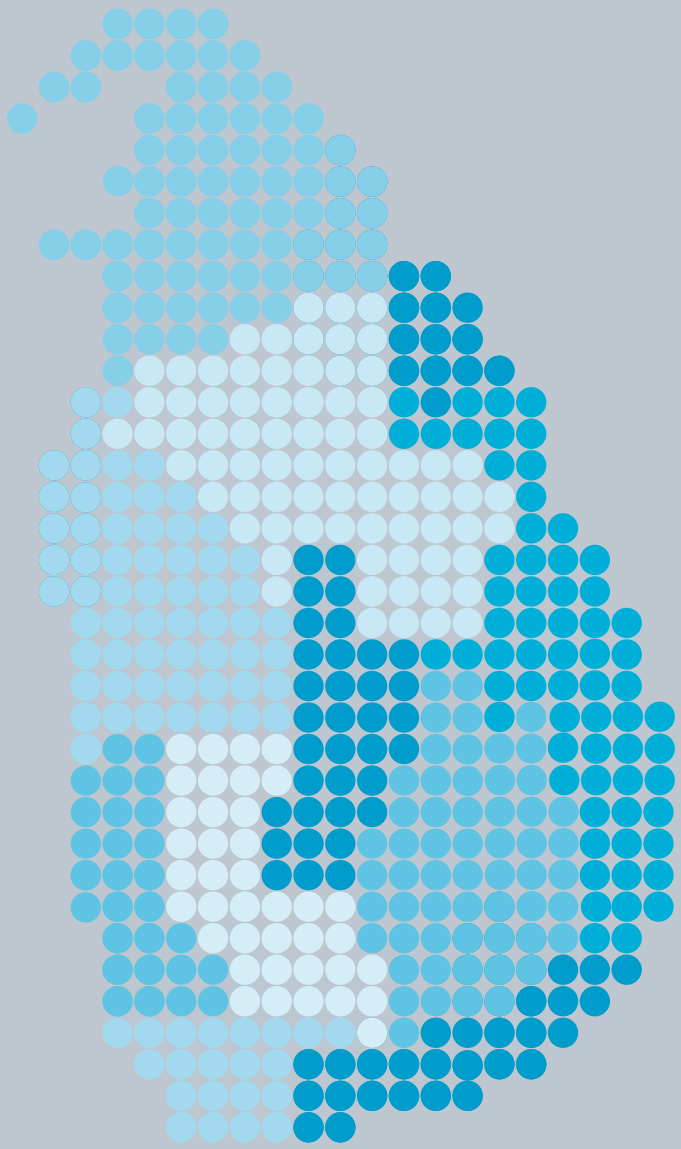
Reforming mobile sector taxation in Sri Lanka:

Promoting growth in the Sri Lankan mobile sector and wider economy through a more efficient tax system



EY Building a better working world

The GSMA represents the interests of mobile operators worldwide, uniting nearly 800 operators with more than 300 companies in the broader mobile ecosystem, including handset and device makers, software companies, equipment providers and internet companies, as well as organisations in adjacent industry sectors. The GSMA also produces industry-leading events such as Mobile World Congress, Mobile World Congress Shanghai, Mobile World Congress Americas and the Mobile 360 Series of conferences.

For more information, please visit the GSMA corporate website at www.gsma.com

Follow the GSMA on Twitter: @GSMA

Building a better working world

EY | Assurance | Tax | Transactions | Advisory

About EY
EY is a global leader in assurance, tax, transaction and advisory services. The insights and quality services we deliver help build trust and confidence in the capital markets and in economies the world over. We develop outstanding leaders who team to deliver on our promises to all of our stakeholders. In so doing, we play a critical role in building a better working world for our people, for our clients and for our communities.

EY refers to the global organization and may refer to one or more, of the member firms of Ernst & Young Global Limited, each of which is a separate legal entity. Ernst & Young Global Limited, a UK company limited by guarantee, does not provide services to clients. For more information about our organization, please visit ey.com.

Report published March 2018.

Disclaimer

Contents

Executive summary

Mobile telephone services are playing an increasingly important role in supporting economic growth and social inclusion in the developing world. Mobile penetration and affordability enhance digital connectivity by expanding internet and broadband access, which in turn facilitate the reduction of barriers for trade, commerce, communication, service delivery and human development. Examples of these benefits are seen in the form of financial inclusion via mobile payment platforms, digitally enabled local entrepreneurship, innovative health and education delivery systems and growing numbers of e-government initiatives.

Conducive regulatory conditions offer the mobile industry the support it needs in order to thrive and maximise the opportunities available to consumers, businesses and governments. Within this, taxation is an important factor and there is a need to achieve the right balance between revenue maximisation, economic growth and social development.

In order to assess the potential benefits of a more efficient tax structure in the mobile sector, one which focuses on increasing mobile affordability and unlocking digital inclusion, the GSMA[1] has commissioned EY to undertake a study of the economic impact of potential tax reforms on the Sri Lankan mobile sector.

This report analyses recent developments in the mobile sector and its tax treatment in Sri Lanka, sets out potential options for tax policy reform and estimates the impacts of these policy options on: the mobile sector, the wider economy and the Government's fiscal position.

The Sri Lankan mobile market has expanded rapidly, but there is scope for further growth in penetration, particularly for 3G and 4G technologies.

In Sri Lanka, the mobile industry is playing an increasingly important role in driving economic growth and digital inclusion across the country. The number of mobile subscribers has grown from 5.4 million in 2007 to 15.0 million in 2017 (reaching 72% unique subscriber penetration), at an average annual growth rate of 10%. Total mobile sector revenues were $947 million in 2017,[2] equivalent to 1.1% of Sri Lankan GDP. Mobile operators contributed approximately $298 million of direct economic value to Sri Lanka in 2017 (0.4% of GDP),[3] while also supporting a much wider mobile ecosystem that includes mobile content developers, mobile distribution providers and retail companies.

This rapid growth has been facilitated by investment in the sector by Sri Lanka's mobile operators, with full 2G population coverage and high levels of 3G (90%) and 4G coverage (69%). However, while coverage levels are high, there is still considerable room for increasing the penetration of new technologies in the sector; just under half (49%) of Sri Lankan mobile subscribers do not own a smartphone, while 4G penetration was just 9.6% in Q4 2017. As 4G technology has been available in Sri Lanka since 2013, this low level of penetration suggests that significant barriers exist which prevent the adoption of smartphones or data-intensive consumption baskets.

Given the low level of fixed broadband penetration in Sri Lanka (4.1% in 2016),[4] increasing access to internet-enabled mobile services should become a policy priority for government. Facilitating the growth of the mobile sector aligns with the Government's broader digitisation objectives for the Sri Lankan economy, which are set out in *Vision 2025*.[5] This includes increasing the incentives to widen internet access and encouraging further development of mobile agricultural services (mAgri) and mobile payment platforms.

1. The GSMA, https://www.gsma.com/aboutus/gsma-asia
2. GSMA Intelligence database
3. GSMA Intelligence database and companies' annual accounts data
4. World Bank Databank – this is calculated as the total number of fixed telephone lines divided by the population.
5. Office of the Prime Minister of Sri Lanka, 2017, *Vision 2025*, http://www.pmoffice.gov.lk/download/press/D00000000061_EN.pdf

In meeting its own objectives for 2025, the Government should also aim to achieve the United Nations' "1 for 2" (1GB of data costing less than 2% of monthly income) affordability target set for 2025.[6] As it currently stands, for a medium consumption basket (1GB of data), the poorest 20% of the population in Sri Lanka spend approximately 5.3% of their monthly income on mobile ownership, while a high consumption basket (5GB of data) would cost approximately 7.3% of their monthly earnings.[7]

Taxes on the mobile sector are high compared to levels in other Asian countries.

In 2017, the mobile industry's total tax contribution was estimated at $246 million,[8] accounting for 2.2% of the total tax revenues of Sri Lanka.[9] This is 1.9 times the size of the sector's revenue as a percentage of GDP. This estimation does not capture the impact of the removal of the VAT exemption on telecommunications services, introduced in November 2016, and the exemption of Telecommunications Levy on internet services introduced in September 2017, either.

The total tax contribution of the mobile sector is equivalent to 26% of the mobile sector's total market revenue. This tax burden as a percentage of mobile revenue is one of the highest among a sample of South Asian and Southeast Asian countries, including Thailand (14%), Malaysia (20%) and Indonesia (23%).

Mobile-specific consumer taxation constitutes 51% of the total tax payments made by the mobile sector; this is higher than in Malaysia (24%) and Pakistan (33%). The Telecommunications Levy is the main source of tax revenue in this category (94% of the total mobile-specific consumer taxes in Sri Lanka).

The tax system exacerbates the competitive pressures on the industry, thereby limiting the growth potential of the mobile sector in Sri Lanka.

The current tax system has a high incidence on both mobile operators and consumers. Despite the positive externalities of the sector, mobile services are subject to a high level of specific taxation. This undermines the affordability of mobile services and is likely to hinder connectivity and digital inclusion in Sri Lanka.

The tax and regulatory system for mobile is not simple and increases the cost of collecting taxes. The World Bank places Sri Lanka 158 out of 190 global countries and sixth out of eight South Asian countries when it comes to the ease of paying taxes. In addition, the tax certainty is also undermined by unexpected tax changes introduced without a previous consultation or an impact assessment. As a result, the tax system is not as efficient and conducive to investment as it could be in Sri Lanka.

Through policy reform, the Government of Sri Lanka has the opportunity to simplify and rebalance mobile sector taxation, supporting the transition of the economy into a knowledge-based services hub.

The Sri Lankan economy has grown steadily in recent years, at an average rate of 4.4% during 2016 and 2017.[10] This growth was primarily driven by expanding services sectors (particularly tourism and IT), which are becoming the engine of the Sri Lankan economy.[11]

In line with the Government's strategic aims, the Sri Lankan economy is becoming increasingly services-oriented, with services accounting for approximately 62% of GDP in 2016.[12] *Vision 2025* highlights that future economic growth in Sri Lanka is constrained by its reliance on low-technology export products (e.g. textiles and tea), a challenging fiscal outlook and regulatory barriers which hamper the access, quality and pricing of energy, transport, finance and telecommunications services.

Sri Lanka currently ranks 103rd out of 136 countries in the Enabling Trade Index[13] and will require an improved business environment in order to overcome barriers to economic growth. This includes delivering the necessary information and communications technology (ICT) infrastructure to support mobile, as set out in *Vision 2025* and the exploration of tax reforms which could improve the affordability of mobile technology for low-income consumers and incentivise industry investment.

Tax reform would lead to considerable growth in mobile penetration, promoting greater investment and affordability in the sector. The growth in the sector would also generate higher GDP and taxation revenue for government in the medium term.

The removal of the Telecommunications Levy on

6. Alliance for Affordable Internet, 2017, "2017 Affordability Report", http://a4ai.org/affordability-report/report/2015/#redefine_%E2%80%9Caffordability%E2%80%9D_with_income_and_gender_inequalities_in_mind
7. GSMA Intelligence database, Tarifica
8. Source: EY analysis and operator data
9. The tax revenue of the calendar year 2017 was LKR 1,749 billion ($12,012 million). Source: Sri Lanka Budget 2018
10. Oxford Economics database
11. Central Bank of Sri Lanka, 2018, "Recent Economic Developments: Highlights of 2017 and Prospects for 2018", http://www.cbsl.gov.lk/pics_n_docs/10_pub/_docs/efr/recent_economic_development/RED2017/Red2017e/3_Chapter_01e.pdf
12. World Bank Databank
13. World Economic Forum, 2016, "The Global Enabling Trade Report 2016", http://www3.weforum.org/docs/WEF_GETR_2016_report.pdf

internet services in September 2017 is a positive step to improve the affordability of mobile services. Building on this, two options for further tax reform have been identified to continue to promote growth in the sector and the wider economy.
These reforms are forecast to lead to increased penetration, an acceleration in the rate of technology migration to smartphones and 3G/4G connections and generate higher GDP and taxation revenue in the medium term.[14]

- **Eliminating Telecommunications Levy on voice and SMS –** The elimination of the 25% Telecommunications Levy on voice and short message services (SMS) will improve the affordability of mobile services for Sri Lankans. By reducing the cost of mobile services, this reform would incentivise greater connectivity among Sri Lankan households and businesses, thereby enhancing consumption and connectivity across the country. The expected impact of this tax reform on the mobile sector and wider economy[15] are as follows:

    - Mobile penetration would increase by 1.6 million unique subscribers (7.7%) by 2023, equivalent to 2.9 million new connections and mobile data usage per connection would grow by 11.5%. Sector revenues would be $76 million higher per annum (9.7%).

    - GDP would grow by $878 million (1.1%) and annual tax receipts would be $165 million (0.8%) per annum higher by 2023, a cumulative fiscal gain of $475 million over five years.

- **Eliminating the Telecommunications Development Charge (TDC) and Outgoing Local Access Charge (OLAC) –** The elimination of the $0.06 Telecommunications Development Charge (TDC)[16] and the LKR 3 (approximately $0.02) Outgoing Local Access Charge (OLAC) would incentivise increased volumes of incoming and outgoing calls in Sri Lanka. It will also alleviate the significant costs and resources which are devoted to the policing of illegal gateways. This reform is forecast to have the following impacts:

    - International incoming traffic is forecast to increase by 514 million minutes in 2023, leading to an increase in sector revenues of $56 million (7.2%). Mobile penetration is forecast to increase by 355,000 unique subscribers (1.7%) by 2023, equivalent to 635,000 new connections and mobile data usage per connection would grow by 3.2%.

    - GDP is forecast to grow by $203 million (0.3%) and annual tax receipts would be over $41 million (0.2%) per annum higher by 2023, a cumulative fiscal gain of over $125 million over five years.

The growth in the sector, under both scenarios, would also lead to wider societal benefits, through increased access to mobile data and broadband services, particularly among lower income rural communities, as more than 50% of new subscribers come from low-income groups in all scenarios. The boost to mobile penetration would lead to growth in productivity across the economy and hence an increase in GDP, household incomes, employment and investment. Both scenarios would aid the Sri Lankan government in meeting the goals of *Vision 2025*.

Moreover, both reforms are shown to be self-financing in terms of their impact on government revenues in the medium term and will generate significant tax revenues in advance of the completion of *Vision 2025*.

14. The forecasts provided in this report estimate the isolated impacts of tax reform on the Sri Lankan mobile industry relative to a baseline forecast for the development of the sector sourced from The GSMA. They do not capture other market developments and/or external market shocks and as such should not been seen as comprehensive forecasts for the sector.
15. A model of the Sri Lankan mobile sector has been developed in order to calculate the changes in the mobile sector resulting from each of the tax policy scenarios, while the wider economic impacts of each scenario are assessed via a 'Computable General Equilibrium' (CGE) model, namely the standard version of the Global Trade Analysis Project (GTAP) model and its associated dataset.
16. The ITOL takes the form of an imposed fixed price that operators must charge for international inbound termination. Currently, the international termination rate is $0.12 per minute, with $0.06 of surtax accruing to government, called the Telecommunications Development Charge (TDC).

1. The Sri Lankan economy, the role of the mobile sector and opportunities for growth

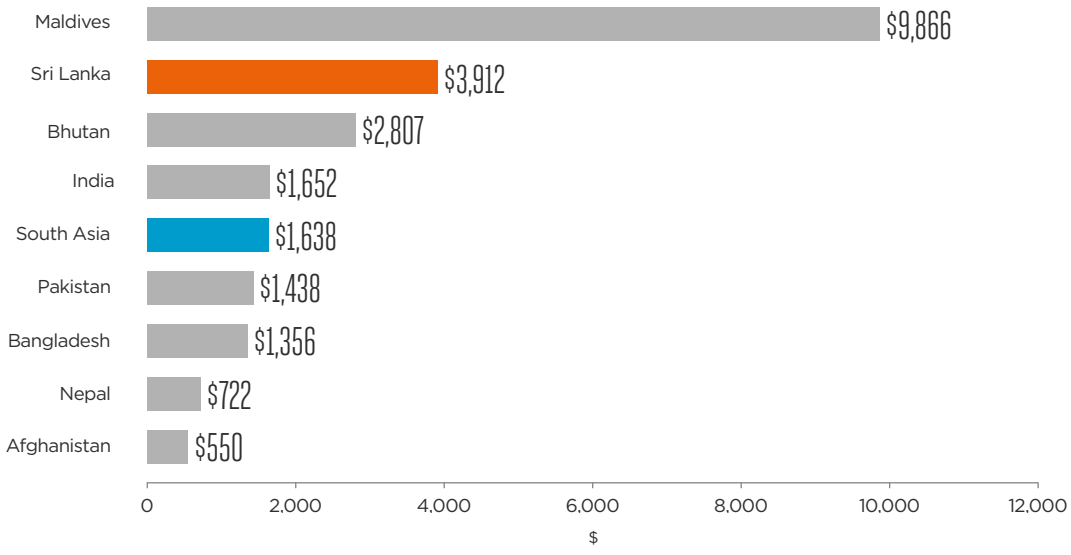
1.1 Macroeconomic overview

The Sri Lankan economy outperforms other countries in South Asia, yet faces a challenging transition to become a knowledge-based economy.

Sri Lanka is the 65th largest economy in the world and the 4th largest in South Asia (behind India, Pakistan and Bangladesh). As shown in Figure 1, GDP per capita in Sri Lanka is significantly higher than other countries in the South Asian region, at approximately $3,912 in 2016.[17] The country is expected to gain upper middle-income status in the short term,[18] with GDP per capita forecast to grow at an average annual rate of 4% in 2017 and 2018, reaching $4,160 by December 2018.[19]

Figure 1

GDP per capita (nominal $) in selected South Asian countries, 2016



Source: Oxford Economics database, World Bank

17. Oxford Economics database
18. As defined by the World Bank, lower middle-income economies are those with a GNI per capita between $1,026 and $4,035.
19. Oxford Economics database

Despite severe flooding and extended periods of drought during 2016 and 2017, which significantly affected agricultural output,[20] the economy expanded at an average rate of 4.4%.[21] Growth was primarily supported by the services sector, which grew by 4.2% and 4.0% in 2016 and the first half of 2017, respectively. Specifically, Sri Lanka experienced positive growth in the tourism, transportation and information technology sectors.[22]

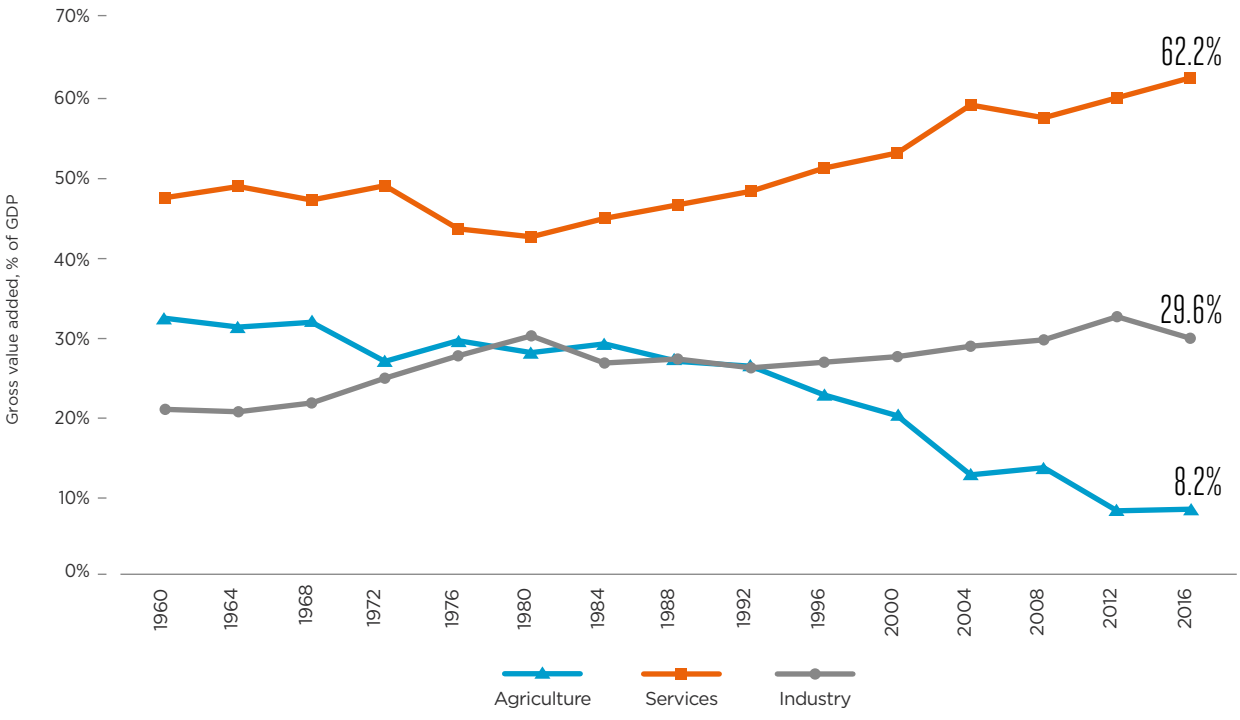
However, Sri Lanka's export performance has slowed in recent periods, with exports declining 0.7% (in real terms) in 2016.[23] Textiles accounted for over 48% of Sri Lanka's exports by value in 2016, while tea products accounted for approximately 12%.[24] Sri Lanka's trade balance was assisted by low commodity prices, particularly for oil, which helped to curb inflationary pressures caused by domestic supply disruptions. The core inflation rate saw a year-on-year decline from 6.7% in the year to September 2016 to 4.6% in the year to September 2017.[25]

The Government's priorities for reforming the country are set out in *Vision 2025*. This aims to transform Sri Lanka into the hub of the Indian Ocean, with a knowledge-based and highly competitive social-market economy.[26] *Vision 2025* recognises that future economic growth in Sri Lanka is constrained by its reliance on low-technology export products (e.g. textiles and tea), a challenging fiscal outlook and regulatory barriers which hamper the access, quality and pricing of energy, transport, finance and telecommunications services.

As shown in Figure 2, the *Vision 2025* aim of transforming Sri Lanka into a services hub[27] supports the long-term transition of the economy, from agriculture towards services. The contribution of the services sector has grown significantly over the past five decades and accounted for 62.2% of GDP in 2016.

Figure 2

Gross value added[28] (% of GDP) by sector, 1960–2016



Source: World Development Indicators, World Bank Databank

20. Rice production decreased by approximately 40% in 2017, according to the Sri Lanka Department of Census and Statistics, 2018, "Paddy Statistics", http://www.statistics.gov.lk/agriculture/Paddy%20Statistics/PaddyStats.htm
21. Oxford Economics database
22. Central Bank of Sri Lanka, 2018, "Recent Economic Developments: Highlights of 2017 and Prospects for 2018", http://www.cbsl.gov.lk/pics_n_docs/10_pub/_docs/efr/recent_economic_development/RED2017/Red2017e/3_Chapter_01e.pdf
23. Oxford Economics database
24. UN Comtrade database
25. Central Bank of Sri Lanka, 2018
26. Office of the Prime Minister of Sri Lanka, 2017, "Vision 2025", http://www.pmoffice.gov.lk/download/press/D00000000061_EN.pdf
27. World Economic Forum, 2016, "The future of Sri Lanka's economy", https://www.weforum.org/agenda/2016/01/the-future-of-sri-lanka-s-economy/
28. Gross value added (GVA) is the measure of the value of goods and services produced in an area, industry or sector of an economy. In national accounts, GVA is calculated as output minus intermediate consumption.

Vision 2025 recognises the need "to develop strategies that encourage the use of digital and other emergent technologies", which include:

- The active promotion of private sector investment in digital technology and the ICT industry;
- Increasing incentives to widen internet access;
- Encouraging innovations in mobile payment systems; and
- Extending the use of mobile technology in the agriculture sector.

The mobile sector can play an important role in achieving the objectives set out in *Vision 2025*, by increasing the level of digitisation in the Sri Lankan economy and thereby stimulating knowledge-based, inclusive growth in the medium term. To unlock these socio-economic benefits, the Government should consider a series of sector reforms, particularly those focusing on the reform of the taxation system facing Sri Lankan mobile consumers and operators. Reducing the tax burden on the sector will lead to lower prices and increased investment, thereby increasing the level of digital (and financial) inclusion in Sri Lanka.

1.2 Fiscal overview

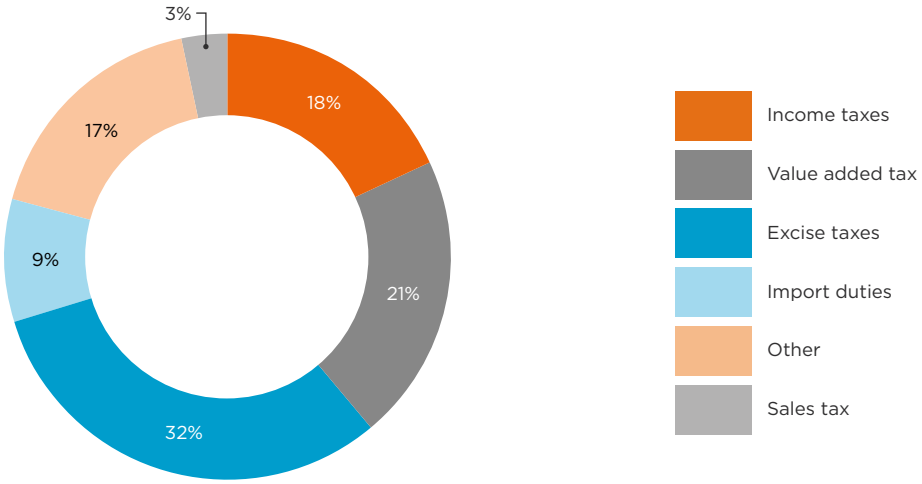
Continued fiscal reform is required to support Vision 2025, as debt management will be essential for financing future investment needs.

The Government of Sri Lanka has established a contractionary fiscal policy in recent periods, by improving public financial management and reforming legislation to make the tax system more efficient and equitable (e.g. changes to the Inland Revenue Law and VAT legislation).[29]

In its 2017 Budget, the Government of Sri Lanka targeted a reduction in the deficit to 4.6% of GDP in 2017 from 5.4% in 2016, with a medium-term aim of reducing the deficit to 3.5% by 2020.[30] Tax revenue is forecast to reach 13.5% of GDP in 2017, owing to several measures introduced in the 2017 Budget to strengthen revenue collection, including the roll out of IT-enabled tax collection systems. The estimated breakdown of tax revenue in 2017 is provided in Figure 3 and shows that excise taxes accounted for the largest proportion of tax revenue during the period, at approximately 32% of total tax revenue. Value-added taxes (VAT) represented 21% of the total, while income taxes amounted to 18%.

Figure 3

Estimated composition of tax revenue, Sri Lanka, 2017



Source: Central Bank of Sri Lanka

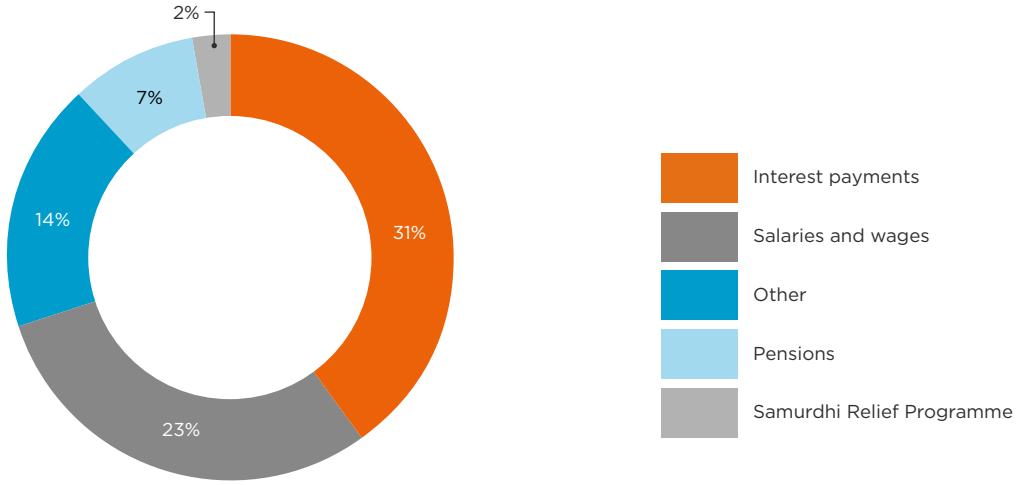
29. World Bank, 2017, "Sri Lanka country overview".
30. Central Bank of Sri Lanka, 2018, "Recent Economic Developments: Highlights of 2017 and Prospects for 2018, Chapter 6", http://www.cbsl.gov.lk/pics_n_docs/10_pub/_docs/efr/recent_economic_development/RED2017/Red2017e/8_Chapter_06e.pdf

The balance of direct taxes (such as income taxes) to indirect taxes (such as excise duties) in Sri Lanka has been noted as a concern by the International Monetary Fund (IMF), as indirect taxes make up a high proportion of current tax receipts[31]. By shifting the tax system towards direct taxes and away from distortive taxes on key sectors, the IMF notes that the Government can create a more transparent, fair and even-handed tax system.[32]

Government expenditure, as a percentage of GDP, has risen steadily over the past five years, from 17.4% in 2012 to an estimated 19.6% in 2017.[33] The composition of government expenditure in the first eight months of 2017 is provided in Figure 4 and shows that the largest spending component was interest payments (31%), reflecting relatively high levels of government debt.[34]

Figure 4

Composition of government expenditure, Sri Lanka, January–August 2017



Source: Central Bank of Sri Lanka

Given the level of public debt, it is important that the Government of Sri Lanka continues its suite of fiscal reforms in pursuit of the objectives outlined in *Vision 2025*. The medium term plan aims to "implement fiscal reforms to achieve medium to long-term targets for macroeconomic stability and an improved investor climate", with growth driven by private investment in order to service external debt.

To improve its fiscal position, while pursuing the *Vision 2025* objectives, the Government should direct its expenditure to sectors which promote its aim of becoming a services hub (such as ICT and financial services), while also continuing to improve revenue collection. The Government's tax policy framework should take into account the distortive impacts of taxation on certain sectors (e.g. mobile) that have the potential (in the short to medium term) to generate significant additional economic activity and tax revenue.

31. International Monetary Fund, 2016, "Addressing Sri Lanka's Economic Challenges".
32. *ibid.*
33. Oxford Economics database and Central Bank of Sri Lanka
34. Central government debt was approximately 79.3% of GDP in 2017 and increased at an annualised rate of 3.6% between 2012 and 2016 (Source: Oxford Economics database).

1.3 Demographic overview

Sri Lanka has the highest proportion of individuals living in rural areas in South Asia, while the proportion of the population that is elderly is also high compared to its peers.

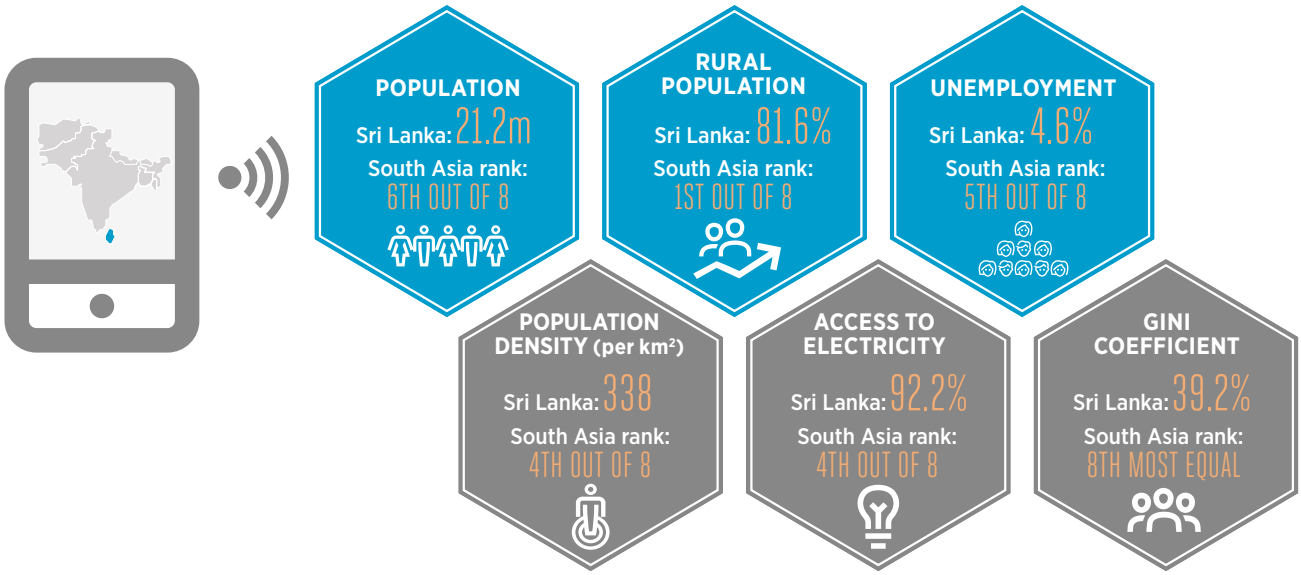
Figure 5 provides a demographic overview of Sri Lanka. Sri Lanka has the highest proportion of individuals living in rural areas in South Asia, at 81.6%.[35]

Despite this, access to electricity in Sri Lanka is relatively high, at 92.2% for the total population (91.0% for the rural population) in 2014. Unemployment is low in Sri Lanka at approximately 4.6%,[36] although income inequality is high when compared to other countries in South Asia.

Sri Lanka also has a high rate of literacy (91%),[37] and with the right conditions, it is therefore well placed

Figure 5

Overview of Sri Lankan demographics



Source: Oxford Economics database, World Bank databank, EY analysis

35. World Bank Databank
36. International Labour Organisation, national estimate
37. World Bank Databank

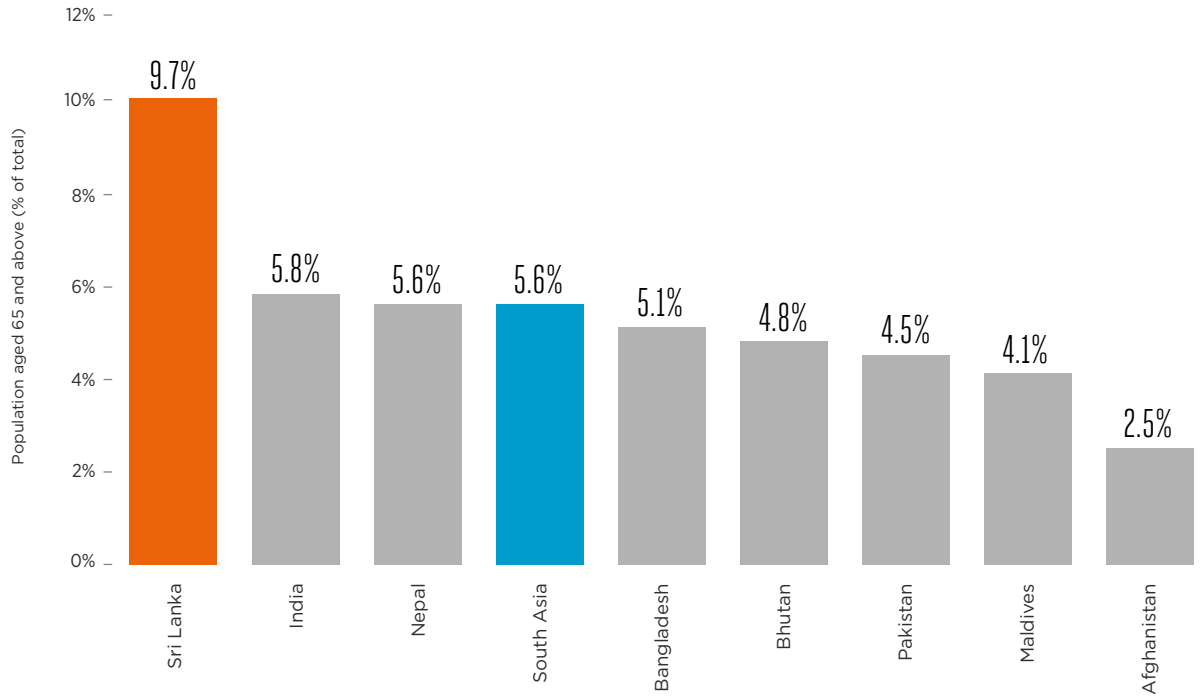
to achieve the aim of becoming a knowledge-based economy as set out in Vision 2025.

As shown in Figure 6, when compared to other South Asian countries, a high proportion of individuals in Sri Lanka are aged 65 and above (9.7%).

Considerable advancements in health care have contributed to the increasing age profile, with life expectancy rising from 69 years in 1995 to 75 years in 2015.[38]

Figure 6

Population aged 65 and above (% of total), South Asian countries



Source: World Bank databank

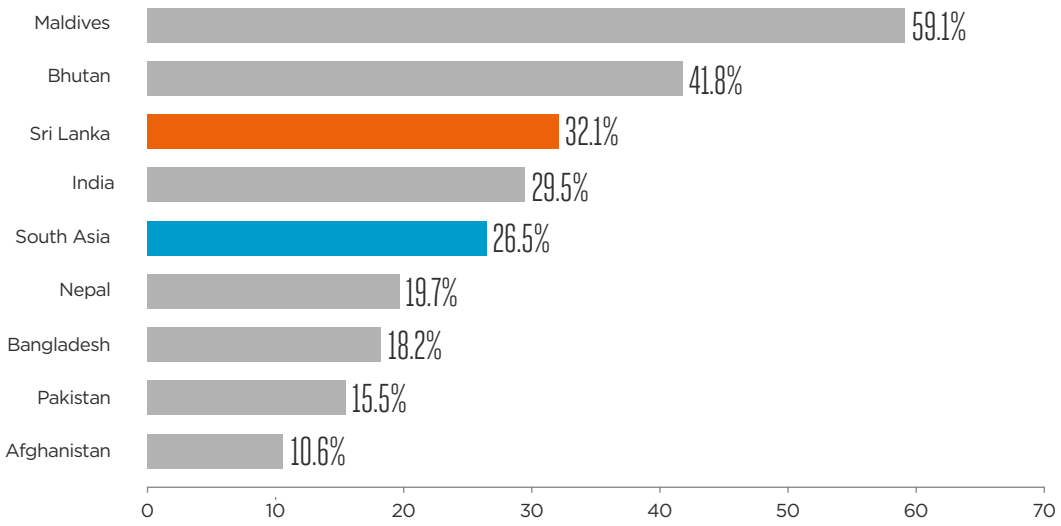
38. World Bank Databank

As shown in Figure 7, the percentage of the population who are internet users[39] in Sri Lanka is comparable with regional peers in South Asia, at 32.1%. This is above the level observed in India, but lags behind Maldives (59.1%) and Bhutan (41.8%) in the region.

With less than one-third of individuals using internet services in Sri Lanka, enhancing access should be considered as a policy priority towards realising the digitisation objectives outlined in *Vision 2025*.

Figure 7

Individuals using the internet (% of population) in selected Asian countries, 2016



Source: World Development Indicators, World Bank databank

1.4 Mobile market in Sri Lanka

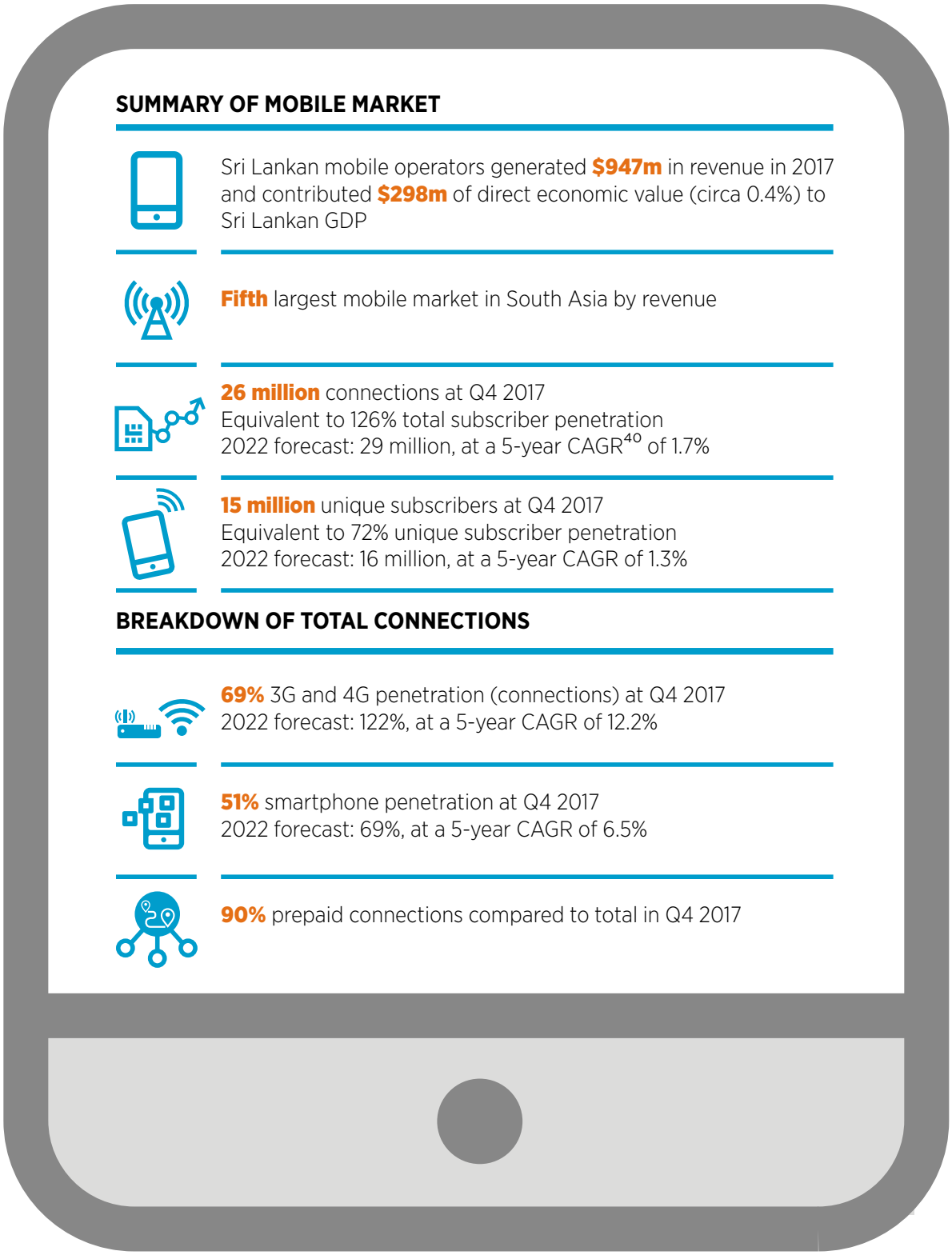
The mobile market has expanded rapidly and will be of increasing importance to Sri Lanka as it manages its transition to a knowledge economy.

The mobile market in Sri Lanka has grown rapidly over the past decade, with the number of subscribers increasing at an annual rate of 10% between 2007 and 2017. However, as demonstrated in Figure 8, which provides an overview of the Sri Lankan mobile market, a significant opportunity exists to further develop the sector (e.g. the relatively low level of 3G penetration and smartphone usage), and to contribute to achieving the goals set out in *Vision 2025*.

39. Internet users are individuals who have used the internet (from any location and through any technology, i.e. fixed or mobile) in the last three months.

Figure 8

Sri Lankan mobile market in figures

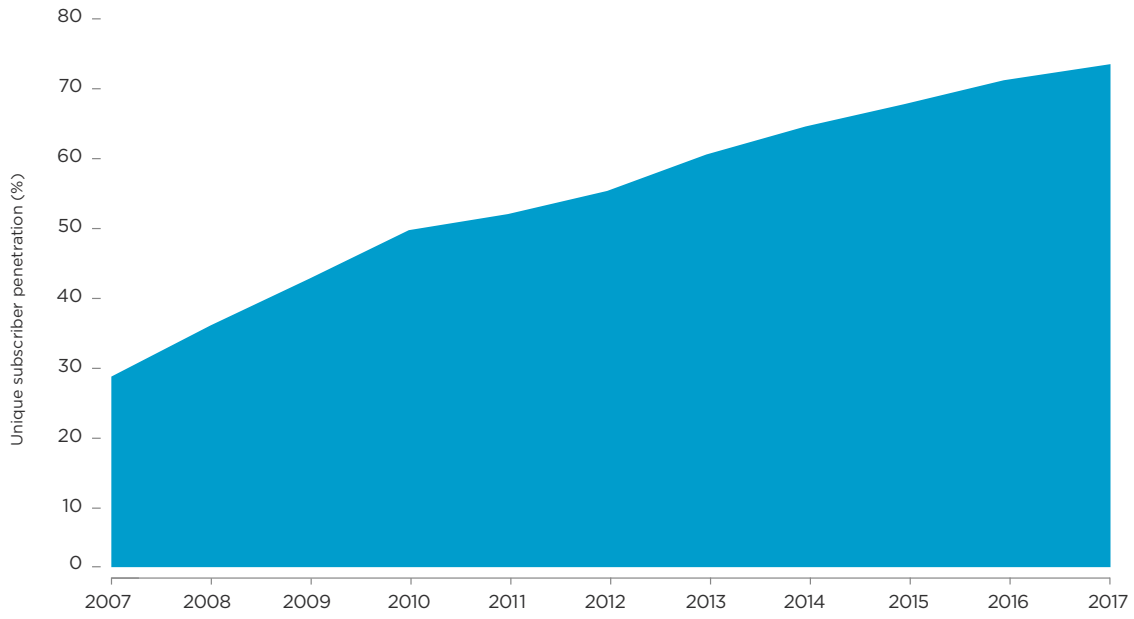


Source: GSMA Intelligence, EY analysis

40. Compound annual growth rate (CAGR) is the mean annual growth rate for the period.

Figure 9

Unique mobile subscriber penetration in Sri Lanka, 2007–2017



Source: GSMA Intelligence database

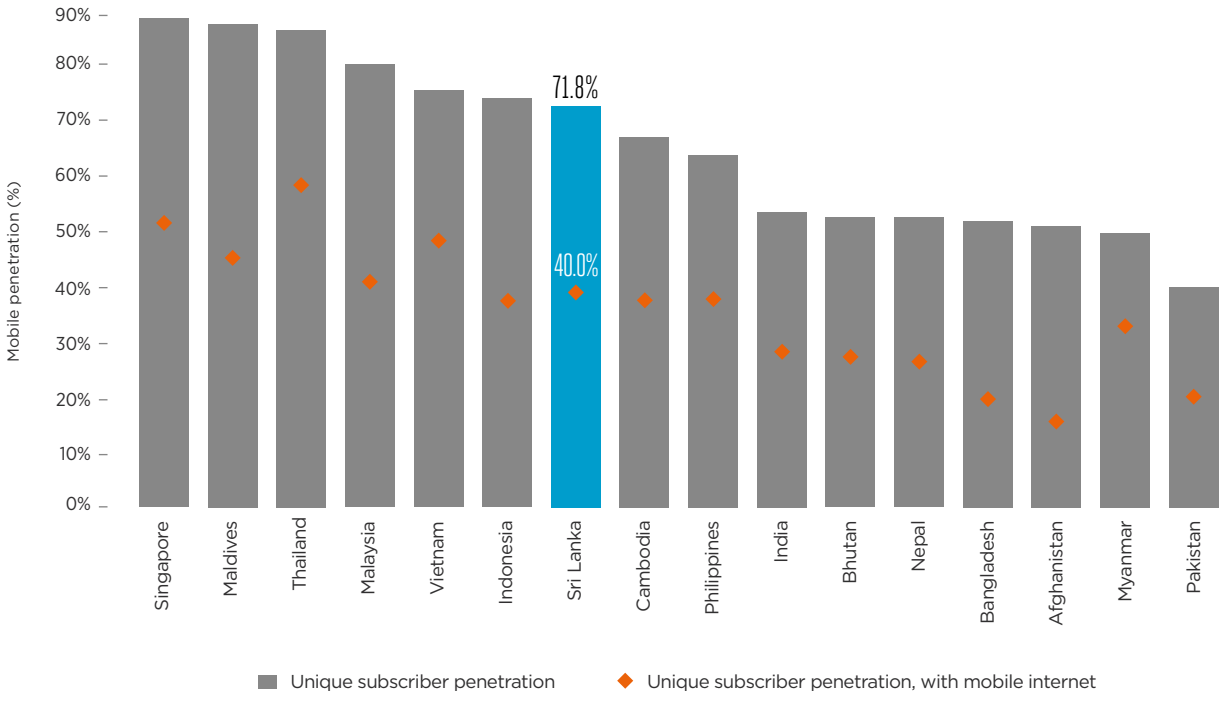
As shown in Figure 9, unique subscriber penetration has more than doubled since the start of 2007, standing at 72% of the population by 2017 (equivalent to 126% penetration in total connections).

However, despite the rapid growth of the mobile market in Sri Lanka, there is still room for expansion, as just over a quarter of the population still remains unconnected to mobile services.

As shown in Figure 10, unique subscriber penetration in Sri Lanka compares favourably with its immediate South Asian neighbours, but ranks below a number of Southeast Asian countries such as Vietnam or Indonesia. Furthermore, only 40% of subscribers have access to mobile internet services in Sri Lanka, which suggests that an opportunity exists to migrate customers to newer technologies.

Figure 10

Mobile penetration (unique subscribers – all and with mobile internet) in selected Asian countries, 2017



Source: GSMA Intelligence database

As shown in Figure 11, mobile penetration (total connections) for 3G surpassed 2G in 2017, thereby becoming the dominant technology in the Sri Lankan mobile market. Penetration (total connections) for 3G services reached 59.4% in Q4 2017, increasing from just 13.8% five years earlier in Q4 2012. Adoption of 4G is also expected to rise rapidly in the medium term, surpassing 2G by 2021.

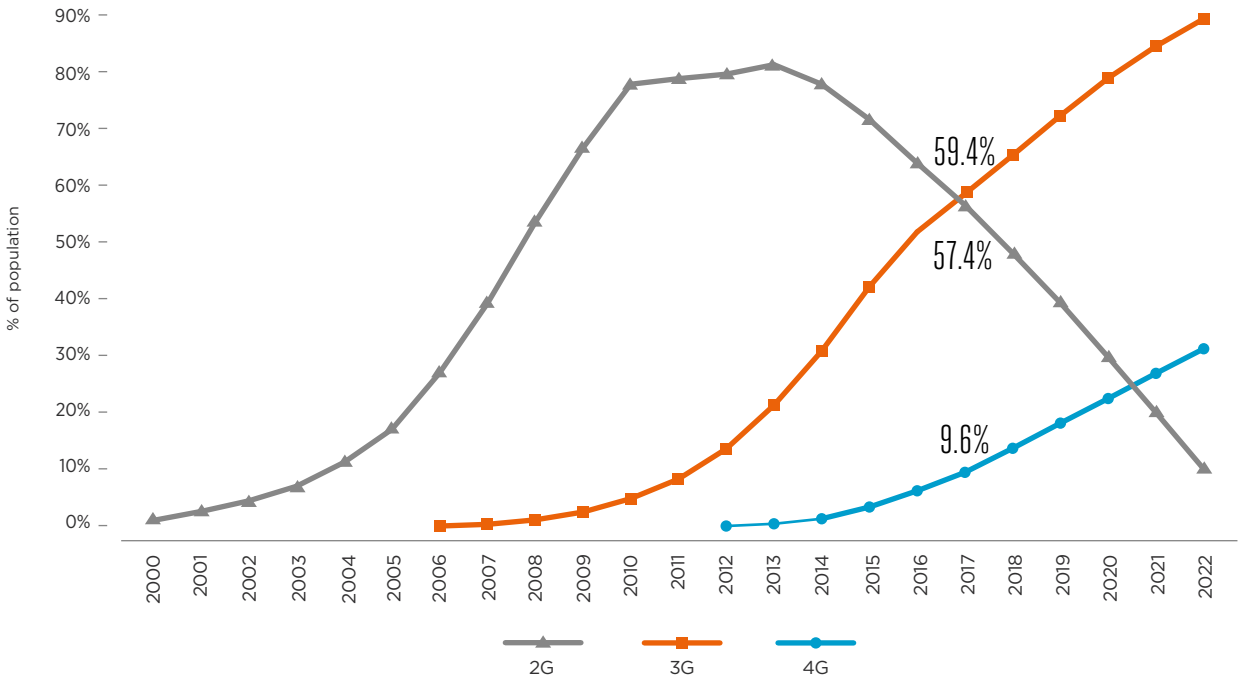
Given the limited fixed broadband penetration in Sri Lanka (4.1% in 2016),[41] the impressive growth of the mobile sector and its investment in 3G/4G technology, demonstrates its importance to realising the objectives set out in *Vision 2025*. Specifically, by enabling greater digitisation and financial inclusion across Sri Lanka, the mobile market can play a vital role in transforming the country into a knowledge-based services hub in the medium term.

However, despite the growth of the sector in terms of penetration and availability of 3G/4G technologies, monthly average revenue per user (ARPU) is relatively low in Sri Lanka, at an estimated $2.38 per connection in Q4 2017. By global standards, ARPU levels in Sri Lanka are very low, ranking 230th out of the 239 countries and regions within the GSMA Intelligence database.[42] This may be related to the level of competition in the Sri Lankan mobile market, which is measured by the Herfindahl–Hirschman Index (HHI).[43] There are currently five mobile network operators in Sri Lanka and the level of competition is high (HHI = 2,908 in Q4 2017) compared to regional peers (e.g. Maldives, HHI = 5,002 in Q4 2017).[44] For a range of data services, Over-The-Top (OTT) service providers (who face lower levels of taxation in Sri Lanka) also add to the competitive pressures facing mobile operators, limiting the scope for profits and reinvestment in the sector.

41. World Bank Databank – this is calculated as the total number of fixed telephone lines divided by the population
42. GSMA Intelligence database
43. The HHI is a measure of competition: it takes the sum of the squared market share held by each mobile operator in a country, giving a maximum country value of 10,000. Higher values indicate a larger concentration of share held by one or two operators, which generally indicates a lower level of competition.
44. GSMA Intelligence database

Figure 11

Market penetration rate (total connections), by technology



Source: GSMA Intelligence database

1.5 Affordability of smartphones and mobile services in Sri Lanka

Meeting the United Nations 2025 affordability target for mobile ownership should boost digitisation and prosperity in Sri Lanka.

Lack of affordability can represent a significant connectivity barrier, particularly so for those at the bottom of the economic pyramid. Analysis conducted by the GSMA highlights that countries with a high cost of mobile ownership (including both device and airtime/data) as a share of income per capita[45] typically have lower penetration rates.[46] A lack of affordability has been cited by up to 80% of people in developing countries as the main barrier to mobile access and usage and therefore there is significant scope to improve.[47]

A basic measure of affordability of mobile services is the proportion of monthly income which is spent on mobile services and devices. To identify the affordability challenges associated with mobile services and devices, the GSMA estimates the total cost of mobile ownership (TCMO) for a range of countries, income groups and consumption baskets.[48]

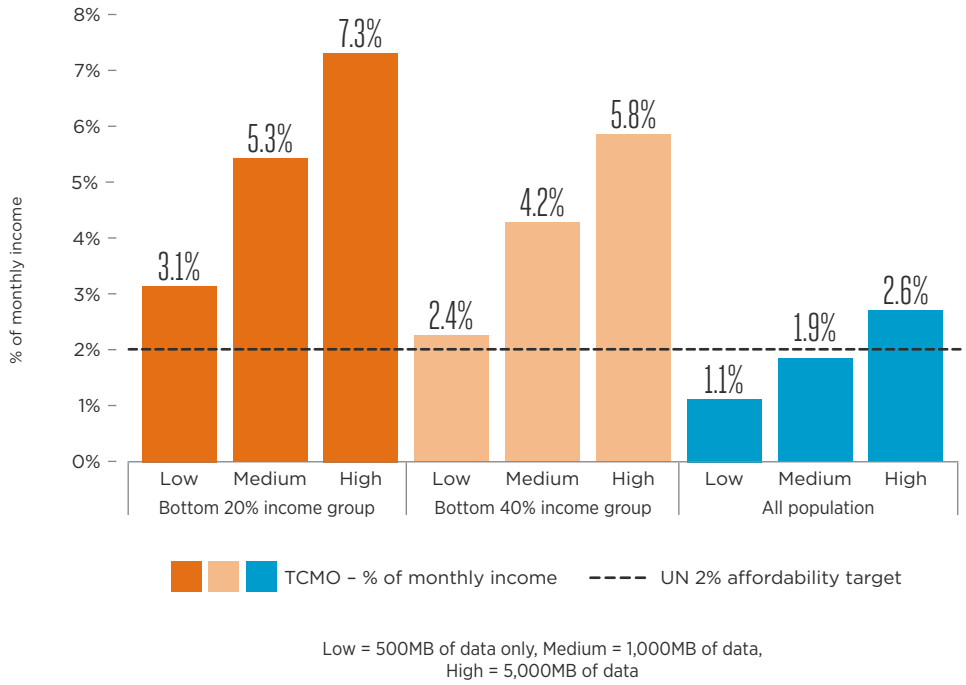
Figure 12 shows the TCMO as a proportion of monthly income for the two lowest income quintiles in Sri Lanka, compared to the entire population.

For a medium consumption basket (1GB of data), the poorest 20% of the population in Sri Lanka spend approximately 5.3% of their monthly income on mobile ownership, while a high consumption basket (5GB of data) would cost approximately 7.3% of their monthly earnings.

Improving the affordability of mobile ownership in Sri Lanka is directly supportive of the Government's medium term objectives outlined in *Vision 2025*, which aims to "enhance (d) digital ecosystems, through reduced transaction costs".[49] To deliver this vision, Sri Lanka can aim to achieve and surpass the United Nations' "1 for 2"[50] affordability target set for 2025,[51] which seeks to ensure that 1GB of data costs no more than 2% of monthly income for individuals in emerging economies. While basic packages arerelatively affordable for all income groups in Sri Lanka and are below the current 5% UN affordability threshold,[52] more-data intensive packages represent a greater affordability challenge. The lack of affordability for these consumption baskets among low-income individuals limits smart phone penetration (51%) and 3G/4G penetration (69% total connections).

Figure 12

TCMO as a proportion of monthly income in Sri Lanka, 2016



Source: GSMA Intelligence database, Tarifica

45. Defined as Gross National Income (GNI) per capita
46. GSMA, 2016, "Digital Inclusion and Mobile Sector Taxation".
47. GSMA Connected Women, 2015, "Bridging the gender gap: mobile access and usage in low- and middle-income countries".
48. TCMO consists of the cost of a handset, activation and usage costs. It is typically calculated as a cost per month and assumes a life expectancy of a device of 36 months for medium and low-income countries and 24 months for high and very high-income countries.
49. Office of the Prime Minister of Sri Lanka, 2017, "Vision 2025", http://www.pmoffice.gov.lk/download/press/D00000000061_EN.pdf
50. '1 for 2' refers to 1GB of data costing less than 2% of monthly income.
51. Alliance for Affordable Internet, 2017, "2017 Affordability Report", http://a4ai.org/affordability-report/report/2015/#redefine_%E2%80%9Caffordability%E2%80%9D_with_income_and_gender_inequalities_in_mind
52. UN Broadband Commission, 2017. ICT expenditure reflects mobile broadband prices, prepaid handset-based 500MB. For further information: http://broadbandcommission.org/Documents/ITU_discussion-paper_Davos2017.pdf

1.6 The socio-economic contribution of the mobile sector

Mobile operators directly contributed $298 million in direct value added to the economy in 2017.

Total mobile sector revenues were $947 million in 2017,[53] equivalent to 1.1% of Sri Lankan GDP. Mobile operators contributed approximately $298 million of direct economic value to Sri Lanka in 2017 (0.4% of GDP),[54] while also supporting a much wider mobile ecosystem, including mobile applications and mobile content developers, mobile distribution providers and retail companies. These companies create further economic activity in Sri Lanka by buying products and services from firms in their supply chain (indirect effects) and by generating employee income which leads to increased consumer spending, generating demand in consumer goods markets (induced effects).

Mobile connectivity promotes productivity improvements in the economy.

Greater access to mobile services has transformed economies, accelerating economic growth and development in countries worldwide. The effects of mobile connectivity on an economy are largely delivered through its impact on productivity. Improvements in mobile connectivity can improve communication and trade within an economy, while also making a country more attractive for foreign investment. Added connectivity can also boost tourism and allow firms to access a broader pool of labour,[55] The benefits of mobile connectivity–and how it translates to the wider economy–have been widely studied. For example, a literature review by the International Telecommunication Union (ITU) finds that a 10% increase in mobile broadband penetration leads to a 0.25% to 1.38% increase in GDP.[56] Further, a number of studies have shown a strong relationship between mobile penetration and productivity; these show that a 10% increase in mobile penetration increases productivity by between 1.0% and 1.3%.[57]

Mobile networks promote digital inclusion and can bridge the digital divide.

Where fixed broadband coverage is low (as is the case in Sri Lanka, where just 4.1% of the population have fixed subscriptions),[58] mobile networks are central to promoting digital inclusion, due to the lower cost of network roll-out. This is particularly true for Sri Lanka's large rural population, which represent 82% of the population and will require greater access to the knowledge and digital economy as Sri Lanka undertakes transformative structural reforms in the medium term.

In line with *Vision 2025*, mobile services can enhance the productivity of Sri Lanka's agriculture sector, moving farmers from purely subsistence agriculture to agri-business. The Government of Sri Lanka has committed to promoting ICT-enabled agricultural extension services to farmers, by encouraging mobile phone-based services.[59]

CASE STUDY
Farmer's Friend[60]

Dialog Sri Lanka's Govi Mithuru (Farmer's Friend, Uzavar Tholan in the Tamil language version) is an agricultural value-added service, which aims to offer comprehensive advice to farmers in Sri Lanka, with a particular focus on reducing dependence on chemical inputs, an issue frequently raised in the target market.

Through outbound dialling and interactive voice response, the service offers agricultural advice at each stage of the farming cycle, from land preparation to post-harvest support. Content is provided across eight crops, alongside nutrition and home gardening content, all provided by CABI Sri Lanka and quality assured by the Sri Lankan Department for Agriculture. The service is priced at LKR 1 ($0.007) per crop per day.

By December 2016, the service had acquired over 250,000 registered users. Approximately 62% of the users have repeatedly accessed the service, who have a 3.3 times higher likelihood of changing planting habits compared to non-users. Users also generate 5% higher monthly average revenue per user (ARPU) and 3% lower churn than comparable non-users.

53. GSMA Intelligence database
54. GSMA Intelligence database and companies' annual accounts data.
55. Oxford Economics, 2013, "The Economic Value of International Connectivity".
56. ITU, 2012, "The Impact of Broadband on the Economy: Research to Date and Policy Issues".
57. LECG, 2009, "Exploring the Relationship Between Broadband and Economic Growth"; and Waverman et al., 2009, "Economic Impact of Broadband: An Empirical Study".
58. World Development Indicators, World Bank Databank
59. Office of the Prime Minister of Sri Lanka, 2017, "Vision 2025", http://www.pmoffice.gov.lk/download/press/D00000000061_EN.pdf
60. GSMA, 2017, "Govi Mithuru/Uzavar Tholan: A mobile agriculture service by Dialog, Sri Lanka", https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2017/06/govi-mithuru-mobile-agriculture-service-dialog-sri-lanka.pdf

Mobile technology also removes other barriers to access to broadband services, including the affordability of ownership of a PC or laptop and access to a bank account. As of 2016, just 32% of Sri Lankan individuals were internet users (fixed and mobile internet) and hence increased roll-out of mobile broadband services will be key to addressing relatively low levels of access to internet services.

Mobile money can expand access to financial services, providing low-income citizens with a secure, accessible and convenient method to manage their finances.

Mobile money services have the power to transform financial systems and promote a move away from cash-based economies. They provide affordable financial services to low-income subscribers and enable safety, security and convenience for financial transactions for those who do not have access to traditional financial services.

Mobile money services were first introduced to the Sri Lankan market through Dialog's eZ Cash application in 2012, under a licence issued by the Central Bank of Sri Lanka. The mobile money network accounts for over 16 million subscribers across Dialog, Etisalat, Hutch and Mobitel's mCash platform, while there are over 20,000 merchant partners across the country.

There are several advantages to electronic payments when compared to cash payments, including contributing to higher transparency of transactions. Cash transactions are often unregistered which allows for the development of a shadow economy and the evasion of tax payments. The promotion of electronic payments, including mobile money transactions, could reduce the budgetary cost of the shadow economy to the Government of Sri Lanka.[61]

Mobile health.

Mobile health (m-Health) applications can improve health systems through reducing the cost of service delivery, providing distribution channels for public health information, streamlining health administration and data management and even aiding real-time supply chain management[62] In a number of countries, including Sri Lanka, mobile healthcare has already been shown to be effective for triaging rural patients who cannot reach urban tertiary care centres and for enabling video-based consultations using mobile broadband, thereby making healthcare accessible to this underserved population.[63]

CASE STUDY
oDoc[64]

oDoc is a Sri Lankan mobile health application which connects individuals to doctors for video consultation and care. The application enables users to book appointments in seconds, upload photos and lab tests and see a doctor on demand. oDoc general practitioners are available to answer general health questions and provide expert opinions on a wide range of domains including dermatology, orthopaedics, paediatrics and gynaecology.

The company is based in Colombo and was founded by medical doctors, Stanford PhDs, mathematicians and ex-senior executives of the John Keells Group. In 2017, oDoc received $1 million seed funding from local investors Phoenix Ventures, the largest seed funding amount provided in Sri Lanka.[65]

61. EY, 2016, "Reducing the Shadow Economy through Electronic Payments".
62. University of Cambridge, 2011, "Mobile Communications for Medical Care".
63. PwC, "Emerging mHealth – Paths for Growth".
64. oDoc, 2018, https://odoc.life/about/
65. GSMA, 2017, "A deep dive into the Sri Lankan start-up ecosystem", https://www.gsma.com/mobilefordevelopment/programme/ecosystem-accelerator/deep-dive-sri-lankan-start-ecosystem

Mobile connectivity can form part of the solution for improving Sri Lanka's healthcare sector, particularly in the context of the increasing demands of an aging population. m-health can be used in education, disease prevention, disease treatment, health care and health support applications. Furthermore, mobile services can be used to overcome traditional barriers[66] to accessing essential information and services, such as geographic isolation, gender disparities[67] and social stigmas.[68]

Disaster response.

Mobile services can play an important role in mitigating the negative impacts of natural disasters, by connecting mobile subscribers with emergency responders, community leaders and national reporting systems. In Sri Lanka, following the Indian Ocean tsunami in 2004, Dialog developed the Disaster and Emergency Warning Network (DEWN), which uses widely available mobile communications technologies such as short messages service (SMS) for early warning. Its purpose is to provide a cost-effective but reliable mass alert system.[69]

Mobile learning.

Mobile learning (m-Learning) has the ability to reduce inequalities in educational systems by widening access to learning materials, improving literacy and reducing drop-out rates. Sri Lanka has the highest rate of enrolment in primary (98.9%) and secondary education (85.4%) in South Asia,[70] and is therefore well placed to achieve the aim of becoming a knowledge-based economy as set out in *Vision 2025*. Further gains in accessing and providing high-quality education can be made in through the use of m-Learning platforms, which have already been successfully integrated into third-level and professional education in Sri Lanka.

Gender equality.[71]

Mobile can empower women in developing countries, making them more connected, safer and better able to access information. Mobile connectivity also provides women with access to services and life-enhancing opportunities, such as health information and guidance, financial services and employment opportunities.[72]

CASE STUDY
m-Learning

Mobitel has collaborated with government, universities, businesses and professional education bodies to develop the m-Learning platform for a range of education levels across Sri Lanka.

The initiative began in September 2008 with the collaboration of the University of Colombo through the development of a Diploma in Marketing course. With the success of this course, many other faculties (including. Science, Economics and Business Administration) have now joined m-Learning and are currently delivering their courses using this unique education tool.

With the Sri Lankan government, Mobitel launched the 'Leadership and Positive Thinking' training initiative, which introduces training methods that help to induce positive thinking and empowerment among young Sri Lankans. The course embraces topics on decision making, teamwork, empathy, personality building, interdependency and conflict resolution.

Sri Lanka was ranked 109th in the world (4th in South Asia) for gender equality according to the 2017 Global Gender Gap Report.[73] Gender equality improvements are targeted in *Vision 2025*, which specifically targets the female labour force participation rate, which was just 35.9% in 2016[74] (approximately half the participation rate observed among Sri Lankan males). The improvement is envisaged through improving access to good quality, affordable child care facilities; facilitating part-time and flexible work arrangements; improving maternity benefits for private sector employees; and improving access to tertiary education and vocational training.

66. N. McKee, J.T. Bertrand and B.L. Becker, 2004, "Strategic communication in the HIV/AIDS epidemic".
67. T.A. Gurman, S.E. Rubin and A.A. Roess, 2012, "Effectiveness of mHealth Behavior Change Communication Interventions in Developing Countries: A Systematic Review of the Literature", in Journal of Health Communication: International Perspectives, 17(1).
68. J.G. Khan, J.S. Yang and J.S. Khan, 2010, "Mobile health needs and opportunities in developing countries", US National Library of Medicine National Institutes of Health, in Health Affairs (2), pp. 254–261.
69. GSMA, 2015, "Disaster Response: DEWN – Dialog's Disaster and Emergency Network", https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2015/02/GSMA_Dialog_DEWN_Disaster_Emergency_Warning_Network.pdf
70. World Development Indicators, World Bank Databank
71. Mobitel, 2018, "mLearning", http://www.mobitel.lk/mlearning-0
72. GSMA Connected Women, 2015, "Bridging the gender gap: Mobile access and usage in low- and middle-income countries".
73. World Economic Forum, Global Gender Gap Index
74. Office of the Prime Minister of Sri Lanka, 2017, "Vision 2025", http://www.pmoffice.gov.lk/download/press/D00000000061_EN.pdf

2. Mobile sector taxation in Sri Lanka

Sri Lanka's tax and regulatory system is complex and in comparison to other countries and sectors, the tax burden on the mobile market is high.

2.1 Overview of mobile taxation in Sri Lanka[75]

2.1.1 Taxation on mobile consumers

Table 1 below outlines the different taxes that apply to consumers of mobile products.

Table 1

Key taxes on mobile consumers, 2017

Consumer taxes	
Value-added tax (VAT)	15%
Telecommunications levy	25%
Outgoing local access charge (OLAC)	LKR 3 per minute
Telecommunications Development Charge (TDC) on international incoming calls	$0.12 per minute
Nation building tax	2%
Cess on telecommunication operators	2%

Value-added Tax

Telecommunication services such as the provision of data and telephone calls are subject to the standard rate of value-added tax (VAT) in Sri Lanka of 15%, as are handsets, SIM cards and scratch cards.

75. This section is based on IBFD's information, EY 2017 Worldwide Corporate Tax Guide, the Sri Lankan Ministry of Finance and Mass Media, Sri Lanka Inland Revenue and operators' data.

Telecommunications levy
The levy is imposed on voice and SMS services at a rate of 25% of the value of the supply of telecommunications services provided by the operator each month. Internet services have been exempted from 1 September 2017.

Outgoing local access charge (OLAC)
Outgoing international direct dialling calls (IDD) are charged at LKR 3 per minute.

Telecommunications Development Charge (TDC) on international incoming calls
The ITOL is charged on incoming international calls terminated in Sri Lanka at a rate of $0.12 and is composed of two elements:

- The international termination rate, called the Incoming Local Access Charge (ILAC), at $0.06 per minute; and
- The levy (sensu stricto) called the Telecommunications Development Charge (TDC), at $0.06 per minute.

The international telecommunications operator must pay the ILAC directly to the Domestic Public Switched Telephone Network (PSTN) Operators.[76] The TDC must be paid to the Telecommunications Regulatory Commission (TRC). Fifty per cent of the TDC collection goes to a consolidated fund and the remaining must be spent by the TRC in the development of the telecommunications industry in Sri Lanka, in order to achieve the universal service and access objectives specified by the Commission itself from time to time.[77]

Nation building tax
The nation building tax is levied on business revenue at a rate of 2%. To be subject to this tax, the business must earn over LKR 3 million per quarter.

Cess on telecommunications operators
Cess[78] is charged at 2% on the annual gross turnover of the operator.

2.1.2 Taxation on mobile operators

Table 2 below outlines the different taxes that apply to operators providing telecommunications services.

Table 2

Key taxes on mobile operators, 2017

Central taxes	
Corporation tax	28%
Personal income tax (on wages)	24% (top rate)
Social security (EPF)	12%
Economic service charge	0.1% – 0.5%

76. Where an international telecommunications operator is also a domestic PSTN operator, it is permitted to make inter-company or intra-company settlements in respect of the ILAC Source: International Telecommunications Operators Levy (imposition) Regulations, No. 01 of 2010 published in Gazette Extraordinary No. 1662/ 1 of July 12, 2010.
77. International Telecommunications Operators Levy (imposition) Regulations, No. 01 of 2010 published in Gazette Extraordinary No. 1662/ 1 of July 12, 2010.
78. A cess is a tax or levy imposed for a specific purpose and is aimed at achieving a particular objective. It is thus a hypothecated tax that does not form part of the general revenue available to the executive branch of government. Source: IBFD.

Corporation tax
Resident companies are subject to taxation on their worldwide profits. The corporation tax rate in Sri Lanka is 28%.

Other taxes

- **Personal income tax.** All resident individuals are liable to pay income tax on their worldwide income. The rate of tax depends on the income the individual earns, with the top rate of income tax being 24%.
- **Social security.** Social security contributions are calculated based on the amount of remuneration paid to their employees.
- **Economic service charge.** The economic service charge is due if the quarterly turnover exceeds LKR 50 million. It is due at a rate between 0.1% and 0.5% on turnover.

2.1.3 Regulatory fees on mobile operators

Table 3 below outlines the different taxes that apply to operators providing telecommunications services.

Table 3

Key regulatory fees on mobile operators, 2017[79]

Regulatory fees	
Annual spectrum fees	Depends on bandwidth and MHz[80]
Base station fees	LKR 100,000 – 300,000 per base station
National interconnection fees	LKR 0.38 – 1.50 per minute

Source: Telecommunications Regulatory Commission of Sri Lanka (TRC)

2.2 Tax contribution of the mobile sector

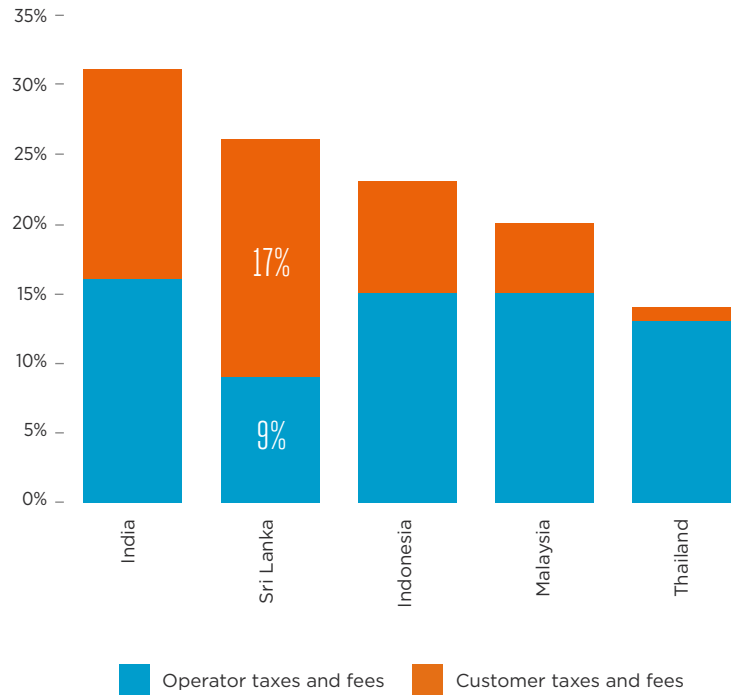
The total tax contribution of the mobile sector is equivalent to 26% of the mobile sector's total industry revenue. In 2017, the total tax contribution is estimated at $246 million.[81] accounting for 2.2% of the total tax revenues of Sri Lanka.[82] This was estimated based on the total tax payments made in 2016. Therefore, it does not to take into account the impact of the removal of the VAT exemption on telecommunications services, introduced in November 2016. Hence, the VAT burden is likely to be higher in reality. This estimation does not capture the impact of the removal of the Telecommunications Levy on internet services in September 2017, either

Operators pay 34% of the total taxes, while consumers pay the remaining 66%. As shown in Figure 13, this total tax burden as a percentage of mobile revenue is one of the highest among a sample of South Asian and Southeast Asian countries, including Thailand (14%), Malaysia (20%) and Indonesia (23%).The share of consumer taxes is also the highest in the sample.

79. Exchange rate is USD to LKR 145.6. This table includes the regulatory fees available on public sources or on information provided by the operators.
80. Based on data received from operators, the effective rate is 2.5%.
81. Source: EY analysis and operator data
82. The tax revenue of the calendar year 2017 was LKR 1,749 billion ($12,012 million). Source: Sri Lanka Budget 2018.

Figure 13

Operator taxes and fees versus consumer taxes and fees (as a percentage of total mobile sector revenue)



Source: GSMA Intelligence, EY Analysis and operator data

The mobile sector made a large contribution in taxes and fees relative to its economic footprint in 2017. The total market revenue represents 1.1% of GDP. Tax revenues from the mobile sector were 2.2% of Sri Lanka's total tax revenue.[83] This is 1.9 times the size of the sector's revenue as a percentage of GDP.[84]

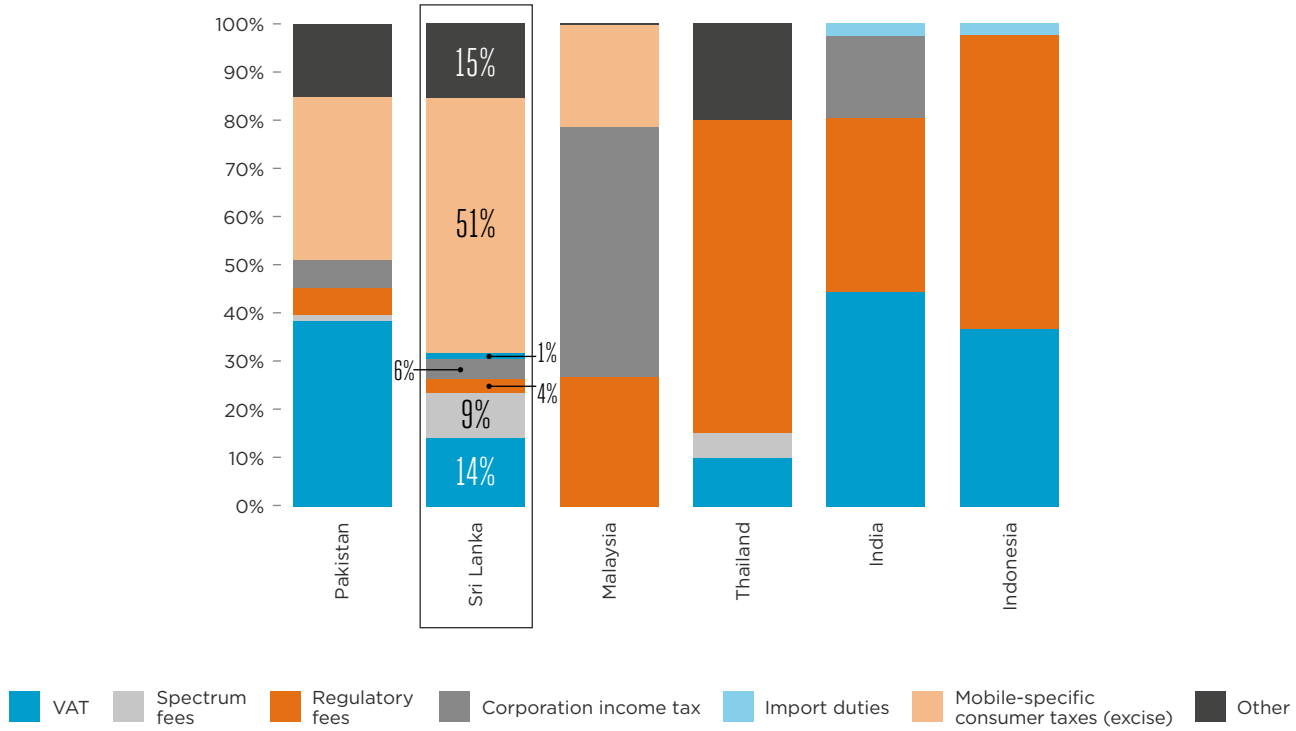
Figure 14 shows the different taxes paid by mobile operators as a proportion of overall total tax payments made by operators in Sri Lanka in comparison to other Asian countries. In Sri Lanka, consumer-specific taxes are the largest source of tax payments (51%), followed by VAT (14%), spectrum fees[85] (9%), corporation tax (6%) and regulatory fees (4%). Other taxes[86] (15%) make up the rest. Consumer-specific taxes contribute more to total tax revenues than in any of the other Asian countries (51%), and more than in Malaysia (24%). Spectrum fees also contribute more to tax revenues than in any other Asian country (9%) in the sample. VAT in Sri Lanka (14%) makes up a greater proportion of the tax revenue than in Thailand (10%). Other taxes (15%) contribute a greater proportion of tax revenue than in Malaysia (1%).

General taxes are equivalent to around 6% of total mobile sector revenue. This is higher than the share in Thailand (4%), as shown in Figure 15. Mobile-specific taxes represent a much larger share of mobile sector revenues, especially when compared to other Asian countries at 20%. This is higher than in Thailand (10%), Malaysia (11%), India (11%) and Indonesia (14%).

83. EY analysis based on operators' data for 2016.
84. The GDP of Sri Lanka in 2016 was $81.32 billion. Estimated growth in 2017 was 4.7%, giving an estimated GDP in 2017 of $85,144 billion. Source: World Bank
85. This includes annual spectrum fees only.
86. This includes all other tax payments made by operators which are not covered by a specific category (including stamp duty, economic service charge, personal income tax, social security contributions, VGF and nation building tax).

Figure 14

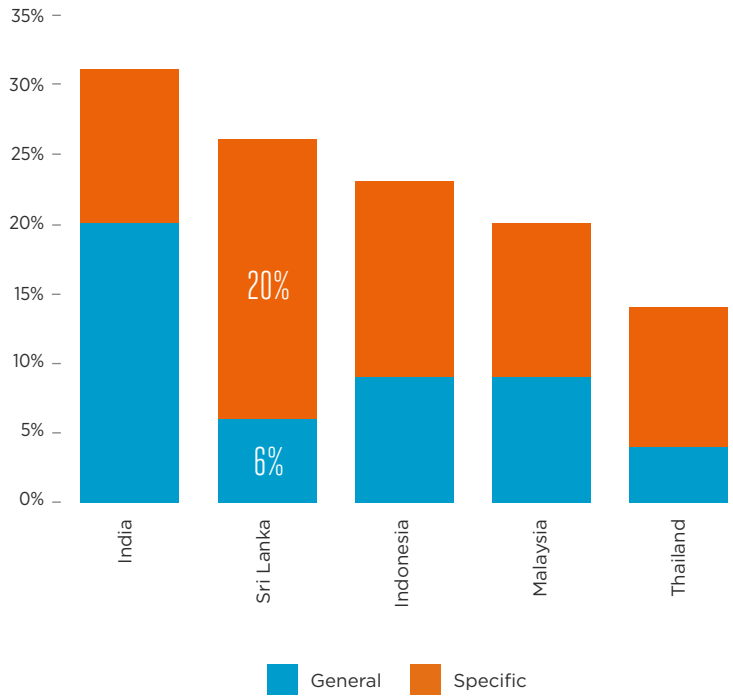
Total tax breakdown



Source: GSMA Intelligence, EY Analysis and operator data

Figure 15

General taxes and fees versus mobile sector-specific taxes and fees (as a percentage of mobile sector revenue)



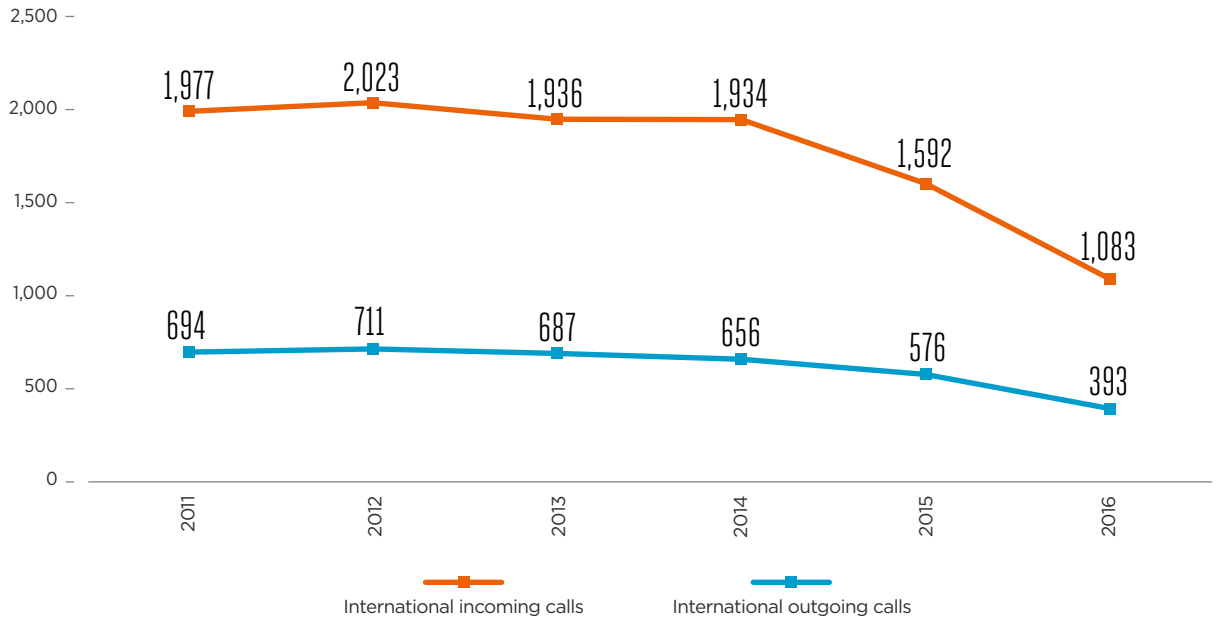
Source: GSMA Intelligence, EY Analysis and operator data

In relation to the ITOL and OLAC, a declining trend in international incoming and outgoing calls can be seen following their implementation in 2010.[87] as shown in Figure 16. The duration of international incoming calls dropped by 45% from 2011 to 2016. Similarly, the duration of outgoing calls fell by 43% from 2011 to 2016.[88]

Higher calling rates (as a result of the higher taxes on international calls and the imposition of VAT) may have now exacerbated the shift to data-based calls in Sri Lanka.

Figure 16

Call duration in Sri Lanka (in millions of minutes)



Source: Telecommunications Regulatory Commission of Sri Lanka (TRC)

87. International Telecommunications Operators Levy (imposition) Regulations, No. 01 of 2010 published in Gazette Extraordinary No. 1662/ 1 of July 12, 2010.
88. In addition, there is evidence suggesting the TDC fund has been underspent, leading to an accumulation of nearly $351 million by 2015. This means the collection of ITOL has not led to a greater public spending in telecommunications infrastructure. Source: Measuring disbursement efficacy of Universal Service Funds: Rohan Samarajiva and Gayani Hurulle. Case studies from India, Malaysia, Pakistan & Sri Lanka. http://www.cprsouth.org/wp-content/uploads/2017/08/Rohan-Samarajiva-and-Gayani-Hurulle_paper.pdf

2.3 Tax burden in comparison to other sectors

In Sri Lanka, not all goods have to bear the same tax burden. Mobile telecommunication services are subject to VAT at the standard rate of 15%, while other goods, including educational services and some food products, are exempt from VAT. Furthermore, mobile services are subject to excise taxes, alongside other sectors such as the insurance and motor vehicles.

Table 4 summarises the main consumption taxes rates applying to different sectors.

Table 4

Key tax rates in Sri Lanka, 2017

VAT (standard rate)	**15%**	
VAT (exempt)		• Wheat and flour • Pharmaceutical products and drugs • Books • Educational services • Specific financial services • Public passenger transport
Excise taxes	**Various**	• Insurance services • Motor vehicles • Telecommunications (levy) • Tobacco and alcohol

Source: 2017 EY Worldwide Corporate Tax Guide, IBFD, Sri Lankan Inland Revenue

3. Designing a more efficient tax policy framework for the mobile sector in Sri Lanka

Governments have to raise tax revenues to fund the provision of public goods and services. However, if the tax system is not designed properly, this could lead to unintended consequences for both the government and the taxpayers in terms of the incidence of the tax burden, distributional effects, efficiency and costs of collection.

In order to prevent such unintended consequences, it is important to follow certain principles of tax policy design which have been consistently developed by international organisations such as the International Monetary Fund (IMF), the Organisation for Economic Cooperation and Development (OECD), the United Nations (UN) and the World Bank.[89]

These principles include:

- Taxation should be as broad-based as possible;
- Specific taxes should be limited and be based on a clear rationale of externalities;
- The tax system should be equitable;
- The tax system should not discourage investment;
- The tax system should be simple; and
- Taxes should be easy to collect.

3.1 Tax policy considerations and principles of taxation applying to the mobile sector

As laid out in Figure 17, the tax system is likely to have wider impacts in terms of:

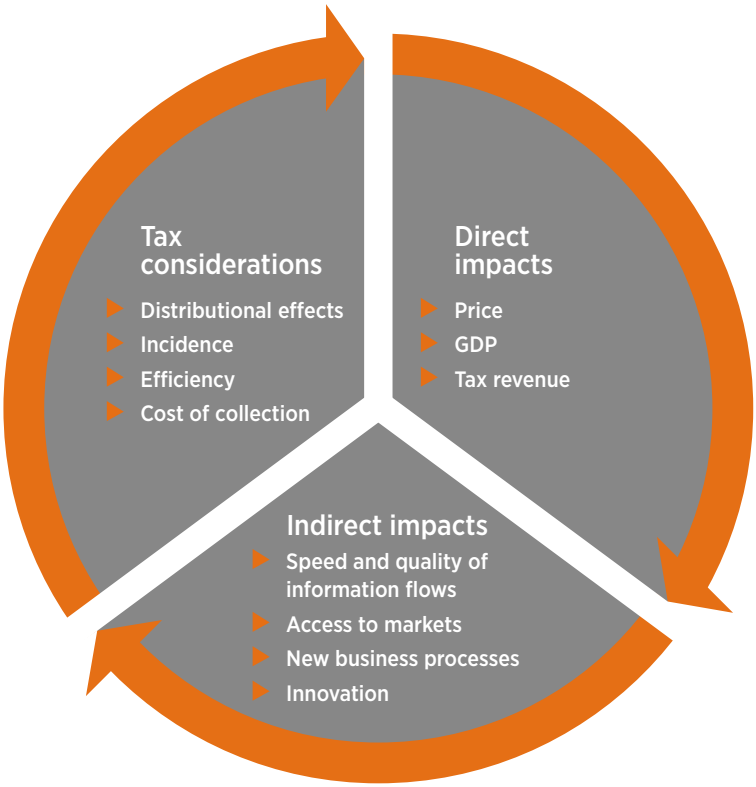
- **Price.** Tax rises can lead to price changes and therefore to changes in demand for mobile services;
- **Tax revenue.** A change in the design or rate of tax will have an impact on tax revenues, which may be positive or negative depending on the precise change and how it is implemented; and
- **Productivity.** To the extent that tax changes broaden or narrow access to mobile technologies, they deliver or impede productivity gains across the economy.

Indirectly, the taxation of the mobile sector will also impact information flows, access to markets, business processes and innovation. This will ultimately affect the economic growth and development of a country.

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

Figure 17

Factors shaping tax policy choices



In order to make sure these impacts are positive, there are key factors which generally need to be taken into account by any tax policy on the mobile sector.[90] These include:

- **Distributional characteristics.** The design of a tax can impact different cohorts of taxpayers in different ways, such as those in different income deciles.
- **Economic incidence.** Who bears the tax depends on the market structure, the demand elasticity and the scope for tax cuts to be absorbed in prices. This incidence will, in turn, determine where in the economy and at what stages in the supply chain the impact of the tax is felt.
- **Efficiency.** Taxes have the capacity to distort decision making by increasing costs of production and distribution. The efficiency of a tax can be assessed against the extent to which unwarranted and unintended distortions are avoided.
- **Cost of collection.** The complexity of a tax and its conformity with existing models and procedures have a direct impact on the cost of collection (administrative burden) and the costs of compliance to the taxpayers.

90. There are a number of theoretical studies around the taxation of mobile services, including: ITU, June 2013, "Taxing Telecommunication/ICT Services: An Overview".

These key tax considerations should be appropriately balanced by applying the following principles:

- Broad-based taxes with single and low rates, minimising the use of exemptions, should be favoured over specific taxes. This should allow the maximisation of revenue with minimal distortions to the consumption and provision of mobile services.
- Specific taxes must be highly selective, narrowly targeting a few goods mainly on the grounds that their consumption entails negative externalities on society. Therefore, mobile phones and services should not be included in a list of goods and services singled out for exceptionally harsh tax treatment.[91]
- Mobile operators and consumers should be treated equally to other people in equal circumstances in an equal way ("horizontal equity"). In addition, the tax system should also preserve "vertical equity"[92] by avoiding the imposition of regressive taxes which affect more heavily consumers of mobile services in the lower income groups.[93]
- Taxes should not undermine the affordability of mobile services, as excessive taxation can increase the cost of handsets and mobile services.[94]
- A stable and transparent tax system in line with international standards is a strategy that would deliver sustained investment.[95]
- Tax rules should be clear and no more complex than needed to achieve the policy aim, facilitating mobile businesses and consumers to make optimal decisions and respond to intended policy incentives.[96]
- The collection of taxes should be as efficient as possible, i.e. low tax administration costs and minimisation of evasion and avoidance costs.[97]

3.2 Outlook for the tax environment in Sri Lanka

The World Bank ease of doing business report[98] ranks Sri Lanka 111 out of 190 countries and four out of eight South Asian countries.

Furthermore, the tax regime in Sri Lanka is regarded as particularly difficult for businesses. The World Bank places Sri Lanka 158 out of 190 global countries and six out of eight South Asian countries when it comes to the ease of paying taxes. The number of tax payments, the time spent to prepare, file and pay taxes, the total tax and contribution rate and the post-filing time, make Sri Lanka's system extremely complex and represent a large administrative burden for companies, acting as a barrier to future investment.

This suggests that a more friendly business environment is necessary to attract more investment. The mobile sector in Sri Lanka has great scope for growth given it is 20 out of 34 Asian and Pacific countries in the ICT Development Index of the International Telecommunication Union (ITU) and 117 out of 176 countries globally.[99] Improving the business environment is key to taking advantage of this potential growth.

91. ITU, June 2013, "Taxing Telecommunication/ICT Services: An Overview".
92. *ibid.*
93. Richard M. Bird and Eric M. Zolt, 2003, "Introduction to Tax Policy Design and Development" in World Bank, Practical Issues of Tax Policy in Developing Countries.
94. V. Tanzi and H. Zee, March 2001.
95. V. Tanzi and H. Zee, March 2001.
96. IMF, OECD, UN and World Bank, July 2016, "Enhancing the Effectiveness of External Support in Building Tax Capacity in Developing Countries". Prepared for Submission to G20 Finance Ministers.
97. Fiscal Affairs Department, March 2011, "Revenue Mobilization in Developing Countries". Approved by Carlo Cottarelli, IMF
98. World Bank, 2017, "Doing business – Measuring business regulations".
99. ICT Development Index, 2017, http://www.itu.int/net4/ITU-D/idi/2017/#idi2017economycard-tab&LKA

3.3 An assessment of mobile sector taxation in Sri Lanka

An assessment of the current mobile tax regime in Sri Lanka against the four tax considerations and principles elaborated in section 3.1 identifies the following characteristics:

- **The current tax system has a high incidence on both mobile operators and consumers.** Despite the positive externalities of the sector, mobile services are subject to a high level of specific taxation. As a result, the tax revenue received from the mobile sector is 26% of overall market revenue. 20% is made up of taxes specifically charged on the mobile sector. As mentioned above, mobile services have positive impacts for the wider economy in terms of connectivity and digital inclusion. Therefore, it is not clear why they should be penalised with specific taxes.

- **Taxes undermine the affordability of mobile services and are likely to have a negative impact on the distribution of income.** Consumers of mobile services face a high tax burden. Taxes on consumers contribute 58% of the total tax revenues from mobile operators. This high level of tax on consumers means that mobile services are more expensive than they could be in Sri Lanka. This may hinder connectivity and digital inclusion for those on lower income in Sri Lanka.

- **The tax system is not efficient and discourages investment, as mobile operators are taxed more heavily than others in Sri Lanka.** Efficiency could be improved by reducing the burden on specific industries, such as the mobile industry. Mobile companies are more heavily taxed than other sectors in Sri Lanka. For example, despite the positive externalities generated by the industry, mobile operators are subject to extra taxes on their corporate income, such as the Telecommunications System Licence. The resulting reduced profits send signals to the market that the provision of mobile services and production of mobile technology is not a profitable investment and this is likely to stifle investment in the industry.

  Furthermore, taxes on consumption have a low tax base, with many exemptions, distorting the efficient allocation of resources. In theory, the tax base should be broad, covering as many goods and services as possible and the point of impact of the tax should be as close to the consumer as possible. This is not the case in the VAT regime in Sri Lanka, hence it does not tax the whole of the "value added" involved in getting a product or service to the final consumer.

- **The tax and regulatory system for mobile is not simple and increases the cost of collecting taxes.** The tax regime in Sri Lanka is regarded as particularly difficult for businesses. The World Bank places Sri Lanka 158 out of 190 global countries and sixth out of eight South Asian countries when it comes to the ease of paying taxes. The number of tax payments, the time spent to prepare, file and pay taxes, the total tax and contribution rate and the post-filing time, make Sri Lanka's system extremely complex and represents a large administrative burden for companies, acting as a barrier to future investment. As shown in Table 5, in Sri Lanka the number of tax payments required to be made is well above the average for South Asia, at 47 and 28.5 respectively. Furthermore, the effective tax rate of Sri Lanka, at 55.2%, is also higher than in the rest of South Asia at 43%.

Table 5

Sri Lanka tax index, 2017

Indicator	Sri Lanka	South Asia	OECD high-income countries	Overall Best Performer
Tax payments (number per year)	47	28.5	10.9	3 (Hong Kong SAR, China)
Time (hours per year)	168	277.3	160.7	55 (Luxembourg)
Total tax and contribution (% of profit)	55.2	43	40.1	18.47 (32 economies)
Post-filing index (0–100)	49.31	41.05	83.45	99.38 (Estonia)

Source: World Bank, Doing Business 2017

3.4 Recommendations for tax policy reform on the mobile sector in Sri Lanka

Based on this analysis, we have identified two recommendations for reform in line with the tax considerations and principles elaborated above:

- **Option 1** – The elimination of the Telecommunications Levy on mobile services (voice and SMS).
- **Option 2** – The elimination of both the Telecommunications Development Charge (TDC) and the Outgoing Local Access Charge (OLAC).

The recent elimination of the Telecommunications Levy on internet services since 1 September 2017 is a very important step in the right direction. However, there is still scope for improvement.

The *Vision 2025* goals recognise *"the country needs to develop strategies that encourage the use of digital and other emergent technologies to become globally competitive and to drive the nation towards a digitally empowered economy."* These two proposals will be aligned with these objectives by reducing even further the tax burden on consumers and operators, increasing the affordability of mobile services and the profitability of operators in Sri Lanka. Subsequently, there will be increased demand for these services and the products associated with them, such as mobile phones and greater investment in the operator's network. As a result, the productivity of Sri Lanka is expected to increase thanks to better connectivity, leading to greater digital inclusion.

3.4.1 Eliminating the Telecommunications Levy on voice and SMS

This 25% levy on voice and SMS reduces the affordability of mobile services, restraining mobile inclusion and connectivity.

The rationale for change

- Removing the levy on calls and SMS services that are imposed on consumers will make these services more affordable and increase their consumption, especially for those on lower income. This will subsequently increase the benefits associated with mobile consumption, such as connectivity, digital and financial inclusion.
- Generally, indirect taxes are imposed to reduce the consumption of goods whose consumption has negative costs associated with it, such as the consumption of alcohol and tobacco products. However, the consumption of mobile services, does not have negative costs associated with it. Instead, the effects of consumption, such as connecting people more easily and more importantly, economic productivity, increases are likely to have positive impacts.
- Increasing the demand for these products will make their production more profitable. This sends signals to the market, encouraging investment into the sector, which will lead to a more productive industry and ultimately a better service.

- Voice and SMS services should be granted the same treatment as internet services. The exemption introduced in September 2017 on data was a very important step to achieve greater connectivity for Sri Lanka. A full elimination of this levy would drive further benefits by removing tax distortions across all mobile products.

3.4.2 Eliminating the TDC and the OLAC

The Telecommunications Development Charge (TDC) is charged at $0.06 per minute on international incoming calls and the OLAC is levied at LKR 3 (approximately $0.02) per minute on outgoing international calls. The TDC and OLAC reduce the affordability of mobile voice services and hinder the inbound and outbound connectivity of Sri Lanka with the rest of the world.

The rationale for change

- As with the rationale behind removing the telecommunications levy on calls and SMS, removing the TDC will make international calls cheaper. This will have the same effects of increasing the consumption of these services, and the associated benefits that go along with this, such as increasing connectivity.

- Furthermore, these benefits are likely to be extended from those that are associated with domestic activity. Having a charge on international incoming calls creates an incentive for people not to make calls in to Sri Lanka. This makes Sri Lanka less accessible and could even hamper foreign direct investment.

- As with the rationale behind removing the telecommunications levy and TDC, removing the OLAC charge will make international calls cheaper. This will have the same effects of increasing the consumption of these services and the associated benefits that go along with this, such as increasing connectivity.

- Furthermore, these benefits are likely to be extended from those that are associated with domestic activity. Having a charge on international outgoing calls disincentivises people from making calls outside of Sri Lanka. This shields Sri Lanka from the rest of the world and could even hamper foreign direct investment.

- Consumers are moving away from what they perceive as extremely costly international voice calling via their service providers to using more unreliable, data-based calls instead. A reduction in international call rates through the reduction in taxes could certainly make it attractive to subscribers to continue to use better quality and more stable international voice call services without switching to data-based services. Furthermore, with alternatives freely available, the tax is likely to raise little revenue, as consumers switch to the much lower cost data-based calls.

- Taxes on international calls lead to high monitoring costs to detect fraud. GSM gateways or SIM-boxes can be used to bypass international termination rates. On the other hand, network operators and authorities actively search for anomalous behaviour in calling patterns to find illegal gateways. The result is a "cat and mouse" game between enforcement authorities, mobile operators, and suppliers of anti-fraud services on one side and manufacturers of gateways and parties offering to terminate clandestine international traffic on the other.[100] The removal of the TDC and the OLAC would alleviate the costs and resources, which are devoted by both operators and authorities, to the policing of these illegal gateways; instead, such resources could be spent, for example, on improving the telecommunications infrastructure or promoting the universal access of broadband.

Section 4 presents detailed economic modelling to show the impacts delivered by these options.[101] However, this should not be seen in any way as an exhaustive list of policy options and alternative reductions in these or other taxes could also be explored in Sri Lanka.

100. OECD, 2015, "Working party on communication infrastructures and services policy". *International Traffic Termination*, p.16
101. While a combination of these tax reforms can potentiate the economic benefits for Sri Lanka, the economic assessment will consider the options as separate 'scenarios' where each tax is reformed and compared to a status quo scenario with no change in taxation.

4. Economic impacts of tax reform on the mobile sector in Sri Lanka

4.1 Recommended options for tax reform

Based on the framework and analysis outlined in the previous section, the following two options for tax reform have been assessed quantitatively by modelling their impacts on the mobile sector and the wider economy:

1. The elimination of the 25% Telecommunications Levy on voice and SMS services. This is expected to result in a lower cost of mobile ownership for both households and business subscribers and will increase mobile penetration (and technology migration) and usage as a result.

2. The elimination of both the Telecommunications Development Charge (TDC), levied at $0.06 per minute on incoming international calls and the Outgoing Local Access Charge (OLAC) levied at LKR 3 (approximately $0.02) per minute on outgoing international calls. This will result in lower prices for international calls, leading to increased volumes.

These options for tax reform have been modelled separately in order to isolate the effects of each option on the mobile sector and the wider economy. While the implications of these specific tax reforms have been modelled, alternative scenarios and combinations of these reforms are also possible.[102]

4.2 Approach to assessing the quantitative impacts of tax reform on the mobile market and the wider economy

The potential quantitative impacts of each of the tax options have been analysed using a set of modelling tools representing both the Sri Lankan mobile sector and the Sri Lankan economy as a whole. While a combination of these tax reforms would be likely to lead to beneficial economic impacts for Sri Lanka, the assessment considers the options as separate 'scenarios', where each tax is reformed and compared to a status quo scenario with no change in taxation (the baseline scenario). A model of the Sri Lankan mobile sector has been created to calculate changes in the mobile sector resulting from each of the tax policy scenarios. This includes the change in subscribers, usage, technology, revenues, profits, reinvestment and expanded capacity in the sector.

102. The economic impacts of each option for tax reform have been modelled separately and therefore cannot be simply aggregated to determine the benefits of combined reductions in various taxes.

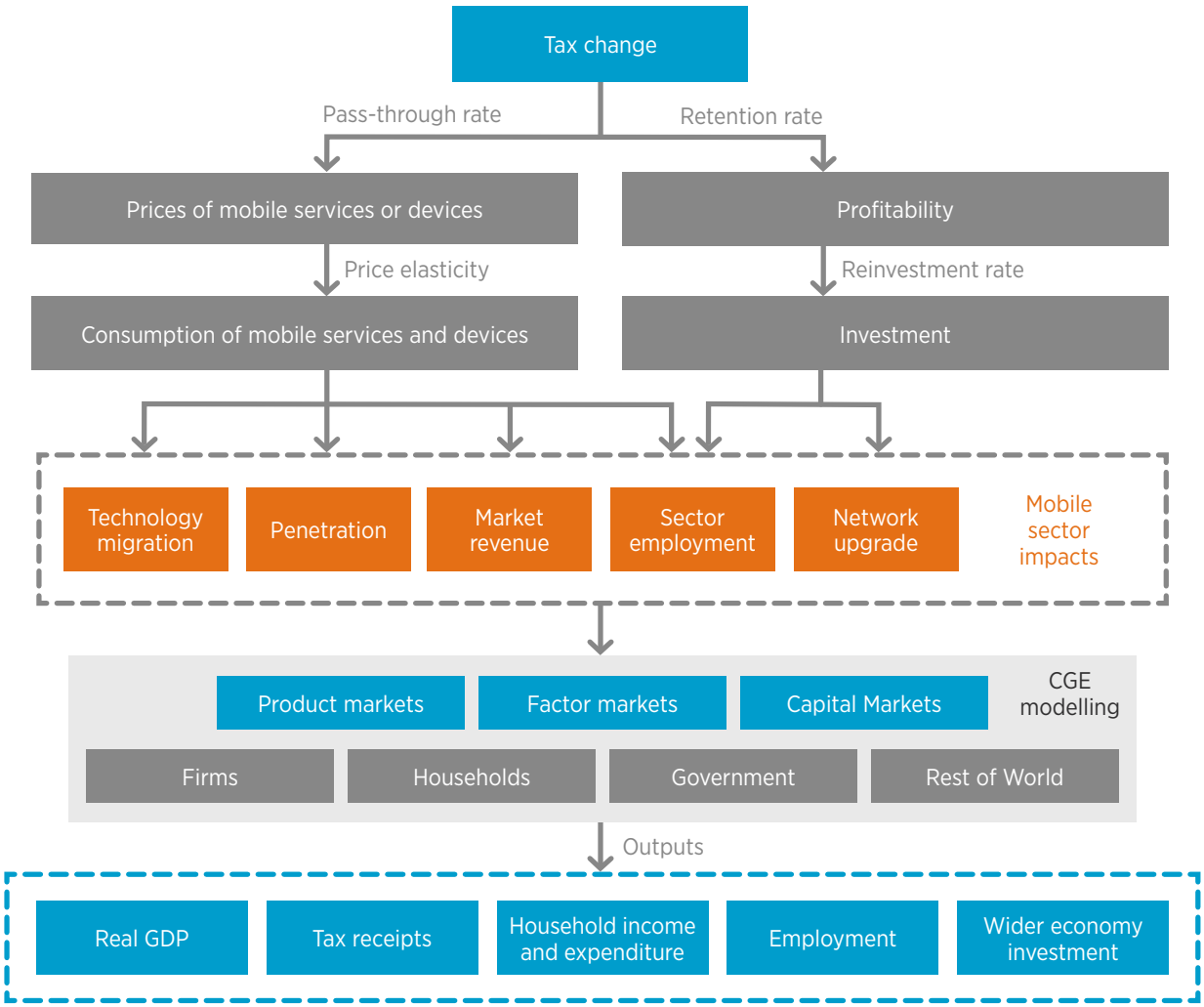
The wider economic impacts of each tax policy scenario are assessed via a 'Computable General Equilibrium' (CGE) model, namely the standard version of the Global Trade Analysis Project (GTAP) model and its associated dataset.[103] The GTAP model contributes to, and is widely used by government agencies, international institutions, the private sector and academia to model policy changes within countries and cross-border effects of trade policies.

Some examples include the World Bank, the World Trade Organization (WTO), the Directorate General for Trade of the European Commission, the Asian Development Bank and the Organisation for Economic Co-operation and Development (OECD).[104]

A schematic of the modelling approach used in this study is shown in Figure 19 below.[105]

Figure 19

Overview of the modelling approach



Source: EY analysis

103. Global Trade Analysis Project (https://www.gtap.agecon.purdue.edu/)
104. GTAP Consortium (https://www.gtap.agecon.purdue.edu/about/consortium.asp)
105. Please see Appendix A for more detail on the methodology approach used in this study to construct the scenario forecasts.

4.3 Eliminating the Telecommunications Levy on voice and SMS

In this scenario, the 25% levy on voice and SMS services would be eliminated, reducing consumer prices and therefore improving the affordability of mobile services.[106] The proposed elimination of the levy on mobile usage would translate into an effective reduction in the price of all mobile services (including data) of 9.7%, the majority of which would be passed through to subscribers.[107]

This price decrease would benefit both households and business subscribers. For household subscribers, the tax reform would improve the affordability of mobile services. For business subscribers, the reduction in supplementary levy would reduce input costs for all sectors that use mobile, increasing demand and freeing up resources which could be invested elsewhere.

This tax scenario is forecast to have the following impacts compared to the baseline scenario.[108]

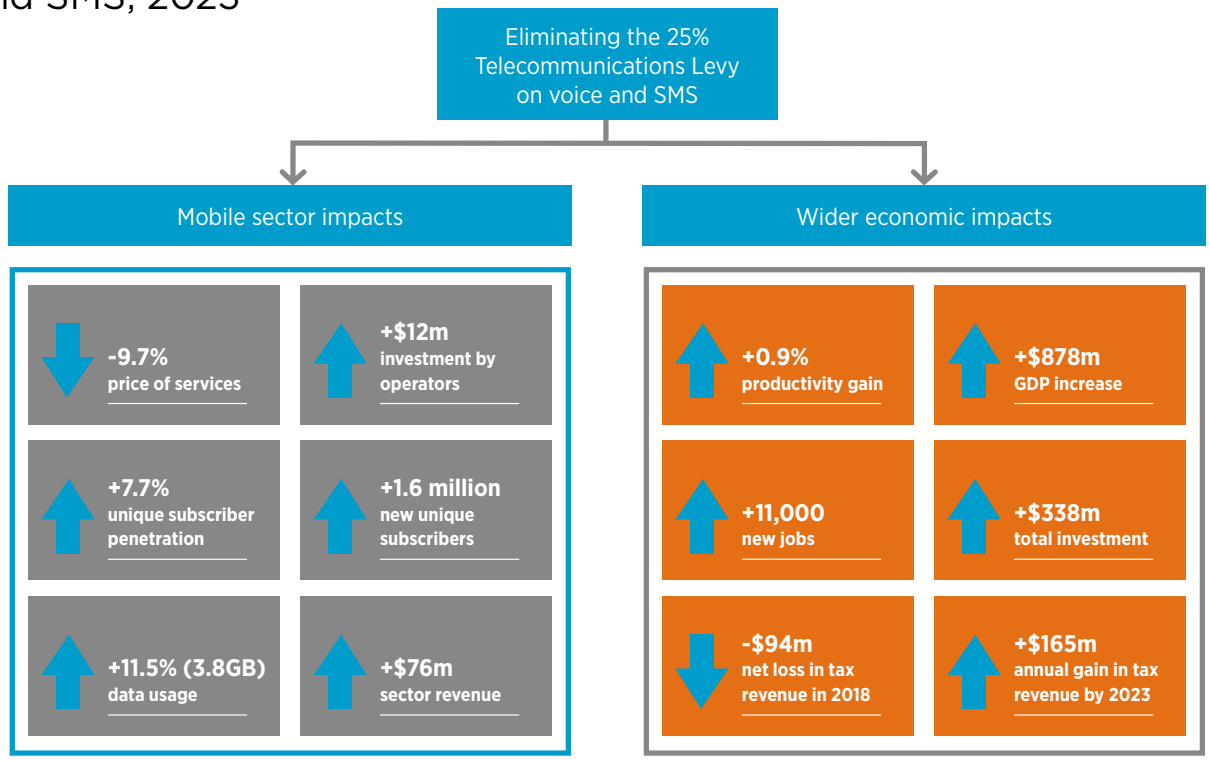
- **New connections:** an additional 1.6 million unique subscribers, or 2.9 million mobile connections by 2023. This is equivalent to an increase of around 7.7% in unique subscriber penetration (13.8% in total connections). Of these new connections, 88% would be prepay and approximately 58% would be classified as low income.
- **Mobile market revenue:** total mobile sector revenue would increase by $76 million (9.7%) by 2023. This would be driven by additional revenues from the increased number of connections and higher overall usage, which offset the reduction in pricing from the tax reform.
- **Usage:** the reduction in the price of mobile services would lead to an 11.5% increase in average data usage per connection compared to the baseline, while average usage of voice and message services would increase by approximately 6.2% and 8.3% respectively.[109] Among low-income customers, data usage per connection would increase by an estimated 62MB per month.
- **Productivity gain:** the increase in unique subscriber penetration of 7.7% would lead to a 0.9% gain in productivity across the economy, leading in turn to further increases in output, incomes and expenditure.
- **GDP increase:** total GDP would increase by $878 million (1.1%) compared to the baseline, as the price and productivity effects lead to a chain reaction of expansion across the economy.
- **Employment increase:** as a result of the increased economic activity in the economy, employment would increase by approximately 11,000 jobs (0.14%).
- **Wider investment in the economy:** as a result of the decrease in intermediate costs for businesses that use mobile, additional resources are made available for investment across the economy. By 2023, this scenario would lead to an annual gain in investment of $338 million.
- **Benefits to other sectors:** as a result of the increased level of economic activity, all sectors within the economy will increase their level of output. Output in the communications sector rises the most (9.4%), while financial services (1.7%) and business services (1.5%) also make relatively strong gains.
- **Tax revenue impact:** this scenario would have an initial net cost to the Sri Lankan Exchequer of $94 million in 2019. However, the subsequent expansion of the mobile sector and significant growth in the wider economy, mean that by year 2 both the annual impact and cumulative impact are positive. The gain in tax revenue is about $165 million per annum by 2023.

The summary of the sector-specific and economic impacts in 2023 is shown in Figure 20.[110]

106. The Telecommunications Levy on data was eliminated in Budget 2017. The removal of the levy on data was not modelled in this scenario, which focuses instead on the recommended removal of the levy on voice and SMS services.
107. The pass-through rate is endogenously generated from the GTAP model and for this scenario it reflects the highly visible nature of the tax and the level of price competition in the Sri Lankan communications sector.
108. Please see Appendix A for more detail on the modelling assumptions used in this study and see Appendix B for detailed estimated impacts.
109. In this scenario, the elimination of the Telecommunications Levy is passed through to domestic customers as a decrease in the composite price of all mobile services, including voice, SMS and data. As a result, usage increases for all services, with the magnitude of the increase generated by the assumed price elasticities of demand, which are discussed in Appendix A
110. All figures represent the annual variance between the baseline scenario and the tax reform scenario at 2023. These results are not cumulative.

Figure 20

Annual impacts of eliminating the Telecommunications Levy on voice and SMS, 2023



Source: EY analysis

4.4 Eliminating the TDC and the OLAC

The elimination of the Telecommunications Development Charge (TDC) of $0.06 per minute of incoming international call and the Outgoing Local Access Charge (OLAC) of 3 LKR per outgoing international call, would stimulate an increase in the volume of international calls. This would generate additional revenue for operators, which can be passed through to consumers in the form of lower prices, or invested in the Sri Lankan mobile market.[111]

The elimination of these charges will help to improve Sri Lanka's business environment, as Sri Lanka currently ranks 103rd out of 136 countries in the Enabling Trade Index.[112] For businesses trading with Sri Lanka, the cost of communication will be reduced, which may also improve the attractiveness of Sri Lanka as a destination for foreign direct investment.[113] This will facilitate and support the transition of Sri Lanka into an export-oriented services hub and thereby promote the strategy set out in *Vision 2025*.[114] The reduction in the cost of international calls will also have a significant social impact, bringing Sri Lankan families closer together and strengthening the ties between Sri Lankan expatriates and domestic households and businesses.

111. A base station, according to the International Telecommunication Union (ITU), is a land station in the land mobile service.
112. World Economic Forum, 2016, "The Global Enabling Trade Report 2016", http://www3.weforum.org/docs/WEF_GETR_2016_report.pdf
113. The impact on foreign direct investment has not been specifically modelled under this scenario.
114. Office of the Prime Minister of Sri Lanka, 2017, "Vision 2025", http://www.pmoffice.gov.lk/download/press/D00000000061_EN.pdf

This tax scenario is forecast to have the following impacts compared to a "baseline" scenario[115] of no change in current levels of taxation:

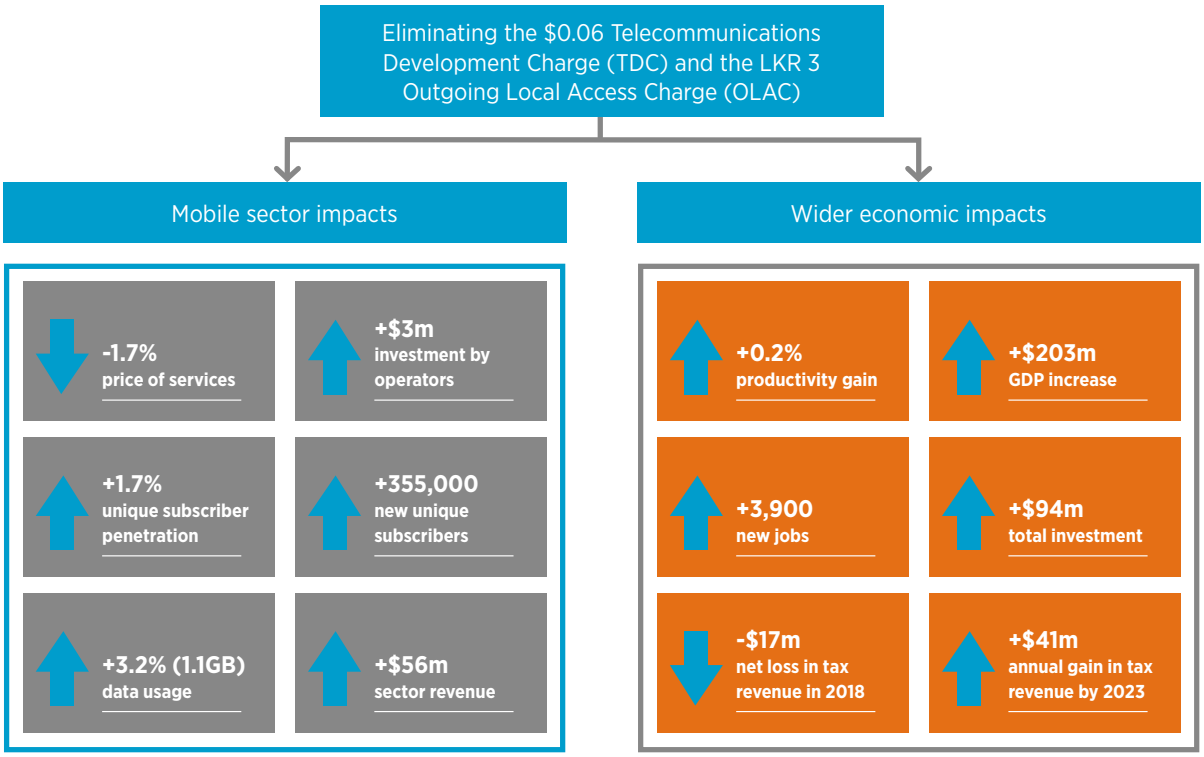
- **International incoming traffic:** As a result of lower prices for non-domestic callers, international incoming traffic will increase by 514 million minutes by 2023.
- **New connections:** an additional 355,000 unique subscribers, or 635,000 mobile connections by 2023. This is equivalent to an increase of around 1.7% in unique subscriber penetration (3.0% in total connections). Of these new connections, 88% would be prepay and approximately 59% would be classified as low income.
- **Mobile market revenue:** total mobile sector revenue would increase by $56 million (7.2%) by 2023. This would be driven by the significant growth in revenues from international traffic, and the incremental mobile penetration and usage levels generated from reduced prices for domestic services.
- **Usage:** the technology migration enabled by investment in the sector would lead to a 3.2% increase in average data usage per connection compared to the baseline, while average usage of voice and message services would also both increase by approximately 0.9% and 1.3%.[116] Among low-income customers, data usage per connection would increase by an estimated 57MB per month.
- **Productivity gain:** the increase in unique subscriber penetration of 1.7% would lead to a 0.2% gain in productivity across the economy, leading in turn to further increases in output, incomes and expenditure.
- **GDP increase:** total GDP would increase by $203 million (0.25%) by 2023 as the price and productivity effects lead to a chain reaction of expansion across the economy.
- **Employment increase:** as a result of the increased economic activity in the economy, employment would increase by approximately 3,900 jobs (0.05%) by 2023.
- **Wider investment in the economy:** as a result of the increased level of output in the mobile sector, additional resources are made available for investment across the economy. By 2023, this scenario would lead to an annual gain in investment of $94 million.
- **Tax revenue impact:** this scenario would have an initial net cost to the Sri Lankan Exchequer of $17 million in 2019. However, the subsequent expansion of the mobile sector and significant growth in the wider economy, mean that, by year 2, both the annual impact and cumulative impact are positive. The gain in tax revenue is approximately $41 million per annum by 2023.

The summary of the sector-specific and economic impacts in 2023 is shown in Figure 21.

115. Please see Appendix A for more detail on the modelling approach and assumptions.
116. In this scenario, the elimination of OLAC is passed through to domestic customers as a decrease in the composite price of all mobile services, including voice, SMS and data. As a result, usage increases for all services, with the magnitude of the increase generated by the assumed price elasticities of demand, which are discussed in Appendix A.

Figure 21

Annual impacts of eliminating the Telecommunications Development Charge (TDC) and Outgoing Local Access Charge (OLAC), 2023[117]



Source: EY analysis

117. Please see Appendix B for further detail on the results of this analysis, including annual impacts between 2019 and 2023.

5. Conclusion: Reforming mobile sector taxation in Sri Lanka

The mobile industry has the potential to play an increasingly important role in achieving Sri Lanka's *Vision 2025* objectives, by supporting the transition towards becoming a services-oriented knowledge economy. The sector has grown rapidly over the past decade, with the number of subscribers increasing at an average annual rate of 10% between 2007 and 2017. The sector now contributes approximately $298 million of direct economic value to the Sri Lankan economy, equivalent to 0.4% of GDP.

There is still significant scope to further develop the sector, through increased mobile penetration and the migration of customers to more modern mobile technologies, including 3G and 4G. Specifically, the Sri Lankan mobile sector can take advantage of high levels of 3G (90%) and 4G coverage (69%) and seek to increase the relatively low level of smartphone adoption (51%). The expansion of the mobile sector can be key to enabling greater digitisation and social inclusion in Sri Lanka's long-term future, and will support the broader objectives outlined in *Vision 2025*.[118]

By promoting investment, reducing the cost of mobile ownership and incentivising usage, the tax reforms outlined in this paper will help to connect individuals, particularly those in low-income groups, to mobile services. A more balanced and efficient taxation structure, which addresses some of the most distortive taxes on the mobile economy in Sri Lanka would generate considerable socio-economic benefits in the country. A summary of the impacts is provided in Table 6.

Table 6

Summary of socio-economic benefits of the proposed tax reforms, by 2023

Indicator	Eliminating the 25% Telecommunications Levy on voice and SMS	Eliminating the Telecommunications Development Charge (TDC) and the Outgoing Local Access Charge (OLAC)
New unique subscribers	+1.6m	+0.4m
Sector revenue	+$76m	+$56m
GDP increase	+$878m	+$203m
Wider investment	+$338m	+$94m
Annual gain in tax revenue	+$165m	+$41m

118. Office of the Prime Minister of Sri Lanka, 2017, "Vision 2025", http://www.pmoffice.gov.lk/download/press/D00000000061_EN.pdf

The policy options for reform outlined in this report achieve a number of key objectives for the mobile sector and wider Sri Lankan economy. This includes supporting the *Vision 2025* objective of increasing the level of digitisation in the Sri Lankan economy and thereby stimulating knowledge-based, inclusive growth in the medium term. Furthermore, these tax reforms will be aligned with the principles of taxation which have been developed by the IMF, World Bank, OECD and UN, by:

- Reducing the level of specific taxation;
- Favouring the use of broad-based forms of taxation, such as VAT; and
- Making the tax system more equitable, recognising the positive externalities of mobile services.

These reforms will be self-sustainable in terms of revenue and, at the same time, will make the tax regime more attractive for investment in the mobile sector.

Appendix A Methodology

This Appendix sets out the methodology applied in this study to calculate the potential economic impacts of tax policy scenarios. As described in Section 4, the economic modelling is undertaken in two stages using two models:

- A model of the Sri Lankan mobile sector, the 'telecoms market model' has been created to calculate changes in the mobile sector resulting from each of the tax policy scenarios. This includes the change in subscribers, usage, technology, revenues, profits, reinvestment and expanded capacity in the sector; and
- The wider economic impacts of each tax policy scenario are assessed via a Computable General Equilibrium (CGE) model, namely the standard version of the Global Trade Analysis Project (GTAP) model and its associated dataset.

Mobile sector modelling

Design of the telecoms market model.

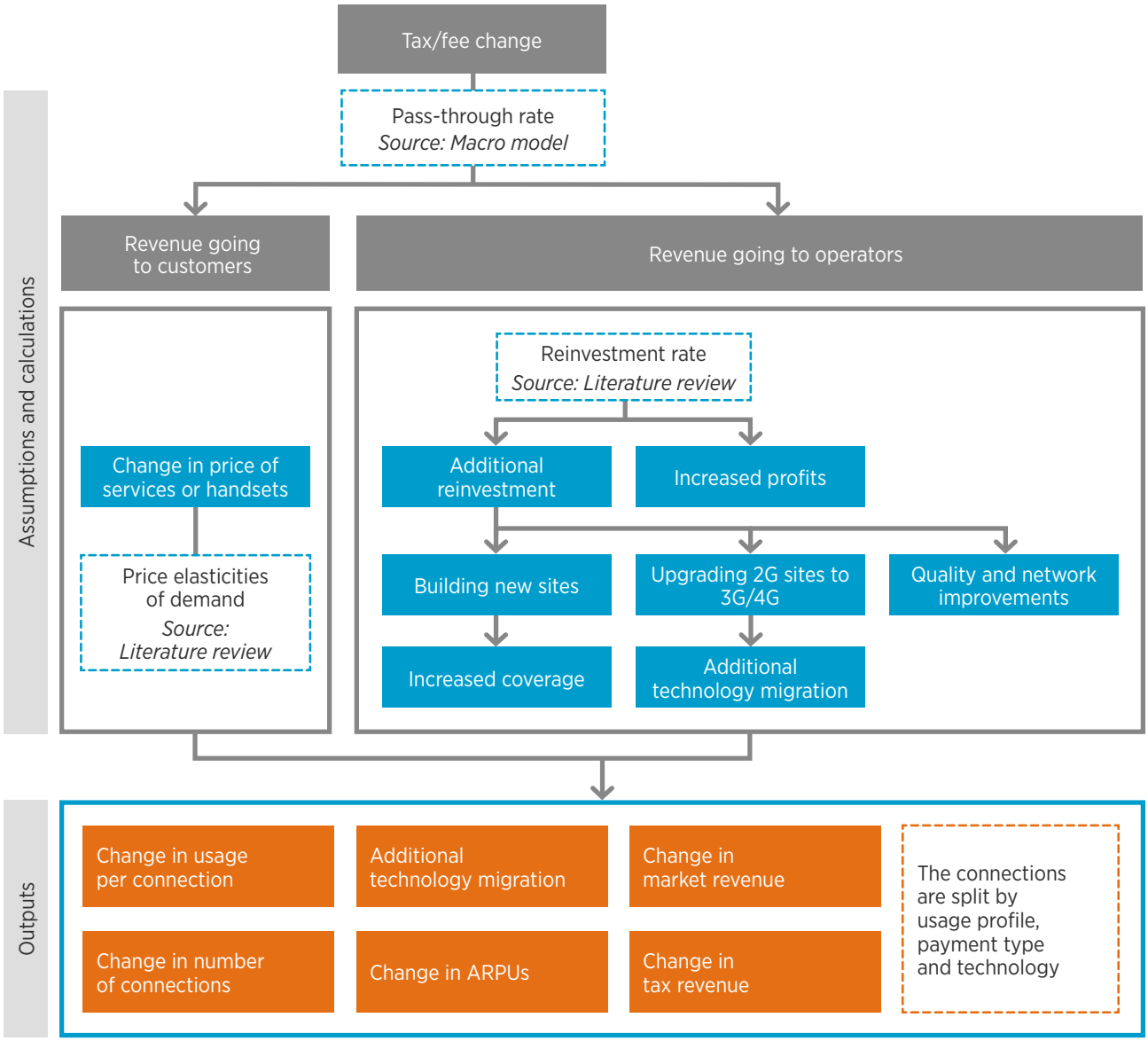
The telecoms market model covers the period 2017–2023 and uses data from local mobile operators and the GSMA Intelligence database. For modelling the scenarios, it has been assumed that the first phase of tax changes becomes effective in 2018.

The telecoms market model then calculates separate forecasts for each tax policy scenario. The difference between the scenario forecasts and the baseline is effectively the additional impact resulting from the tax policy reform.[119]

A schematic of this model is presented in Figure 22 below.

Figure 22

Overview of mobile sector modelling approach



Source: EY analysis

119. The baseline forecast is the counterfactual scenario for which results are compared against. It is based on operators forecasts of the market over the period 2017–2023.

As illustrated in Figure 29, the telecoms market model captures the impact on consumer demand and operators' profits and investment as a consequence of a mobile taxation reform. The model allows for the estimation of the additional connections, technology migration and mobile penetration generated across different usage profiles (categorised by low, medium and high-income groups) and across 2G, 3G and 4G services.

Mobile market impacts.

For consumers, a reduction in the tax rate leads to a decrease in the effective price of mobile services or handsets. The relationship between the size of the tax reduction and the related decrease in prices is dependent on the level of "pass-through".[120] The resulting reduction in the effective price of mobile services is modelled to have the following impacts:

- An increase in usage per connection, as lower prices lead to increased demand for services;
- An increase in the number of connections, as lower prices reduce the relative cost of mobile ownership which attracts new subscribers; and
- Additional technology migration, as lower prices for smartphones and/or cheaper data services accelerates the migration of existing subscribers from 2G services to 3G/4G services.

For operators, the proportion of the tax reduction that is not passed through in the form of lower prices would either be retained as increased profit or reinvested. The decision between these two options depends on an assumption made on the reinvestment rate.[121] The following effects of additional investment are estimated using the telecoms market model:

- An increase in the number of subscribers, as the investment enables the building of new mobile sites and, hence, increased network coverage; and
- Additional technology migration, as the investment enables upgrade of 2G sites to 3G/4G and, therefore, existing subscribers have the opportunity to upgrade from 2G to 3G/4G services.

Key outputs.

The key outputs of the telecoms market model include changes to the baseline forecast (based on the GSMA Intelligence forecast) in respect of:

- The number of connections;
- The number of unique subscribers;
- Mobile market penetration;
- Total market revenue; and
- Sector taxation receipts.

For connections and subscribers, the model specifies market segments by usage profile (high, medium and low), technology (2G, 3G and 4G) and payment type (prepay and postpay). Therefore, the telecoms market model is run for a total of 18 categories of subscribers.

Macroeconomic modelling

Macroeconomic modelling approach.

The macroeconomic model builds upon the mobile sector analysis to estimate how lower taxes and prices feed through to the wider economy. This takes into account forward and backward linkages in the supply chain (i.e. supply chain for mobile service providers and where mobile services are used in other sectors of the economy), the interaction between expanding businesses and a rise in household incomes and employment and an assumed productivity gain across the economy as mobile penetration rises. This model gives an estimate of the dynamic impact on total tax receipts, allowing for all these indirect effects to work through the economy.

The macroeconomic impacts are modelled in two stages:

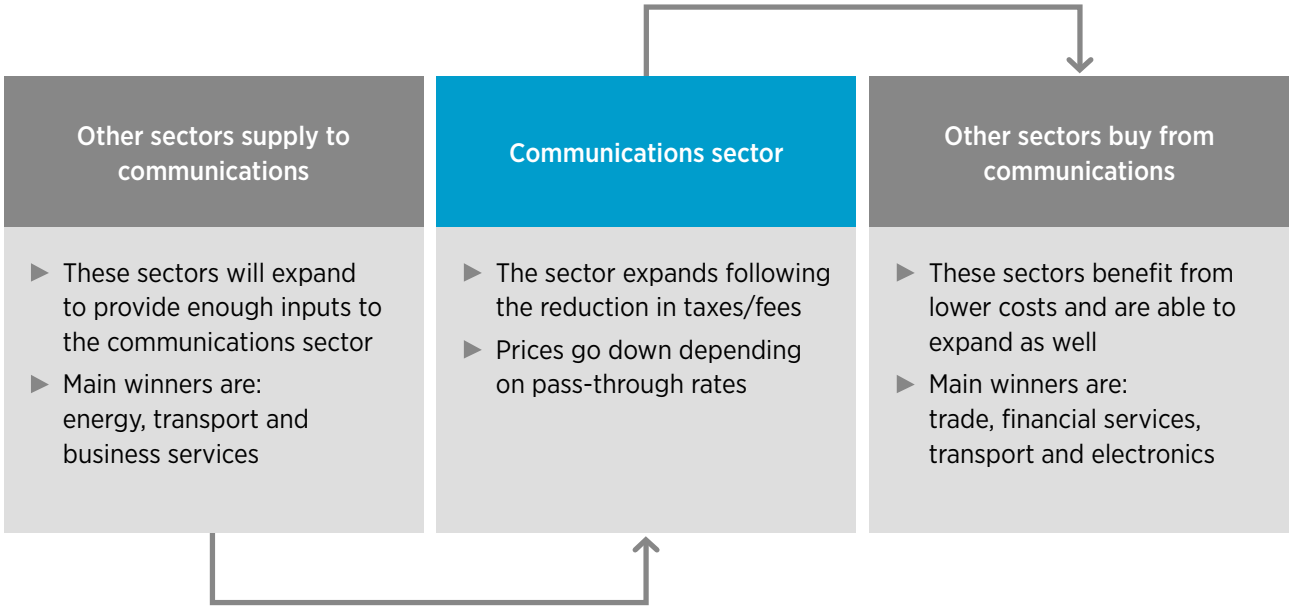
- The impact of the tax change on the sector itself and the interaction with the wider economy; and
- A boost to economy-wide productivity resulting from the increase in penetration.

The impact of the mobile sector on the wider economy starts from its supply chain linkages. In particular, telecommunications is an important input to businesses right across the Sri Lankan economy. As lower taxes and consequent lower prices are passed on, many businesses will benefit and be able to expand their own outputs. Businesses that supply the mobile sector will also benefit from its expansion (see Figure 23).

120. The percentage of the tax/fee change which is passed through to subscribers in the form of lower prices. This is calculated based on the relative slope of the supply and demand curves for mobile services.
121. The percentage of the tax/fee change not passed through to subscribers which is reinvested by operators.

Figure 23

Supply chain linkages



Source: EY analysis

The wider interactions in the economy lead to a virtuous circle of economic expansion:

- The forward and backward linkages from the mobile sector lead to expansion in a number of related sectors and this in turn creates more expenditure circulating in the economy;
- The mobile communications sector will see increased investment, as it is now relatively more profitable than in the baseline;
- Overall household incomes will expand, leading to more spending in the wider economy and an increase in aggregate savings to fund investment;
- Higher real wages attract more people into the workforce, expanding employment and in turn further boosting spending in the economy;
- A larger economy requires more investment to complement the expansion in employment and to support the larger capital stock, which will see growth in construction and in sectors making investment goods; and
- The economy is modelled to be constrained by available resources (workers, capital), so some sectors must contract to make way for the expanding sectors.

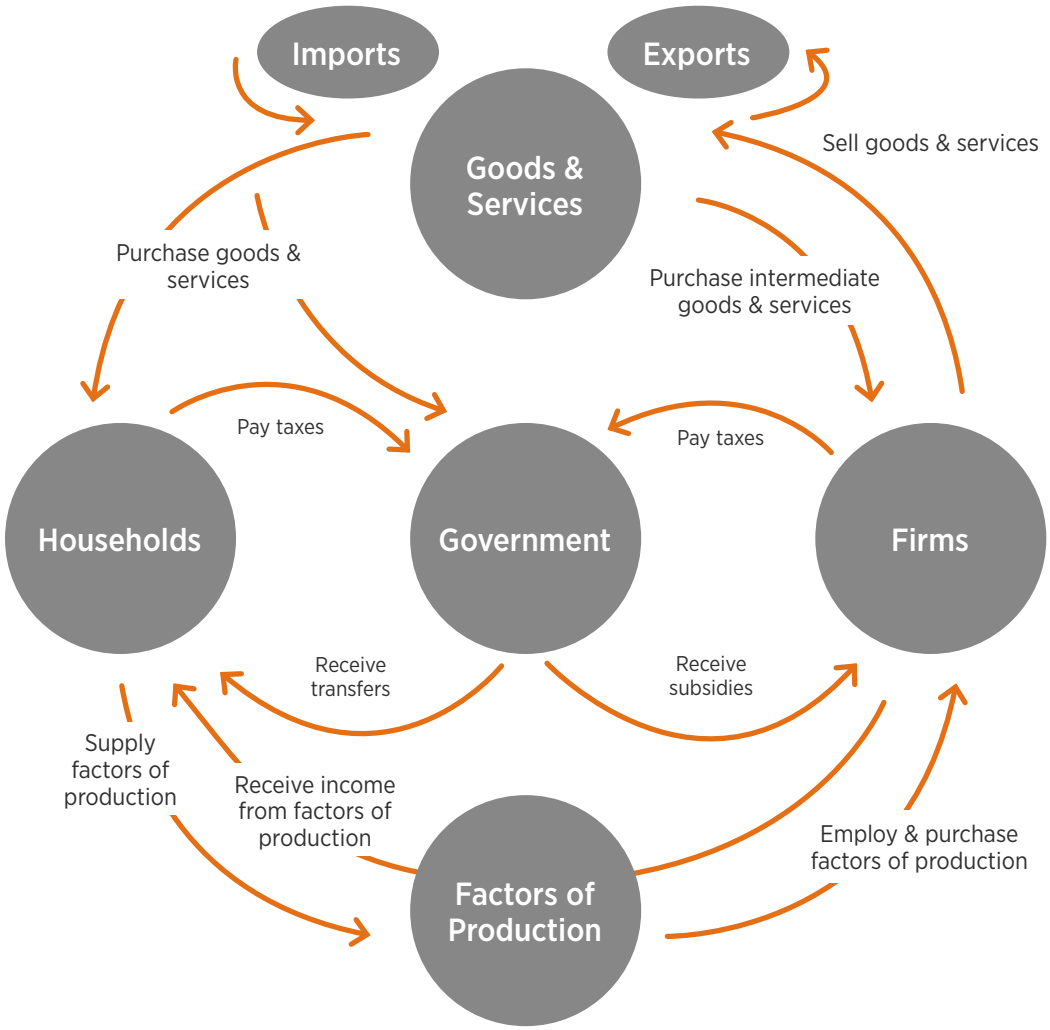
These linkage and interaction effects will be reinforced by an increase in productivity in the Sri Lankan economy, due to the rise in penetration of the mobile sector. This in turn leads to a further expansion in output, incomes and expenditure in the economy.

The CGE model

CGE models reproduce the structure of the whole economy by mapping all existing economic transactions among diverse economic agents (e.g. households, firms). They are large-scale numerical models that simulate the core economic interactions in the economy and replicate the circular flow of the economy (see Figure 24). They are based on the economic theory of general equilibrium; i.e. that supply and demand for goods, services and factors of production in the economy must be balanced. Economic relationships in CGE models are based on theory and empirical evidence from the academic literature. The prices of goods, services and factors of production adjust until all markets clear, that is, until they are simultaneously in equilibrium.

Figure 24

Circular flow of the economy



Source: Adapted from Burfisher, Mary (2011) Introduction to Computable General Equilibrium Models

Central in CGE modelling is the choice of closure rules. This relates to the specification of endogenous (those determined by the model) and exogenous (those determined externally). In the standard GTAP model prices, quantities of all non-endowment commodities (e.g. produced and traded commodities) and regional incomes are endogenous variables, while policy variables, technical change variables and population are exogenous to the model.[122] This standard closure is amendable with a wide range of alternative options available depending on modelling assumptions adopted.

122. T.W. Hertel (ed.), 1997, Global Trade Analysis: Modelling and Applications, Cambridge University Press.

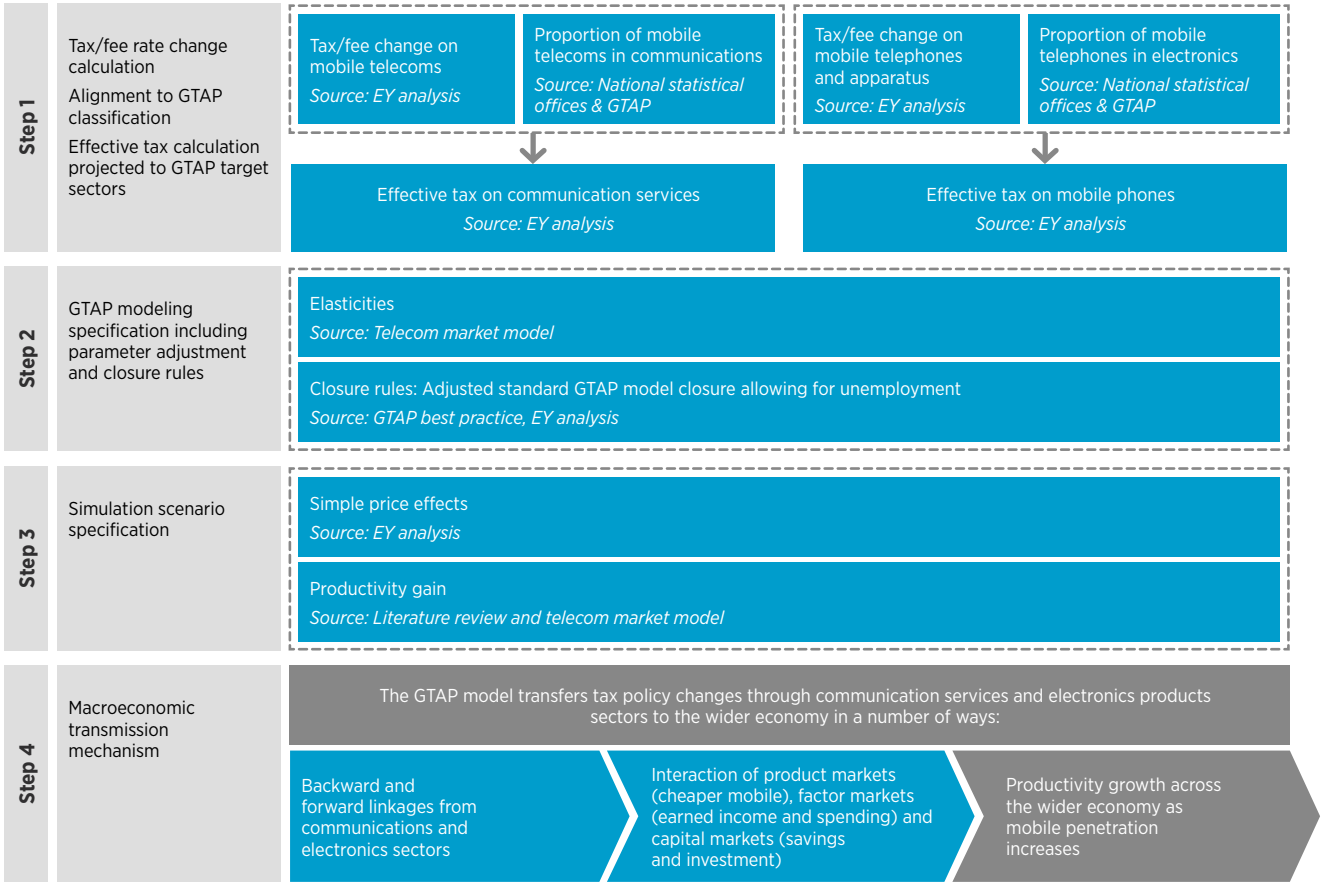
Scenario modelling

The CGE model is used to conduct a number of tax policy simulations and hence assess the impacts of detailed policy scenarios on the wider economy. The approach is as follows:

- First, the effective tax on Communication Services (which includes mobile services) is calculated;[123]
- Second, GTAP model parameters (e.g. own-price and cross-price elasticities) and closure rules (e.g. related to employment assumptions) are adjusted to ensure better alignment with the mobile telecoms market and broader characteristics of the specific economy;
- Third, simulation scenarios are run that account for the direct effect of taxes and tariffs on prices and a productivity improvement from any increase in mobile penetration (see Figure 25); and
- Finally, simulations are performed estimating the new equilibrium following the policy shocks introduced.

Figure 25

Overview of macroeconomic modelling approach



Source: EY analysis

123. All taxes affecting the production and consumption of mobile services and mobile phones in Sri Lanka (e.g. turnover, excise, VAT) are combined to estimate the effective (compound) tax rates on final and intermediate consumption of goods and services.

The impact of changes in tax policy on pricing

Mobile taxation policy changes may be fully or partially passed through to consumer prices for mobile goods and services. The extent of pass-through depends on specific market factors (e.g. the extent of competition in the specific market) and is likely to vary by sector and country.

In this study, the extent to which tax changes are passed onto consumers, is derived from the macroeconomic modelling in GTAP and specifically for Sri Lanka. The GTAP model calculates the communication sector-specific short-to-medium-run change in relative prices of intermediate and final goods after a change in taxation. This calculation is based on relationships derived for Sri Lanka that are incorporated in the GTAP model and which are based on input-output tables from national statistics and other empirical data on the Sri Lanka economy. In the GTAP model, tax reform scenarios are modelled as a percentage change in the overall taxation burden on consumption and/or production in the sector.

Therefore, the change in price in any country is determined by the specific market conditions in the communications sector and the relationships in the wider economy of that country, as these are reflected in the underlying data (demand and supply flows) and parameters (elasticities and other estimated coefficients) of the economy under analysis. Specifically, the extent of pass-through is determined by the assumed elasticity of both demand and supply in the market.[124] The elasticity of supply depends on the competitive environment and degree of market power within the industry and reflects the profitability, input costs and usage of natural resources in production. The elasticity of demand is determined by consumer preferences and will vary depending on the underlying behavioural relationships in the Sri Lankan economy.

Table 7 provides the pass-through rates derived in the GTAP model for each scenario.

Table 7

Pass-through rates derived for each scenario

Indicator	Elimination of Telecommunications Levy on voice and SMS	Elimination of the Telecommunications Development Charge (TDC)	Elimination of the Outgoing Local Access Charge (OLAC)
Pass-through rate	79%	100%	73%

In scenario 1, the operators pass 79% of the tax reduction on to subscribers in the form of lower prices. This level of the pass-through rate reflects the underlying market structure and behavioural relationships of domestic households and firms. These are based on input-output tables from national statistics and other empirical data.

In scenario 2, two separate pass-through rates apply to the two different taxes which are eliminated. For the elimination of the OLAC, operators pass 79% of the tax reduction on to subscribers in the form of lower prices. This is modelled as a composite price reduction for all services (not just outgoing calls), including voice, SMS and data. For the elimination of the TDC, the mobile operators pass the full tax saving on to the foreign customers. This is because the elimination of the TDC is treated in GTAP as a reduction on taxation of exports in the telecommunications sector, in line with approaches undertaken in previous studies. As the TDC represents a standard charge on international termination, the direct reduction in this surtax is likely to be fully on to foreign customers in the form of lower prices. On the other hand, the elimination of the OLAC and Telecommunications Levy are both treated in GTAP as a reduction in consumption tax within the sector. In this case, the mobile operators may choose to pass through the tax reduction in the form of reduced prices for a range of domestic mobile services in order to lower the cost of mobile ownership, or to retain additional profit.

124. For instance, if we assume that supply is perfectly elastic, then consumers will absorb the full tax reduction in the form of lower prices.

Key assumptions for Sri Lanka

The assumptions underlying the mobile sector and macroeconomic modelling for this study are based on an extensive literature review and are presented in more detail below.

Price elasticity of demand.

The impact of price changes on the consumption of mobile services are captured via estimates of the price elasticity of demand (PED), which measures the change in quantity demanded following a change in price.

A literature review has been conducted (covering 30 studies), as a basis for establishing a set of assumptions on the PED.

For purposes of this study, we define three sets of PEDs:

- Mobile usage elasticities which relate to the change in usage per connection following a change in price;
- Mobile ownership elasticities which relate to the change in the number of connections following a change in the price of services and handsets;
- Technology migration elasticities which relate to the migration from 2G to 3G/4G services following a change in the price of data and a change in the price of handsets; and
- International traffic termination elasticity, which relates to the change in usage per connection following a change in the price of international termination.

All elasticities in this study are further varied by income groups of subscribers (low, middle and high). To establish relevant price elasticities for Sri Lanka, we have used a set of studies pertaining to middle-income countries (Sri Lanka is defined as a lower middle income economy by the World Bank).[125]

The following price elasticities of demand have been assumed in this study:

- Usage elasticities: from -0.65 to -0.83 for voice and from -1.04 to -1.32 for data;
- Ownership elasticities: from -0.68 to -0.87 for mobile services and from -0.98 to -1.24 for handsets;
- Technology migration elasticities: from -0.25 to -0.32 for data and from -0.36 to -0.45 for handsets; and
- Price elasticity of demand for international incoming traffic: -1.34.[126]

Reinvestment rate.

The exact reinvestment rate depends on a range of factors, including the cash flow of a specific company. In the modelling, it is assumed that operators reinvest 60% of the portion of the tax reduction that they retain (i.e. the proportion that is not passed onto subscribers). The remaining 40% is retained as increased profit. This assumption is based on a review of previous studies of the economic impacts of mobile taxation reforms.[127]

Of the reinvestment amount, it is assumed that operators' investment is directed towards upgrading 2G sites into 3G. This is based on analysis of the mobile market in Sri Lanka, which suggests that there is significant scope to migrate customers from 2G to 3G technology in the region.

The equivalent of additional investment expressed in the number of upgraded base stations per year is based on the assumption that transformation of a 2G site into a 3G site requires around $27,000 of capital expenditure.[128]

Total factor productivity impact.

The benefits of mobile connectivity–and how they translate to the macro economy–have been widely studied in the literature. The effects of mobile connectivity on the economy are largely delivered through their impact on productivity, one of the main measures being total factor productivity (TFP).[129]

It has been assumed that a 1% increase in unique subscriber penetration leads to a 0.12% increase in total factor productivity. This value is based on a review of the literature and with reference to previous studies conducted by the GSMA. This impact has been adjusted from previous studies to account for relatively high mobile penetration and infrastructure in Sri Lanka.[130]

In this study, the shock to TFP is modelled as a change in the productivity of all primary factors (of equal proportions) in the Sri Lankan economy. This productivity change enters as a variable into

125. World Bank (https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups)
126. This is based on an empirical study by OECD, 2015, "International Traffic Termination".
127. See, for example, Gilchrist and Himmelberg, 1995, "Evidence on the role of cash flow for investment" and Katz, 2012, "Assessment of the economic impact of taxation on communications investment in the United States".
128. GSMA
129. TFP is a measure for how efficiently an economy uses inputs during its production process

the constant elasticity of substitution (CES) value-added production function.[131] The TFP shock works in the Sri Lankan model as the sum of two effects:

- By reducing production costs which are passed on to consumers through lower prices, which in turn leads to higher demand and production levels (the output effect); and
- By reducing the demand for primary factors, for a given output level (productivity effect).

Timing of macroeconomic impacts.

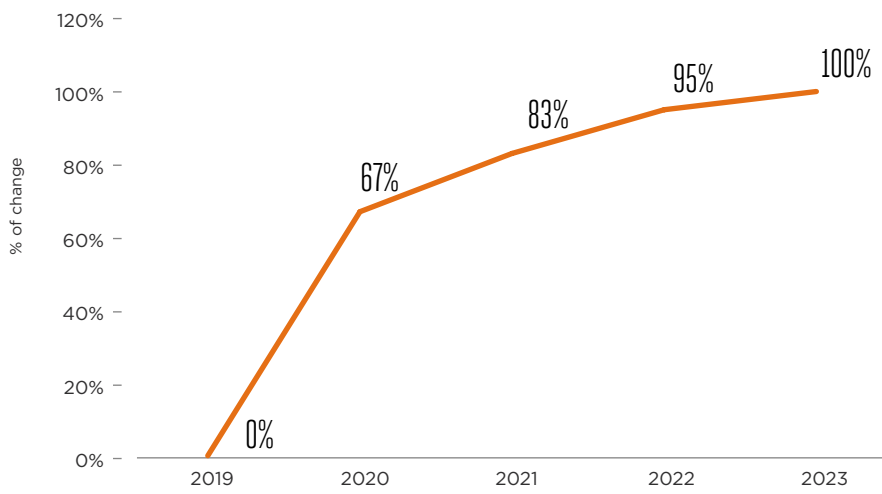
The standard GTAP model seeks to calculate differences in key economic variables between different possible states of the economy–a baseline case and a policy scenario–at a fixed point in time. This means that the standard model is a comparative static model and does not model year-by-year changes to the new equilibrium.

The CGE literature on the dynamic impacts of tax policy on a country's GDP suggests that the transition to a new equilibrium takes on average 5-10 years with the annual impact on GDP increasing at a diminishing rate.[132]

Using this evidence from the literature, we have formed assumptions on the transition path between the baseline case and the policy change. We assumed that 67% of the steady state impact is felt in 2020 (the next year following the policy is implemented), 83% in 2021, 95% in 2022 and 100% in 2023 (five years after the policy implementation). The productivity effects are assumed to come into effect from 2019. The assumed path is illustrated in Figure 26 below.

Figure 26

Time path for the transition to the new equilibrium



Source: EY analysis

130. This calculation is based on previous GSMA analysis which outlines the relationship between mobile penetration rates, infrastructure and productivity.
131. The factor substitution effect is zero, as the productivity of all factors changes in the same proportions.
132. See, for example, HMRC, 2014, "The Dynamic Effects of Fuel Duty Reductions"; HMRC, 2013, "The Dynamic Effects of Corporation Tax"; and Giesecke and Nhi, 2009, "Modelling Value-Added Tax in the Presence of Multiproduction and Differentiated Exemptions".

Closure rules in the macroeconomic model.

In order to account for specific labour market conditions in Sri Lanka, a specific closure rule has been applied in GTAP in relation to employment and wages. The standard approach in CGE models is to assume that the supply of labour is fixed and hence an increase in the demand for labour results in an increase in wages and prices, rather than employment. However, data from ILOSTAT and Sri Lanka's Department of Census and Statistics both demonstrate that the highest rate of unemployment is among people with higher levels of education.

Therefore, the modelling approach allows for employment to increase among skilled labour in Sri Lanka, specifically in the "Technicians/ Associate Professional" category. This means that an expansion of demand in the economy leads to both an increase in employment and an increase in wages for skilled workers.

Appendix B Scenario estimations

This Appendix sets out the detailed estimated mobile market and economic impacts of each of the tax scenarios, compared to a baseline case of no tax reform.

Scenario 1: Elimination of the Telecommunications Levy on voice and SMS

This scenario models an elimination of the 25% Telecommunications Levy on voice and SMS.

Table 8

Annual impact of elimination of the Telecommunications Levy on voice and SMS on selected variables

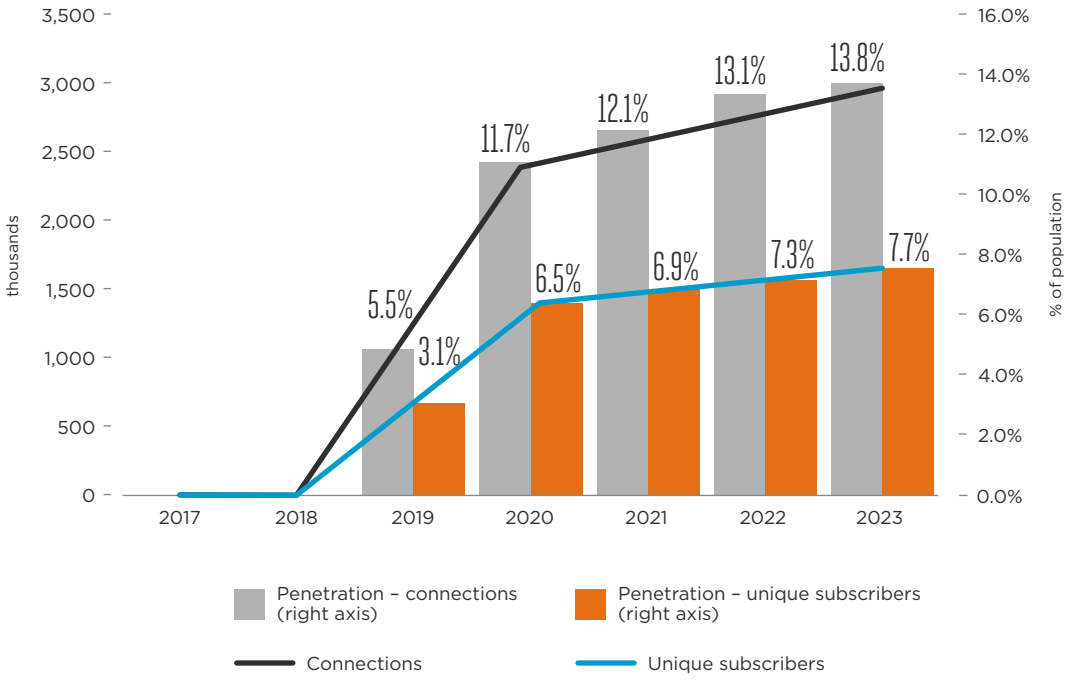
Indicator	2019	2020	2021	2022	2023
MOBILE SECTOR IMPACTS					
Change in price of services vs baseline	-9.7%				
Incremental connections (total)	1,153,000	2,457,000	2,618,000	2,775,000	2,931,000
Incremental unique subscribers (total)	647,000	1,372,000	1,461,000	1,550,000	1,640,000
Incremental connections (3G and 4G)	1,098,000	2,341,000	2,545,000	3,096,000	3,686,000
of which technology migration	340,000	540,000	424,000	628,000	850,000
Incremental connections by low-income subscribers	645,000	1,387,000	1,490,000	1,591,000	1,700,000
ARPU (total) vs baseline	-5.5%	-1.6%	-2.1%	-1.7%	-0.4%
Increase in mobile penetration (connections)	5.5%	11.7%	12.4%	13.1%	13.8%
Increase in mobile penetration (unique subscribers)	3.1%	6.5%	6.9%	7.3%	7.7%
Data usage vs baseline	10.0%	19.8%	19.2%	20.4%	22.8%
Data usage per connection vs baseline	5.6%	10.2%	9.1%	9.7%	11.5%
Increase in market revenue (total)	-$12m	$56m	$54m	$62m	$76m
Increase in market revenue (total) vs baseline	-1.5%	7.1%	6.9%	7.9%	9.7%
Additional investment	$12m	$12m	$12m	$12m	$12m
Static tax impact[133]	-$96m	-$97m	-$97m	-$97m	-$96m
Impact on mobile sector taxation	-$95m	-$84m	-$84m	-$83m	-$81m
WIDER ECONOMIC IMPACTS[134]					
Full impact on communications sector taxation[135]	-$87m	-$56m	-$69m	-$79m	-$83m
Receipts from all other sectors	-$7m	$166m	$206m	$236m	$248m
Total tax receipts	-$94m	$110m	$137m	$156m	$165m
Cumulative total receipts	*-$94m*	*$17m*	*$153m*	*$310m*	*$475m*
Real GDP	$24m	$588m	$729m	$834m	$878m (1.08%)
Employment	Impact estimated for 2023 only				11,031 (0.14%)
Household income	Impact estimated for 2023 only				$803m (1.26%)
Household expenditure	Impact estimated for 2023 only				$675m (1.23%)
Investment	Impact estimated for 2023 only				$338m (1.51%)

Source: EY analysis

133. This is the initial direct cost to the Exchequer, before behavioural change in the sector and the economy; overstates the true cost.
134. The evidence on the time path of some of the variables to the new equilibrium is not available.
135. The productivity impact of the tax reform is assumed to take place in year 2, resulting in a marginal increase in tax revenue from the communications sector. In the following years, the tax loss increases in absolute terms as market revenue rises.

Figure 27

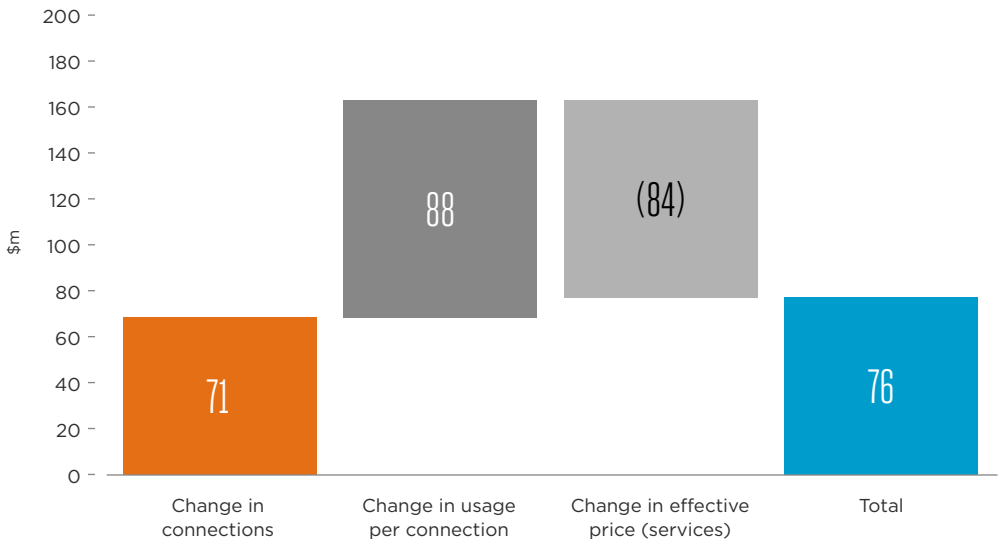
Connections and penetration impacts of elimination of the Telecommunications Levy on voice and SMS, $m



Source: EY analysis

Figure 28

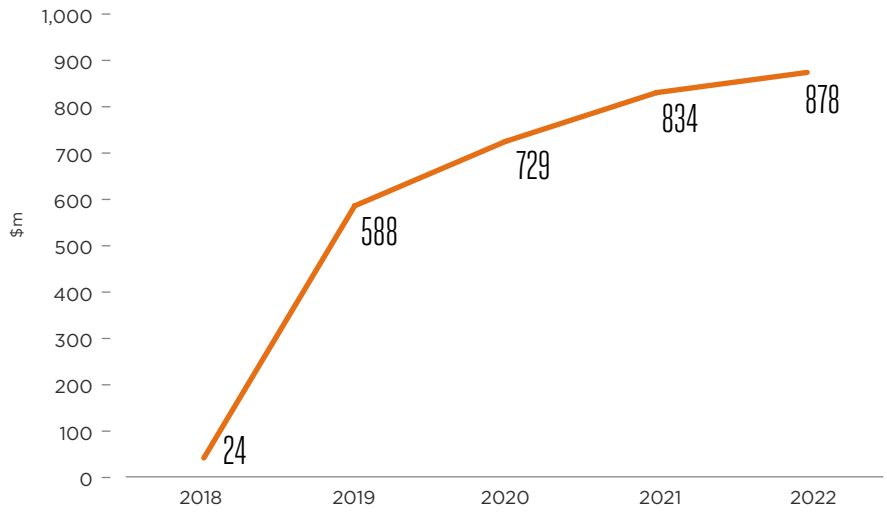
Main drivers of market revenue change following elimination of the Telecommunications Levy on voice and SMS



Source: EY analysis

Figure 29

Elimination of the Telecommunications Levy on voice and SMS – annual GDP effects compared to baseline, $m



Source: EY analysis

Scenario 2: Elimination of the Telecommunications Development Charge (TDC) and Outgoing Local Access Charge (OLAC)

This scenario models an elimination of two taxes: the Telecommunications Development Charge (TDC) of $0.06 per minute levied on the number of minutes of incoming international calls and the Outgoing Local Access Charge (OLAC) of LKR 3 per minute of an outgoing international call.

Table 9

Annual impact of elimination of the Telecommunications Development Charge (TDC) and Outgoing Local Access Charge (OLAC) on selected variables

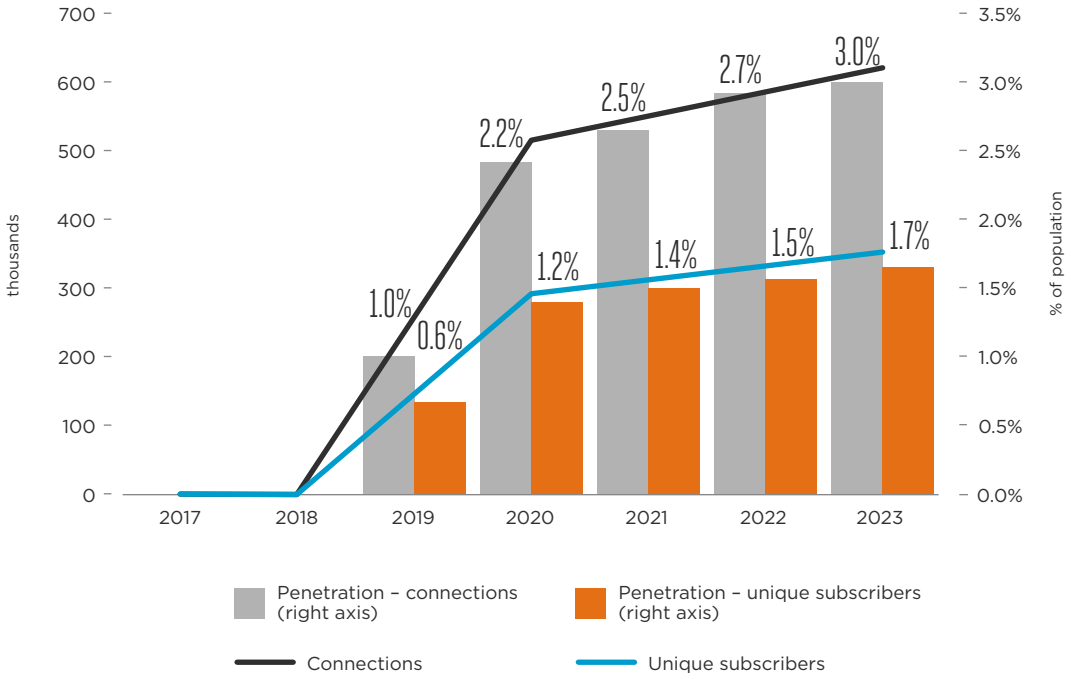
Indicator	2019	2020	2021	2022	2023
MOBILE SECTOR IMPACTS					
Change in price of services vs baseline	-1.7%				
Incremental connections (total)	216,000	468,000	526,000	582,000	635,000
Incremental unique subscribers (total)	122,000	261,000	294,000	325,000	355,000
Incremental connections (3G and 4G)	236,000	544,000	684,000	891,000	1,111,000
of which technology migration	94,000	202,000	260,000	377,000	498,000
Incremental connections by low-income users	121,000	266,000	303,000	339,000	376,000
ARPU (total) vs baseline	1.1%	4.4%	4.2%	4.2%	4.8%
Increase in mobile penetration (connections)	1.0%	2.2%	2.5%	2.7%	3.0%
Increase in mobile penetration (unique subscribers)	0.6%	1.2%	1.4%	1.5%	1.7%
Data usage vs baseline	1.8%	3.6%	3.7%	4.3%	5.5%
Data usage per connection vs baseline	1.0%	1.9%	1.8%	2.2%	3.2%
Increase in market revenue (total)	$15m	$48m	$48m	$50m	$56m
Increase in market revenue (total) vs baseline	1.9%	6.1%	6.1%	6.3%	7.2%
Additional investment	$3m	$3m	$3m	$3m	$3m
Static tax impact	-$65m	-$63m	-$61m	-$57m	-$55m
Impact on mobile sector taxation	-$61m	-$51m	-$49m	-$45m	-$41m
Additional international incoming traffic (million minutes)	258	588	565	537	514
WIDER ECONOMIC IMPACTS					
Full impact on communications sector taxation[136]	-$ 42m	-$ 23m	-$ 29m	-$ 33m	-$ 35m
Receipts from all other sectors	$ 25m	$ 51m	$ 63m	$ 72m	$ 76m
Total tax receipts	-$ 17m	$ 27m	$ 34m	$ 39m	$ 41m
Cumulative total receipts	*-$ 17m*	*$ 11m*	*$ 45m*	*$ 84m*	*$ 125m*
Real GDP	$ 24m	$ 136m	$ 169m	$ 193m	$ 203m (0.25%)
Employment	Impact estimated for 2023 only.				3,940 (0.05%)
Household income	Impact estimated for 2023 only.				$ 178m (0.28%)
Household expenditure	Impact estimated for 2023 only.				$ 151m (0.27%)
Investment	Impact estimated for 2023 only.				$ 94m (0.42%)

Source: EY analysis

136. The productivity impact of the tax reform is assumed to take place in year 2, resulting in a marginal increase in tax revenue from the communications sector. In the following years, the tax loss increases in absolute terms as market revenue rises.

Figure 30

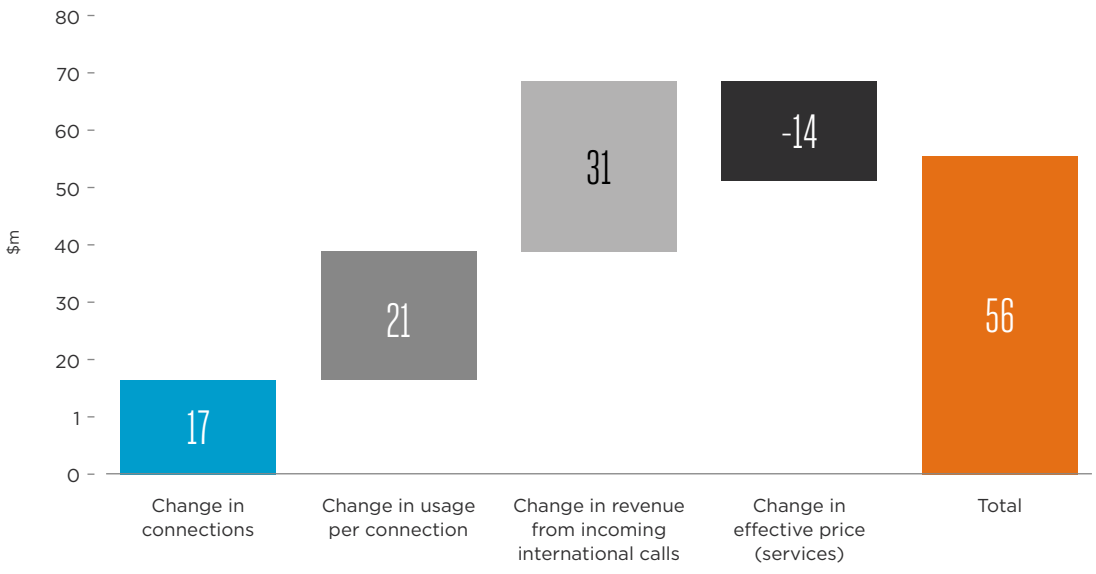
Connections and penetration impacts of elimination of the Telecommunications Development Charge (TDC) and Outgoing Local Access Charge (OLAC)



Source: EY analysis

Figure 31

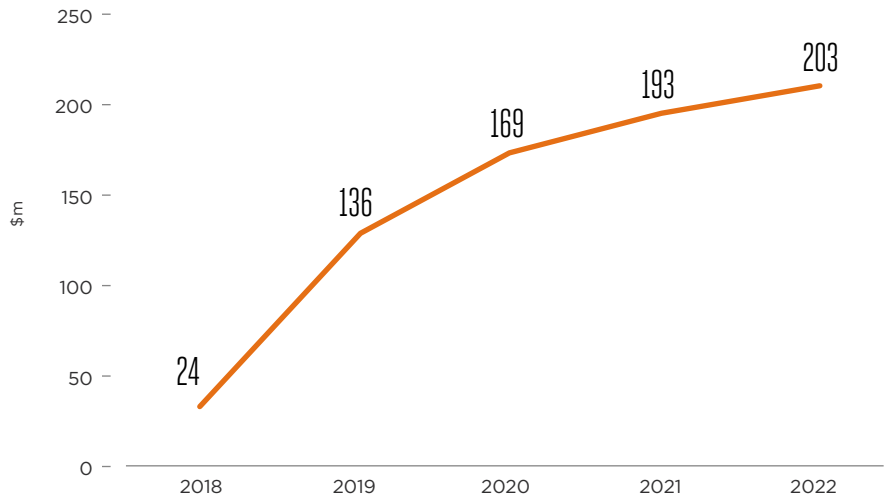
Main drivers of market revenue change following elimination of the Telecommunications Development Charge (TDC) and Outgoing Local Access Charge (OLAC)



Source: EY analysis

Figure 32

Elimination of the Telecommunications Development Charge (TDC) and Outgoing Local Access Charge (OLAC) – annual GDP effects of compared to baseline, $m



Source: EY analysis

For full report please visit the GSMA website at
www.gsma.com

GSMA HEAD OFFICE
Floor 2
The Walbrook Building
25 Walbrook
London EC4N 8AF
United Kingdom
Tel: +44 (0)20 7356 0600
Fax: +44 (0)20 7356 0601