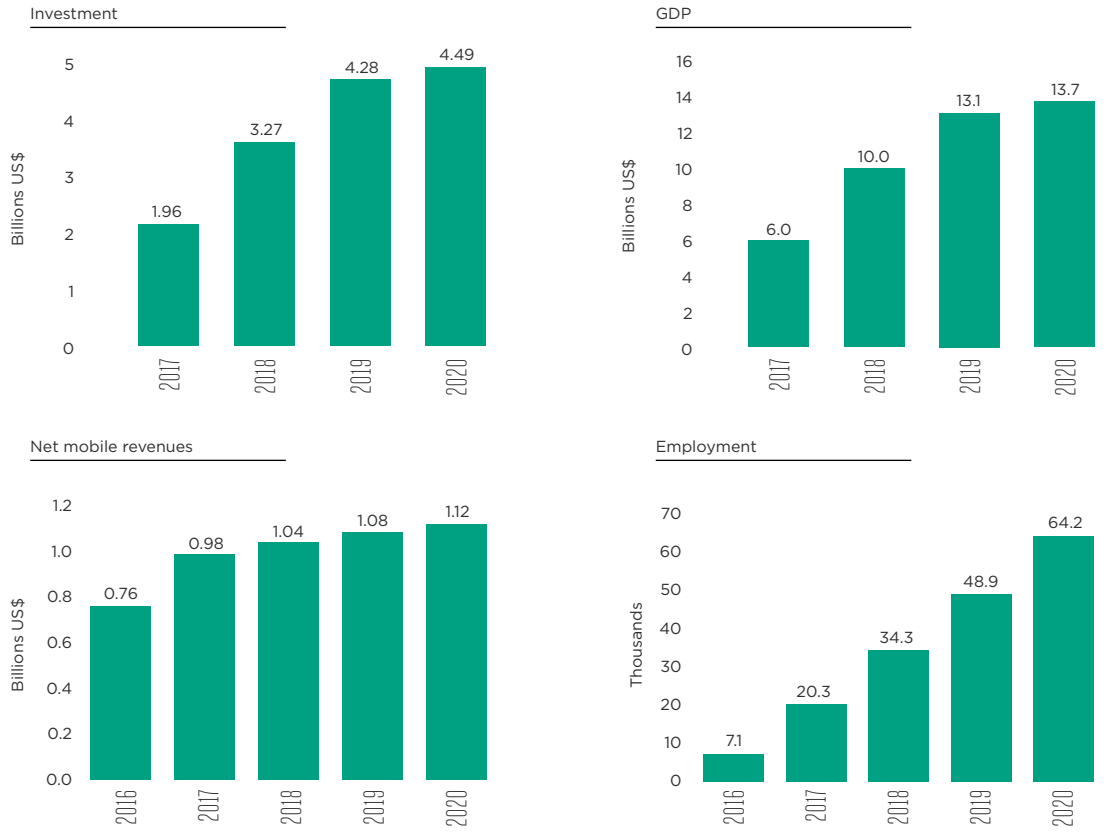
Figure 20

135. Bassanini A and Scarpetta S (2001), "The Driving Forces of Economic Growth: Panel Data Evidence for the OECD countries".

As shown, the possible increase in mobile connections could be as high as 33 million by 2020, representing an increase of 2.6% over the forecast size of the market. In addition, 3G connections could potentially be 11 million higher, representing 2.3% of the market.

Figure 21 shows the impact on mobile sector revenues and on the wider economy, estimating impacts on economy-wide investment, GDP and employment.[136]

Potential impact on macroeconomic indicators in Scenario 1 relative to the base case



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

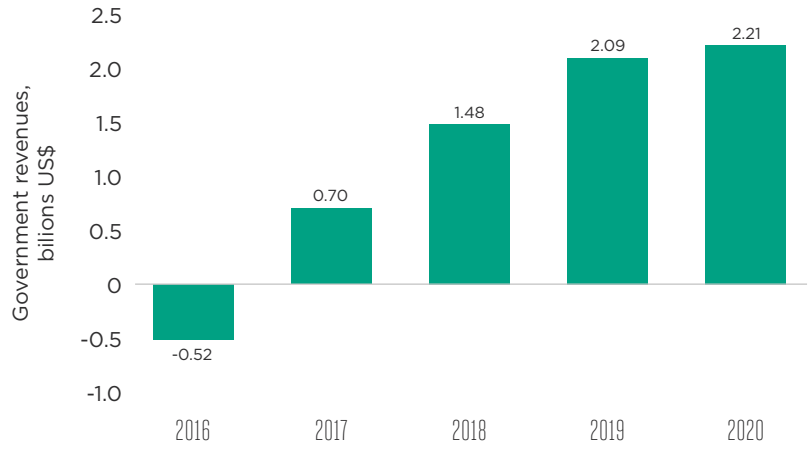
Figure 21

In Scenario 1, mobile sector revenues could be US$ 1.1 billion higher, an increase of 3.7%. In addition, India's GDP could be higher by up to US$ 14 billion in 2020 compared to the base case, as increase of 0.5%. Further, investment could be US$ 4.5 billion higher and employment could increase by up to 64,000.

Figure 22 shows the estimated impact on government revenues. The potential initial short fall could be more than compensated for in the following years' increase. In 2020 it is estimated that the difference to the base case could be as much as US$ 2.2 billion, or 0.4%. Cumulatively, over the period 2016-2020, total tax revenue could increase by as much as US$ 5.9 billion or 0.3%.

136. Employment here is measured in Full Time Equivalent (FTE).

Potential tax revenues in Scenario 1 relative to the base case



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

Figure 22

Scenario 2

Scenario 2 estimates the reduction in spectrum usage charges from a variable rate of 3%-8% to 1%. The impact on mobile and 3G connections are shown in Figure 23.

Potential impact on total mobile penetration (left) and mobile broadband penetration (right) in Scenario 2 relative to the base case

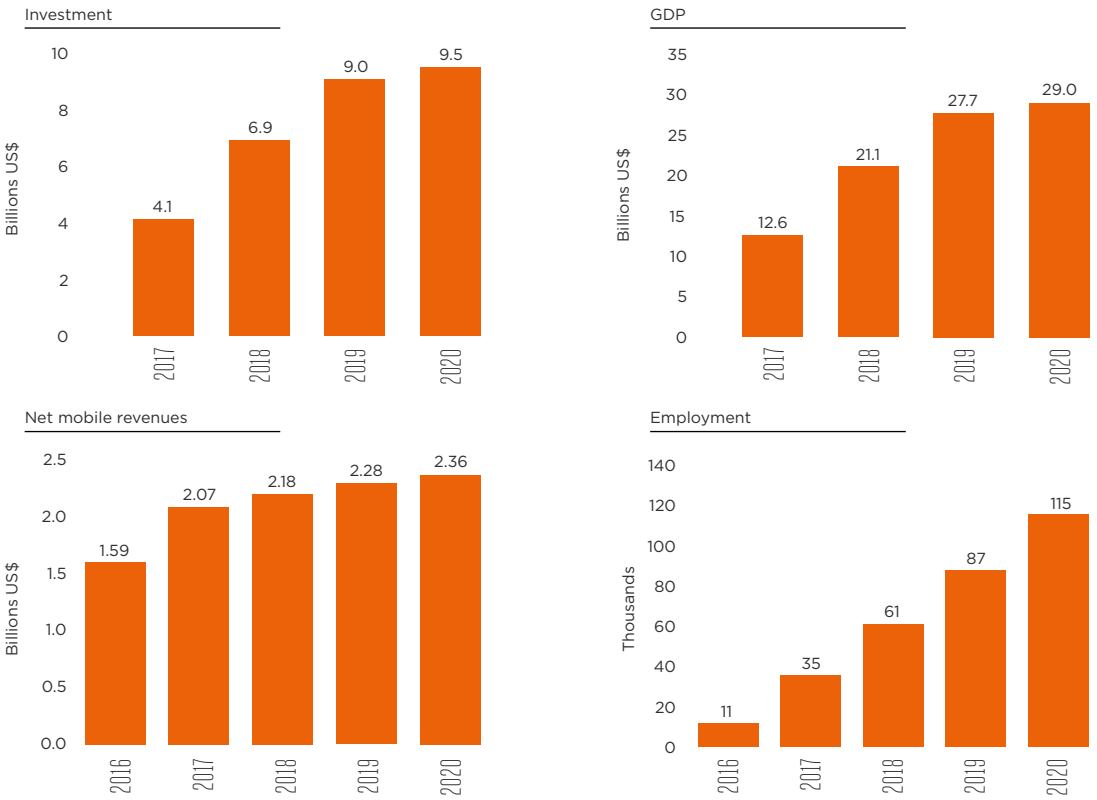
Source: Deloitte analysis based on operator, GSMA, IMF and World Bank data

Figure 23

In Scenario 2, the number of mobile connections could by higher in 2020 relative to the base case by as much as 69 million, or 5.4%, and 3G connections by 23 million, or 4.8%.

In terms of effects on the wider economy, Figure 24 shows the impact on GDP, investment and employment as well as mobile sector revenues net of tax.

Potential impact on macroeconomic indicators in Scenario 2 relative to the base case



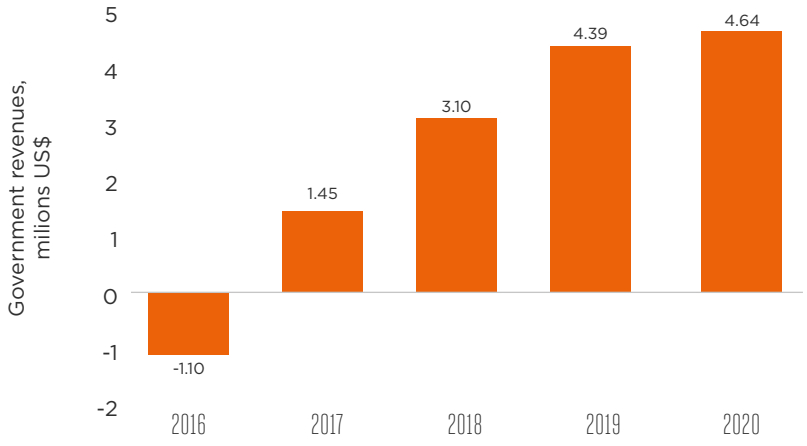
Source: Deloitte analysis based on operator, GSMA, IMF and World Bank data

Figure 24

In Scenario 2, mobile sector revenues net of tax could be higher by up to US$ 2.4 billion, an increase over the base case in 2020 of 7.9%. For the economy as a whole, GDP could be US$ 29 billion, or 1.1% higher than the base case. In addition, investment could be US$ 9.5 billion higher in 2020 and employment could be higher by as much as 115,000.

Finally, Figure 25 shows the estimated impact on tax revenues from 2016 to 2020. The reduction due to the lower fee payments in 2016 would be more than compensated for in 2017, and by 2020 annual tax revenue could US$ 4.6 billion higher compared to the base case. The total cumulative impact on tax revenues could be as much as US$ 12 billion, or an increase of 0.5%.

Potential tax revenues in Scenario 2 relative to the base case



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

Figure 25

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