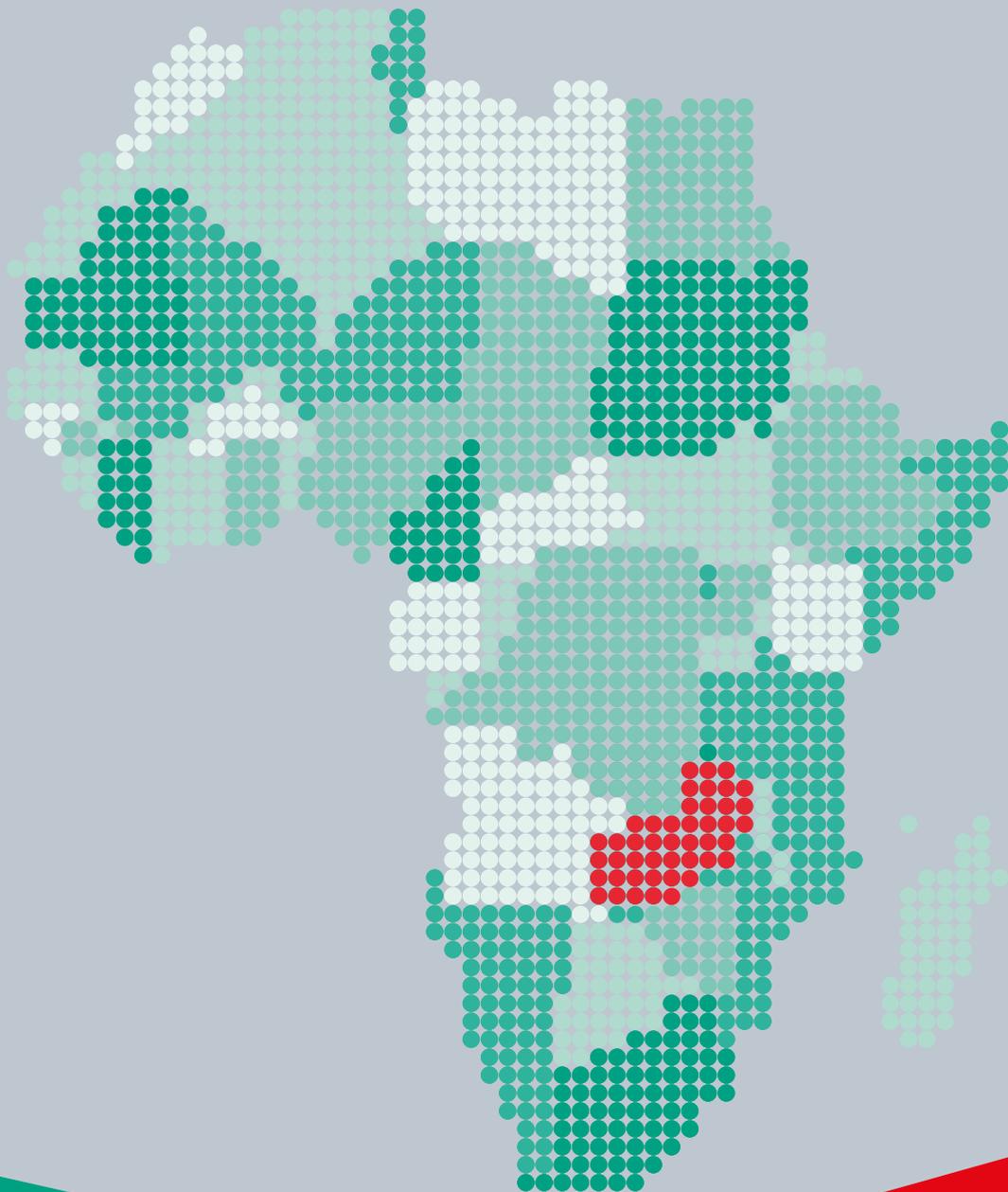




Reforming mobile sector taxation in Zambia:

Promoting economic and social development
through a more efficient tax system





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The GSMA represents the interests of mobile operators worldwide, uniting more than 750 operators with over 350 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.

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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, investment, 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 GSMA¹ has commissioned EY to undertake a study of the economic impact of potential tax reforms on the Zambian mobile sector.

This report analyses recent developments in the mobile sector and its tax treatment in Zambia, 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 Zambian mobile market has expanded rapidly, but there is scope for further growth in penetration, particularly for 3G and 4G technologies

In Zambia, 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 2.2 million in 2008 to 7.9 million in 2018 (reaching 45.1% unique subscriber penetration), at an average annual growth rate of 14.2%. Total mobile sector revenues were \$533 million in 2017,² equivalent to 2.1% of Zambian GDP.³ Mobile operators contributed approximately \$188 million of direct economic value to Zambia in 2017 (0.7% of GDP),⁴ while also supporting a much wider mobile ecosystem that includes mobile content developers, mobile distribution providers and retail companies.

However, there is still considerable opportunity to increase the penetration of new technologies in the sector; over half of the population remain unconnected to mobile services, while less than a quarter of individuals own a smartphone.

Given the low level of fixed broadband penetration in Zambia (0.2% in 2016),⁵ increasing access to internet-enabled mobile services could be expected to be a policy priority for the Government. Facilitating the growth of the mobile sector also aligns with the Government's longer-term digitalisation objectives for the Zambian economy, which are set out in the *Smart Zambia Master Plan*.⁶ This includes reducing the cost of communication services in Zambia, and establishing high capacity broadband infrastructure for government, business, citizens and information and communications technology (ICT) regional hub services.

In meeting its own objectives, the Government could therefore aim to improve affordability and facilitate investment in the mobile sector. As it currently stands, for a low consumption basket (500MB of data), the poorest 20% of the population in Zambia spend approximately 19.0% of their monthly income on mobile ownership, while a medium consumption basket (1GB of data) would cost approximately 38.3% of their monthly earnings.⁷ This is significantly higher than the current United Nations (UN) 5% affordability threshold and suggests significant improvements to

1. GSMA, <https://www.gsma.com/mea/>.

2. GSMA Intelligence database.

3. Zambian GDP was \$25.5 billion in 2017. Source: Oxford Economics.

4. EY analysis of GSMA Intelligence database.

5. This is calculated as the total number of fixed telephone lines divided by the population. Source: World Bank databank.

6. Ministry of National Development Planning, 2017, *Seventh National Development Plan 2017 - 2021*, <http://www.mndp.gov.zm/download/7NNDP.pdf>.

7. GSMA Intelligence database, Tarifica.

affordability are required.⁸ Investment in the sector to date has significantly increased access to the mobile internet, however further investment will be required to surpass the current 40% network coverage for 3G and 4G services.

Taxes on the mobile sector are high compared to levels in other Sub-Saharan countries

The mobile sector makes a disproportionate contribution in taxes and fees relative to its economic footprint. In 2017, the total tax contribution was estimated at \$189m. This represents 35% of the total market revenue, compared to an average of 32% in a sample of other Sub-Saharan countries.

While the mobile market revenue accounted for 2.1% of Zambia's GDP,⁹ the sector's tax and fee payments accounted for around 4.8% of government total tax revenue.¹⁰ This means that the mobile tax contribution is more than double its size in the economy. This is higher than in other countries in Sub-Saharan Africa (SSA), including Cameroon (1.9), Ghana (1.5), Rwanda (1.3) and Senegal (1.1).

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

In Zambia, mobile-specific consumer taxes are the largest source of tax payments (43%), followed by VAT (25%) and corporation tax (12%). Zambia has the highest proportion of mobile-specific consumer taxes and of corporation tax in a large sample of Sub-Saharan African countries; in addition, the share of regulatory fees in Zambia (9%) is also above the levels seen in Ghana (7%), Tanzania (6%), Guinea (5%) and South Africa (2%). Annual licence fees represent the largest proportion in this category, at 7% of the total tax payments.

Consumers pay 69% of the total taxes, while operators pay the remaining 31%. Zambia has the largest proportion of consumer's payments (25% of the total market revenue) in a large sample of SSA countries. This is largely driven by the 17.5% excise duty on airtime.

Through policy reform, the Government of Zambia has the opportunity to simplify and rebalance mobile sector taxation, supporting the transition of the economy into the ICT hub of the region

The Zambian economy expanded at an average rate of 4.0% between 2012 and 2017, and GDP is forecast to grow by a further 4.4% in 2018.¹¹ However, while the medium-term economic outlook has been upgraded by the International Monetary Fund (IMF),¹² the organisation highlighted the need for diversification of the Zambian economy and export base. The country experienced a slowdown in growth during 2015 and 2016, as copper price reductions of 20% and 12% in consecutive years led to lower export earnings and government revenues, while poor rainfall also diminished hydro-electricity generation and agricultural production.¹³

The need for greater economic diversification is recognised by the Zambian Government, and is included within the *7th National Development Plan, 2017-2021 (7NDP)*.¹⁴ The *7NDP* sets out the strategy for economic and social development in Zambia, and seeks to promote economic diversification, job creation and a more inclusive society. The *7NDP* also outlines the Government's focus on increasing investments in ICT infrastructure, and its commitment to "undertake policy, legal and institutional reforms to facilitate universal access to ICT and promote the use of ICT in business (e-Commerce); networking of services and applications across the public sector and online access to government services".

Reforming mobile sector taxation could allow the Zambian Government to achieve the broad economic and social objectives in the *7NDP*. Specifically, reduced consumer taxes would improve the affordability of mobile ownership, facilitating greater access to mobile broadband services for individuals and businesses. Furthermore, the development of the mobile sector would help to diversify the Zambian economy, as more industries benefit from greater digitalisation of consumer and business interactions.

Tax reform in the sector 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 the Government in the medium term

Three options for tax reform to continue to promote growth in the Zambian mobile sector and the wider economy have been identified. These reforms are forecast to lead to increased penetration, an

8. UN Broadband Commission, 2017, http://broadbandcommission.org/Documents/ITU_discussion-paper_Davos2017.pdf.

9. Zambian GDP was \$25.5 billion in 2017. Source: Oxford Economics.

10. The total tax revenue was estimated at ZMW 37,623 million in 2017. This is approximately \$3,952 million (at an average exchange rate of ZMW 9.5 per US dollar). Source: Budget Speech 2017, http://www.parliament.gov.zm/sites/default/files/images/publication_docs/2017_Budget_Speech.pdf.

11. Oxford Economics database.

12. International Monetary Fund, 2017, *Zambia: 2017 Article IV Consultation-Press Release; Staff Report; and Statement by the Executive Director for Zambia*, <http://www.imf.org/en/Publications/CR/Issues/2017/10/25/Zambia-2017-Article-IV-Consultation-Press-Release-Staff-Report-and-Statement-by-the-45358>.

13. *ibid.*

14. Ministry of National Development Planning, 2017, *Seventh National Development Plan 2017 - 2021*, <http://www.mndp.gov.zm/download/7NDP.pdf>.

acceleration in the rate of technology migration to smartphones and 3G/4G connections, and generate higher GDP and taxation revenue in the medium term:¹⁵

- **Reducing excise duty on mobile services:**

The current excise duty rate of 17.5% on mobile services in Zambia is the second highest among the countries in Sub-Saharan Africa. As this tax is levied on both chargeable and free mobile services, the effective rate is even higher. The phased reduction of 17.5% excise duty on mobile services, to 15% in 2019, 12.5% in 2020 and finally 10% in 2021 would move the rate closer to the levels in its regional peers and improve the affordability of mobile services for Zambians. By reducing the cost of mobile services, this reform would incentivise greater connectivity among Zambian households and businesses, thereby enhancing consumption and connectivity across the country. The expected impacts of this tax reform on the mobile sector and wider economy¹⁶ are as follows:

- Mobile penetration would increase by 1.0 million unique subscribers (5.0%) by 2023, equivalent to 1.7 million new connections, and total data usage would grow by 12.8%. Sector revenues would be \$45 million higher per annum (7.6%); and
- Annual tax receipts would be \$22 million per annum higher by 2023, a cumulative fiscal gain of \$26 million over five years, and GDP would grow by \$287 million (1.1%).

- **Reducing the corporation tax rate for the mobile sector:** The reduction of the specific corporation tax rate for the mobile sector, from the current 40% to the standard 35% rate would promote additional investment in the mobile sector, while also reducing consumer prices and improving affordability. The expected impacts of this tax reform on the mobile sector and wider economy are as follows:

- Mobile penetration would increase by 176,000 unique subscribers (0.9%) by 2023, equivalent to 289,000 new connections, and total data usage would grow by 1.1%. Sector revenues would be \$7 million higher per annum (1.2%); and
- Annual tax receipts would be \$6 million per annum higher by 2023, a cumulative fiscal gain of \$19 million over five years, and GDP would grow

by \$50 million (0.2%).

- **Reducing annual licence fees:** The reduction in annual licence fees from 3.0% of revenue excluding interconnection revenue and excise duty payments, to 1.5%, would generate a tax saving for operators, which would be reflected in the form of lower prices, and additional investment in the sector. The expected impacts of this tax reform on the mobile sector and wider economy would be as follows:

- Mobile penetration would increase by 284,000 unique subscribers (1.4%) by 2023, equivalent to 467,000 new connections, and total data usage would grow by 2.5%. Sector revenues would be \$12 million higher per annum (2.0%); and
- Annual tax receipts would be \$8 million per annum higher by 2023, a cumulative fiscal gain of \$22 million over five years, and GDP would grow by \$80 million (0.3%).

The growth in the sector, under all 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 75% 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.

Moreover, all reforms are shown to be self-financing in terms of their impact on government revenues in the medium term, and will generate significant tax receipts by 2023.

15. The forecasts provided in this report estimate the isolated impacts of tax reform on the Zambian mobile industry relative to a baseline forecast for the development of the sector sourced from GSMAI. They do not capture other market developments and/or external market shocks, and as such should not be seen as comprehensive forecasts for the sector.

16. A model of the Zambian 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.



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

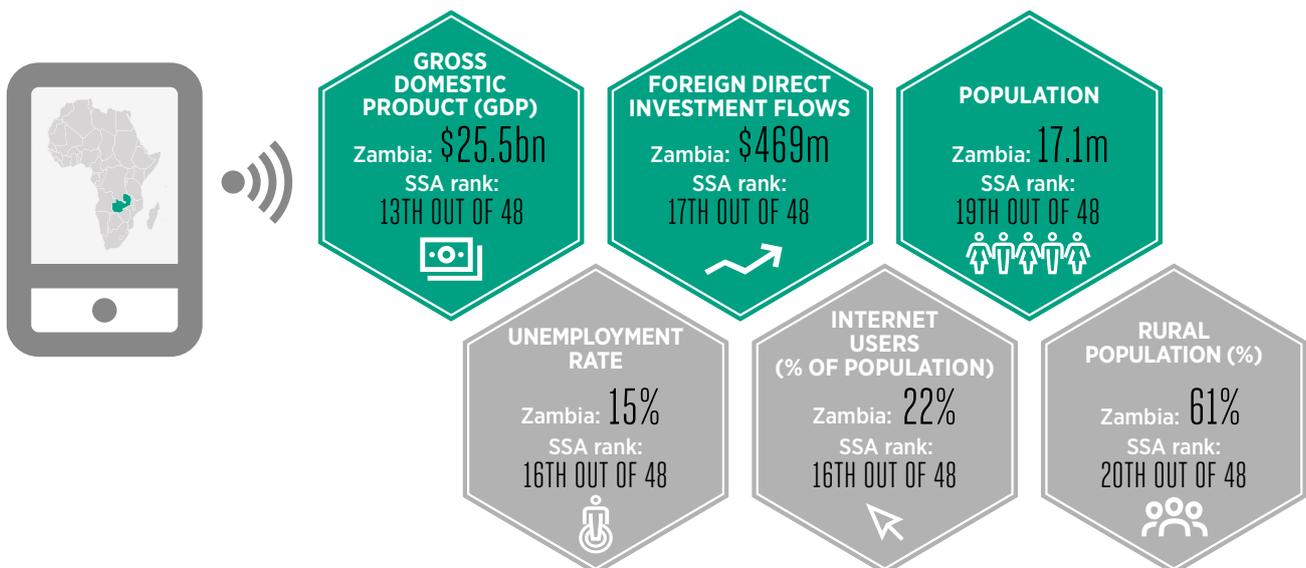
1.1 Country overview

Figure 1 provides an overview of key economic and demographic statistics for Zambia. The Zambian economy is the 13th largest in Sub-Saharan Africa (SSA), with an estimated gross domestic product

(GDP) of \$25.5 billion in 2017.¹⁷ Of the 17.1 million individuals in Zambia, over 61% reside in rural areas, while approximately 22% are regular users of the internet.¹⁸

Figure 1

Country overview



Source: Oxford Economics database, World Bank databank, United Nations Conference on Trade and Development (UNCTAD), EY analysis

17. Oxford Economics database.

18. This includes both fixed and mobile internet. Source: World Bank databank.

1.1.1 The Zambian economy

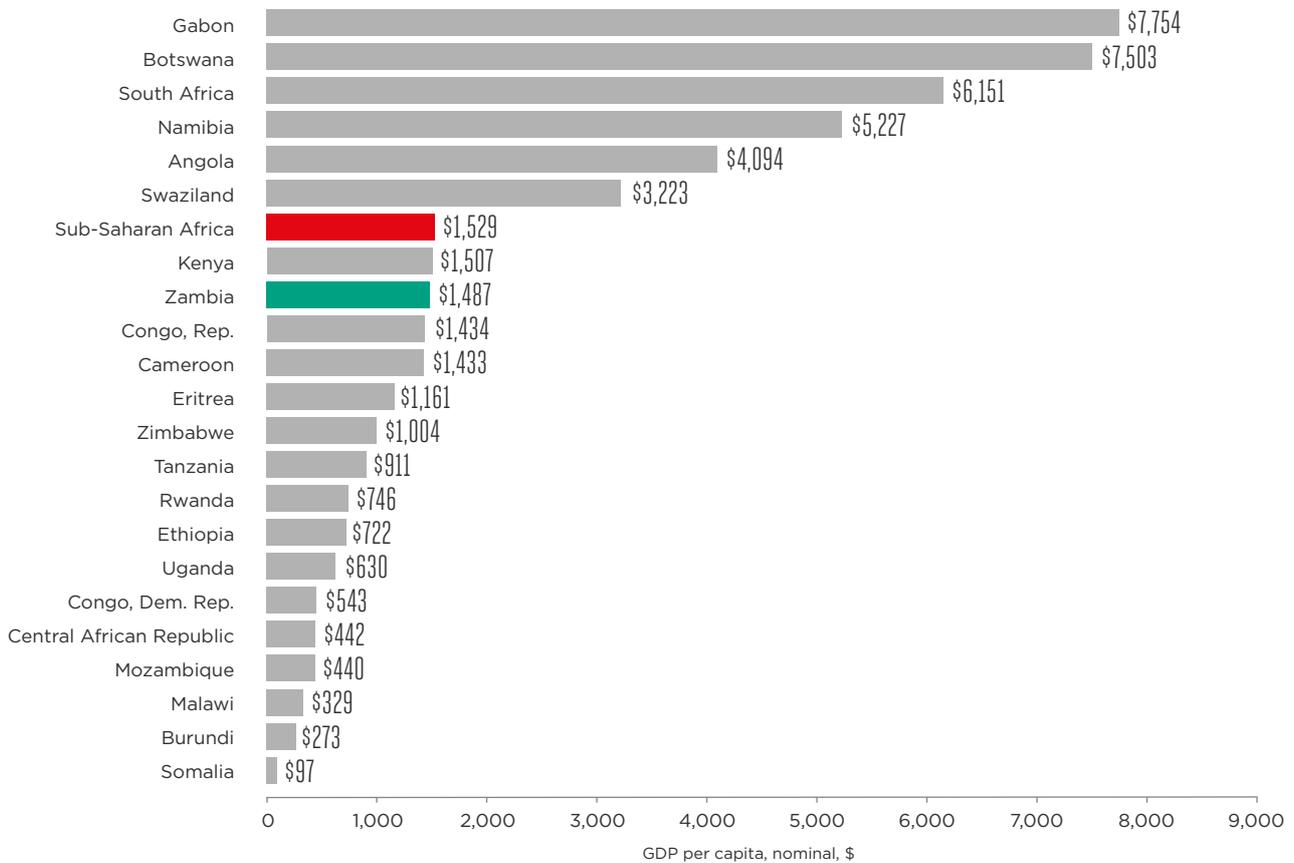
The Zambian economy continues to grow, but will require greater economic diversification in order to support growth in the medium term

The Zambian economy expanded at an average rate of 4.0% between 2012 and 2017, and GDP is forecast to grow by a further 4.4% in 2018.¹⁹ While the medium-

term economic outlook has been upgraded by the IMF,²⁰ relatively slow economic growth has not kept pace with Zambia's rapidly expanding population, which has increased at a consistent rate of 3.1% over the past decade. This creates challenges for infrastructure provision and households' disposable incomes, which decreased by 19%, in nominal terms, between 2012 and 2017.²¹ As shown in Figure 2, GDP per capita is marginally below the average for the region, at approximately \$1,490 in 2017.

Figure 2

GDP per capita (nominal \$) in selected Sub-Saharan African countries, 2017



Source: Oxford Economics database

In their 2017 report, the IMF highlighted the need for diversification of the Zambian economy and export base. Zambia is the second-largest producer of copper in Africa, with copper products accounting for \$6.0 billion of export earnings in 2017, 74% of total export value for the year. In total, the mining sector accounted for 14.8% of Zambia's GDP in 2017, behind only wholesale and retail trade (19.1%) in terms of economic contribution.²²

As shown in Figure 3, Zambia's economic performance tracks closely to copper price fluctuations, highlighting the need for economic diversification. The country experienced a slowdown in growth during 2015 and 2016, as copper price reductions of 20% and 12% in consecutive years led to lower export earnings and government revenues, while poor rainfall also diminished hydro-electricity generation and agricultural production.²³

19. Oxford Economics database.

20. International Monetary Fund, 2017, *Zambia: 2017 Article IV Consultation-Press Release; Staff Report; and Statement by the Executive Director for Zambia*, <http://www.imf.org/en/Publications/CR/Issues/2017/10/25/Zambia-2017-Article-IV-Consultation-Press-Release-Staff-Report-and-Statement-by-the-45358>.

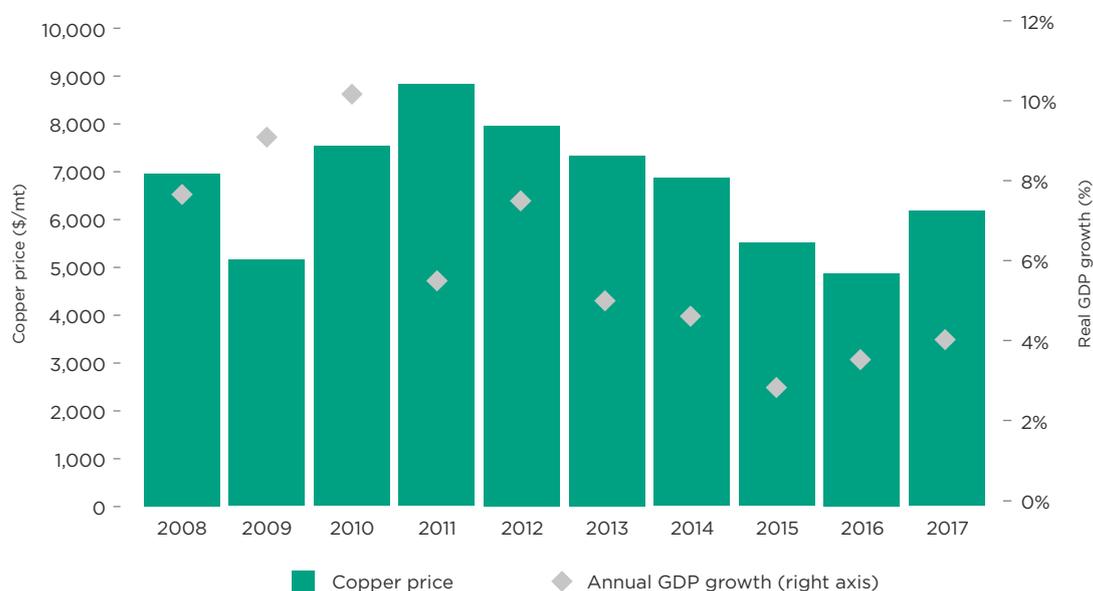
21. Oxford Economics database.

22. International Monetary Fund, 2017, *Zambia: 2017 Article IV Consultation-Press Release; Staff Report; and Statement by the Executive Director for Zambia*, <http://www.imf.org/en/Publications/CR/Issues/2017/10/25/Zambia-2017-Article-IV-Consultation-Press-Release-Staff-Report-and-Statement-by-the-45358>.

23. *ibid.*

Figure 3

Real GDP growth in Zambia and annual global copper prices



Source: Oxford Economics database and World Bank Commodity Price Data (The Pink Sheet)

The need for greater economic diversification is recognised by the Zambian Government, and is included within the *7th National Development Plan, 2017-2021 (7NDP)*.²⁴ The *7NDP* sets out the strategy for economic and social development in Zambia, and is composed of five key pillars:

- Economic diversification and job creation;
- Poverty and vulnerability reduction;
- Reduced developmental inequalities;
- Enhancing human development; and
- Creating a conducive governance environment for a diversified and inclusive economy.

Within the *7NDP*, the Government also outlines its focus on increasing investments in ICT infrastructure, and its commitment to “undertake policy, legal and institutional reforms to facilitate universal access to ICT and promote the use of ICT in business (e-Commerce); networking of services and applications across the public sector and online access to government services”.

Reforming mobile sector taxation will allow the Zambian Government to achieve a number of objectives set out in the *7NDP*. Specifically, reduced

consumer taxes will improve the affordability of mobile ownership, facilitating greater access to mobile broadband services for individuals and businesses. Furthermore, the development of the mobile sector will help to diversify the Zambian economy, as more industries benefit from greater digitalisation of consumer and business interactions.

1.1.2 Fiscal outlook

The Zambian Government is gradually adopting a policy of fiscal consolidation, and aims to reduce the country's risk of debt distress from high to moderate

The *2018 Budget and Medium Term Economic Framework (MTEF) 2018-2020* sets out the Zambian Government's strategy for public expenditure and financing over the medium term.²⁵ The *MTEF* seeks to finance the spending requirements outlined in the *7NDP*, while also containing public debt levels. Gross government debt has risen dramatically in recent years, increasing from 23.5% of GDP in 2012 to an estimated 55.5% at the end of 2017,²⁶ reflecting a combination of weaker growth and Zambia's significantly increased borrowing in the low copper price environment.

The 2018 budget targets a fiscal deficit of 6.8%, representing a marginal decrease from 7.0% in 2017.

24. Ministry of National Development Planning, 2017, *Seventh National Development Plan 2017 – 2021*, <http://www.mndp.gov.zm/download/7NDP.pdf>.

25. Republic of Zambia, 2017, *The 2018-2020 Medium Term Expenditure Framework and 2018 Budget*, <https://www.lusakatimes.com/wp-content/uploads/2017/09/MTEF-2018-2020.pdf>.

26. Oxford Economics database.



To contain spending, the *Government's Medium Term Economic Framework (MTEF)* targets a reduction in the public service wage bill from 51% of domestic revenues to 45% by 2020, while revisions to the Public Finance Act and Public Procurement Act will ensure greater use of public funds.²⁷

The Zambian Government has also set ambitious revenue targets in order to finance expenditure, including a 14% increase in domestic revenue in FY18.²⁸

A number of revenue mobilisation initiatives have been established by the Government to support the *MTEF*, including the introduction of IT solutions to improve tax collection, taxation of the informal sector, and the appointment of revenue collecting agents.²⁹ As discussed further in Section 1.3, the adoption of person-to-government (P2G) mobile technologies can be a vehicle towards improving the efficiency of tax collection, while reducing the negative fiscal impact of the shadow economy.

1.2 Market overview

The mobile market in Zambia has grown rapidly over the past decade, with the number of unique subscribers increasing at an annual rate of 14.2% between 2007 and 2017. However, as demonstrated in Figure 4 which provides an overview of the Zambian

mobile market, a significant opportunity exists to further develop the sector (e.g. to increase the relatively low level of 3G penetration and smartphone usage), and to contribute to achieving the goals set out in the *7NDP*.

27. Republic of Zambia, 2017, *The 2018-2020 Medium Term Expenditure Framework and 2018 Budget*, <https://www.lusakatimes.com/wp-content/uploads/2017/09/MTEF-2018-2020.pdf>.

28. Minister of Finance, 2017, *2018 Budget Address*, http://www.parliament.gov.zm/sites/default/files/images/publication_docs/2018%20Budget.pdf.

29. Republic of Zambia, 2017, *The 2018-2020 Medium Term Expenditure Framework and 2018 Budget*, <https://www.lusakatimes.com/wp-content/uploads/2017/09/MTEF-2018-2020.pdf>.

Figure 4

Zambian mobile market in figures³⁰

SUMMARY OF MOBILE MARKET



Zambian mobile operators generated **\$533m** in revenue in 2017, contributing **\$188m** of direct economic value to the Zambian economy (0.7% of GDP).



24th largest mobile market in Sub-Saharan Africa by revenue.



14.0 million connections at Q1 2018
Equivalent to 79.5% total subscriber penetration
2023 forecast: 16.9 million, at a 5 year CAGR of 3.9%.



7.9 million unique subscribers at Q1 2018
Equivalent to 45.1% unique subscriber penetration
2023 forecast: 10.1 million, at a 5 year CAGR of 5.0%.

BREAKDOWN OF TOTAL CONNECTIONS



26.9% 3G and 4G penetration (connections) at Q1 2018.
2023 forecast: 66.4% (3G and 4G), 5 year CAGR of 19.8%.



22.5% smartphone penetration at Q1 2018
2023 forecast: 50.3%, at a 5 year CAGR of 17.4%.



95.8% prepaid connections compared to total in Q1 2018
2023 forecast: 94.4%, at a 5 year CAGR of -0.3%.

Source: GSMA Intelligence database, EY analysis

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

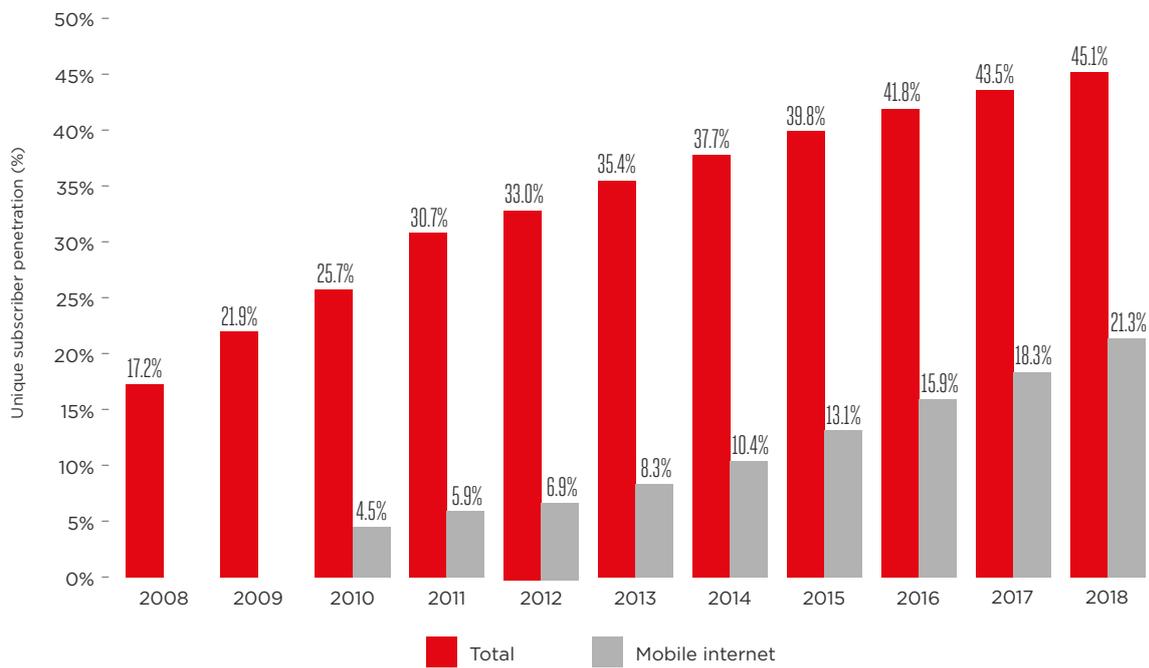
1.2.1 Market penetration and technology migration

The mobile market has expanded rapidly in the past decade, yet there is further room for growth in terms of subscriber penetration and technology migration

As shown in Figure 5, unique subscriber penetration has more than doubled since the start of 2008, standing at 45.1% of the population by Q1 2018 (equivalent to 79.5% penetration in total connections). However, less than half of unique subscribers are mobile broadband users (unique subscriber mobile internet penetration standing at 21.3% in Q1 2018).

Figure 5

Unique mobile subscriber penetration in Zambia, 2008-2018



Source: GSMA Intelligence database

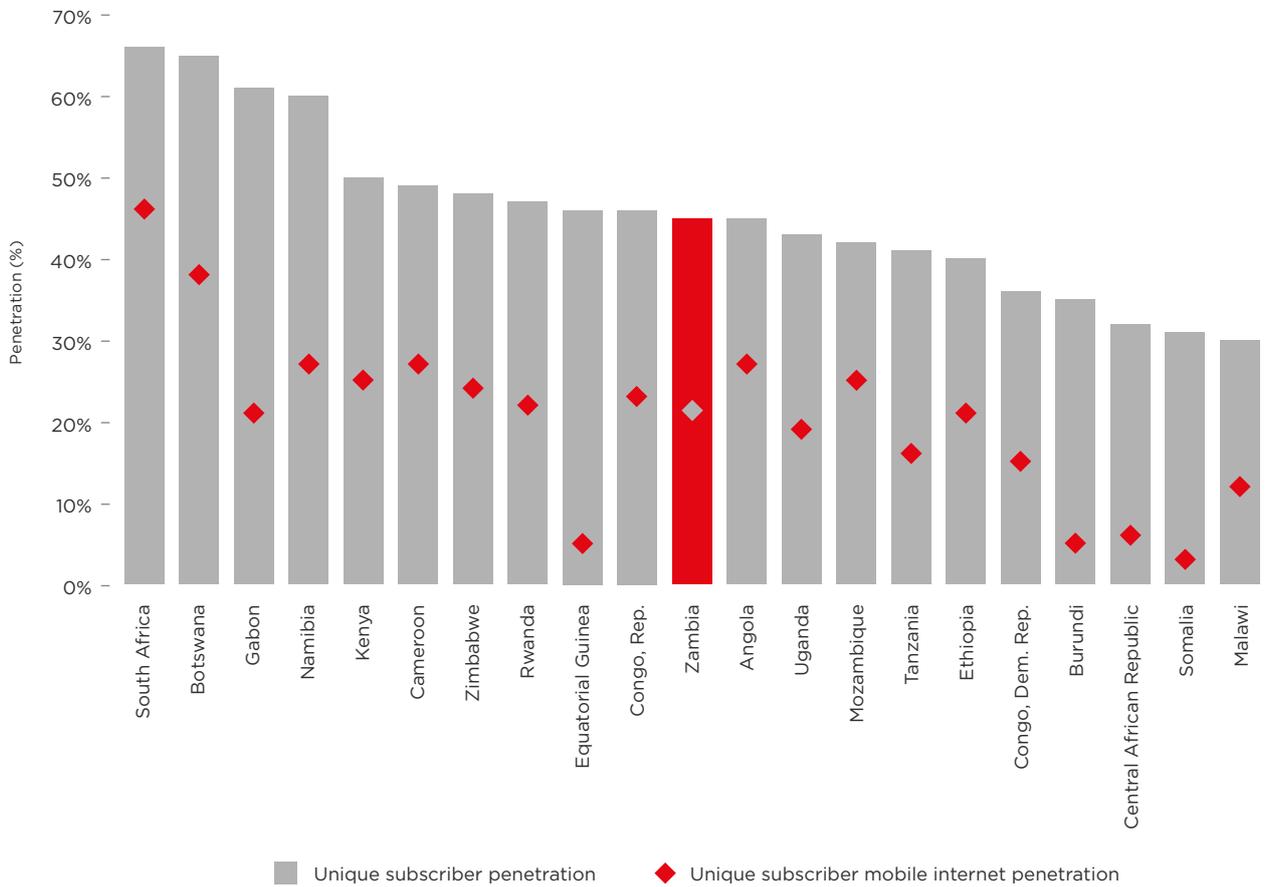
However, despite the rapid growth of the mobile market in Zambia, there is still further room for expansion, as over half of the population still remains unconnected to mobile services. In the 7NDP, the Zambian Government stated a target of 90% unique subscriber penetration by 2021.³¹ This ambitious objective forms one part of Zambia’s vision to become an ICT hub in the region.

As shown in Figure 6, unique subscriber penetration in Zambia ranks below a number of neighbouring countries, such as Botswana, Namibia and Zimbabwe. Furthermore, only 21.3% of subscribers have access to mobile internet services in Zambia, which highlights the significant opportunity to migrate customers to newer technologies.

31. Ministry of National Development Planning, 2017, *Seventh National Development Plan 2017 – 2021*, <http://www.mndp.gov.zm/download/7NDP.pdf>.

Figure 6

Mobile penetration (unique subscribers – all and with mobile internet) in selected Sub-Saharan Africa countries, 2017



Source: GSMA Intelligence database

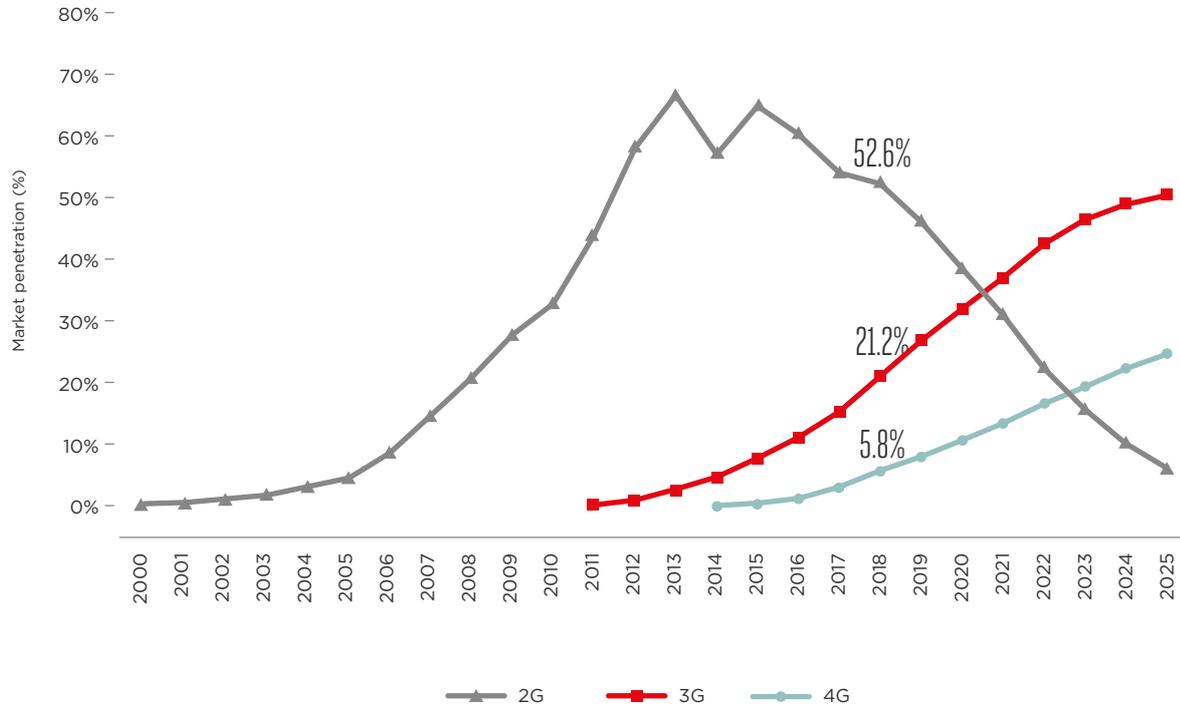
Given the Zambian Government’s target of 50% mobile internet penetration by 2021,³² it will be crucial that subscribers continue to migrate from 2G technology to mobile broadband enabled technologies in the medium term. As shown in Figure 7, 2G is still the

dominant technology in the Zambian mobile market, with a penetration rate (total connections) of 52.6% in 2018. Market penetration is expanding for 3G and 4G services, with 3G penetration increasing from 2.7% in 2013 to 21.2% in 2018.

32. *ibid.*

Figure 7

Market penetration rate (total connections), by technology



Source: GSMA Intelligence database

The Zambian mobile market is developing rapidly, and there are significant opportunities to increase penetration and promote the use of modern internet-enabled technologies. Increasing the rate of adoption

and usage of modern mobile services is directly aligned with the Zambian Government's *7NDP* objectives of diversifying the economy and enhancing access to ICT.



1.2.2 Affordability of smartphones and mobile services in Zambia

The lack of affordability of mobile services and devices in Zambia is a challenge for the industry, particularly in respect of low-income individuals

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 capita³³ typically have lower penetration rates.³⁴ 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.³⁵

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

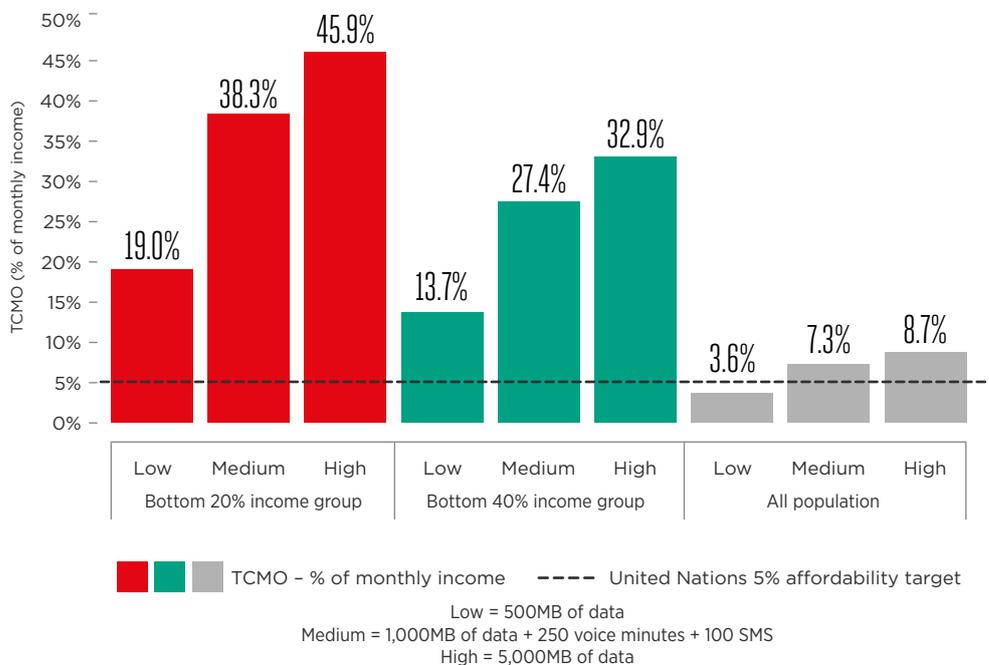
cost of mobile ownership (TCMO) for a range of countries, income groups and consumption baskets.³⁶

Figure 8 shows the TCMO as a proportion of monthly income for the two lowest income quintiles in Zambia, compared to the entire population. For a low consumption basket (500MB of data), the poorest 20% of the population in Zambia spend approximately 19.0% of their monthly income on mobile ownership, while a medium consumption basket (1GB of data) would cost approximately 38.3% of their monthly earnings.

Improving the affordability of mobile ownership in Zambia is directly supportive of the Government's 7NDP, which aims to increase unique subscriber penetration and improve digital literacy across the country. At present, basic packages represent an affordability challenge for Zambia's lowest income groups, and are below the current 5% UN affordability threshold.³⁷ As usage levels converge towards more data-intensive packages in the future, it will be important that these affordability issues are addressed.

Figure 8

TCMO as a proportion of monthly income in Zambia, 2017



Source: GSMA Intelligence database, Tarifica

33. Defined as gross national income (GNI) per capita.

34. GSMA, 2016, *Digital Inclusion and Mobile Sector Taxation*, <https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2016/07/Digital-Inclusion-and-Mobile-Sector-Taxation-2016.pdf>.

35. GSMA, 2015, *Connected Women 2015 – Bridging the Gender Gap: Mobile Access and Usage in Low- and Middle-Income Countries*, https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2016/02/GSM0001_03232015_GSMAReport_NEWGRAYS-Web.pdf.

36. 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.

37. ICT expenditure reflects mobile broadband prices, prepaid handset-based 500 MB. Source: UN Broadband Commission, 2017, http://broadbandcommission.org/Documents/ITU-discussion-paper_Davos2017.pdf.

1.2.3 Investment environment and opportunities for development

Investment in the mobile market to date has expanded 3G and 4G coverage across Zambia. However, further investment will be required in order to deliver Zambia’s long-term ICT objectives, as set out in the Smart Zambia Master Plan

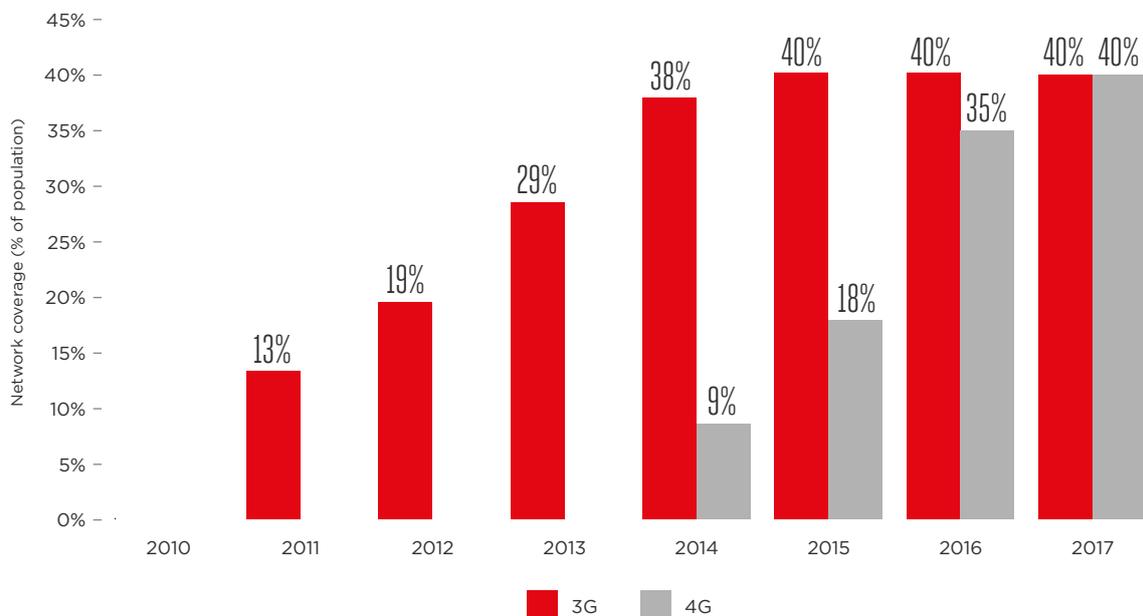
In order to improve the availability and quality of mobile services, significant levels of capital expenditure are required to finance investment in network infrastructure, operational costs and one-off

licence fees. Without such investment, technological advances in the mobile industry cannot be made available to the population, often impacting those in rural areas and low-income individuals.

As shown in Figure 9, network coverage for mobile broadband-enabled services has expanded significantly during the past decade, with 3G and 4G population coverage both reaching 40% in 2017. Network expansion has been fuelled by significant investment by Zambia’s mobile operators, with capital expenditure averaging 22% of revenue during 2011 to 2017, reaching a peak of 37% in 2015.³⁸

Figure 9

Network coverage, by population (%), Zambia



Source: GSMA Intelligence database

38. GSMA Intelligence database.

However, despite the recent expansion of network coverage in Zambia, approximately 60% of the population do not have access to mobile internet services. Figure 9 highlights that 3G coverage has remained stable at 40% since 2015. GSMA Intelligence forecasts that coverage for both 3G and 4G technologies will remain at 40% in the medium term.³⁹ As a result, policies which facilitate increased investment in mobile network infrastructure are required in order to increase access to broadband services, particularly given the low rate of fixed broadband penetration, which was just 0.2% in 2016.⁴⁰

The *Smart Zambia Master Plan* is one such platform which will support the expansion of the mobile market. The vision underlying the plan is to develop Zambia into a “prosperous and globally competitive knowledge-based developed country by 2063”⁴¹ and to facilitate efficiency in the economy through the strategic application of ICT for job creation, value addition and global competitiveness.⁴² The plan seeks to take advantage of the country’s central location, in order to become the ICT hub of the region. The following are the project objectives:

- To contribute to the sector’s development by introducing an efficient and advanced telecommunication network as a driving force to further promote the nation’s economic and social development;
- To support achievement of a variety of government goals, such as better delivery of services to the public and citizens, through better access to information and more efficient government administration;
- To establish a high capacity fixed and wireless broadband infrastructure for government, business, citizens and ICT regional hub services;
- To reduce the cost of communication services in Zambia; and
- To develop education and human capital.

Through the *Smart Zambia Master Plan*, the Government seeks to achieve the harmonised construction of national ICT infrastructure, including the National Optic Fibre Backbone. By working with the mobile industry, a coordinated initiative of private and public investment can help to connect individuals to mobile services in currently underserved areas. This in turn will advance the economic and social development objectives outlined in the *7NDP*.

39. *ibid.*

40. World Bank databank.

41. The *Smart Zambia Master Plan* integrates the key objectives of African Union’s *Agenda 2063*.

42. Ministry of National Development Planning, 2017, *Seventh National Development Plan 2017 – 2021*, <http://www.mndp.gov.zm/download/7NDP.pdf>.



1.3 The socio-economic contribution of the mobile sector

Mobile operators directly contributed \$188 million in direct value added to the economy in 2017

Total mobile sector revenues were \$533 million in 2017,⁴³ equivalent to 2.1% of Zambian GDP. Mobile operators contributed approximately \$188 million of direct economic value to Zambia in 2017 (0.7% of GDP),⁴⁴ while also supporting a much wider mobile ecosystem, including mobile distribution providers and retail companies. These companies create further economic activity in Zambia 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.⁴⁵ 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.⁴⁶ 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%.⁴⁷

Mobile networks promote digital inclusion and can bridge the digital divide

Where fixed broadband coverage is low (as is the case in Zambia, where just 0.2% of the population have fixed subscriptions),⁴⁸ mobile networks are central to promoting digital inclusion, due to the lower cost of network rollout. This is particularly true for Zambia's large rural population (61% of the population), and will

require greater access to the knowledge and digital economy in order to achieve the *Smart Zambia Master Plan* objective of transforming Zambia into the ICT hub of the region.

CASE STUDY

Lima Links⁴⁹

Lima Links, launched in August 2016, connects smallholder farmers to the wider agricultural market place via mobile technology.

Farmers can register for the service via SMS, and thereby gain access to suppliers, consumers and bulk buyers, and advertise the crops they produce. The service also allows users to follow the real time market prices of agricultural crops, enabling better harvesting decisions. Previously, Zambian farmers had limited access to information regarding consumer demand and the market prices for crops.

To date, Lima Links has helped 1.3 million Zambian farmers gain greater access to the agricultural market place via mobile technology.

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 22% of Zambian individuals were internet users (fixed and mobile internet), and hence increased rollout 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,

43. GSMA Intelligence database.

44. GSMA Intelligence database and companies' annual accounts data.

45. Oxford Economics, 2013, *The Economic Value of International Connectivity*.

46. ITU, 2012, *The Impact of Broadband on the Economy: Research to Date and Policy Issues*, https://www.itu.int/ITU-D/treg/broadband/ITU-BB-Reports_Impact-of-Broadband-on-the-Economy.pdf.

47. LECC, 2009, "Exploring the Relationship Between Broadband and Economic Growth" and Waverman et al., 2009, "Economic Impact of Broadband: An Empirical Study".

48. World Development Indicators, World Bank databank.

49. Lima Links, <http://www.limalinkszambia.com/>.

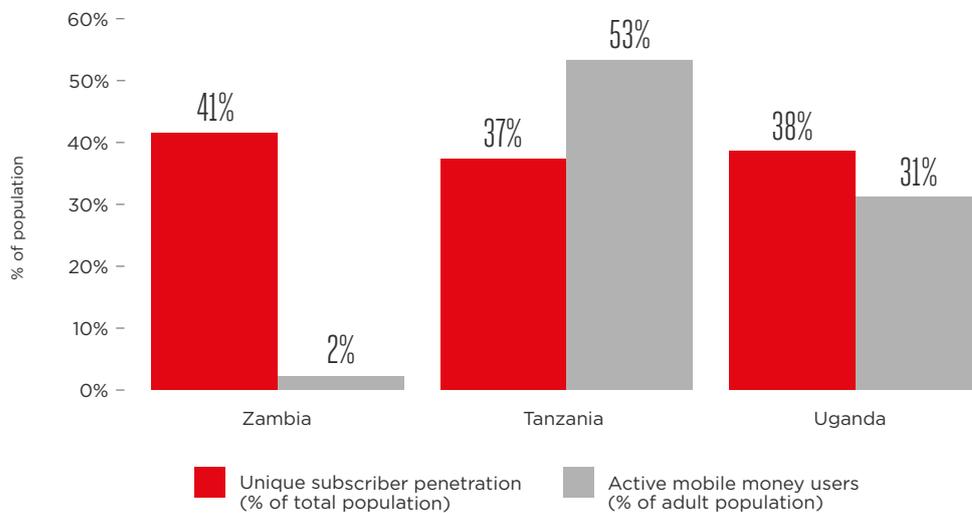
security and convenience for financial transactions for those who do not have access to traditional financial services.

The potential role of mobile money in Zambia's financial sector is highlighted within the Bank of Zambia's *National Financial Inclusion Strategy 2017-2022*.⁵⁰ Widespread and accessible delivery channels are viewed as a key driver for enhancing financial

inclusion in Zambia, and expanding the use of mobile-based delivery channels is regarded as a strategic objective. As shown in Figure 10, the adoption of mobile money in Zambia has been very slow relative to neighbouring countries with a similar level of mobile penetration. However, the mobile money market in Zambia has gained momentum in recent years, with MTN, Airtel and Zamtel all gaining a larger mobile money customer base.⁵¹

Figure 10

Mobile penetration and active mobile money usage, 2015



Source: Finscope 2015, Bank of Zambia, GSMA Intelligence database

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 also reduce the budgetary cost of the shadow economy to the Zambian Government.⁵²

The increased adoption of electronic payments will be an important enabler of the revenue mobilisation and expenditure objectives outlined in Zambia's *Medium Term Economic Framework (MTEF)*. Mobile technology can support the introduction of IT solutions to improve tax collection, and facilitate the taxation of the

informal sector. Such technologies include person-to-government (P2G) and business-to-government (B2G) services, which can generate significant efficiencies, while encouraging greater financial inclusion within the economy. Research from Tanzania has shown that shifting to digital P2G and B2G payments in certain cash-heavy industries can reduce leakage by up to 40%, and increase annual tax revenue by \$477 million per annum.⁵³ In Kenya, public sector digitalisation saved the Government an estimated \$290 million over four years, as P2G payments improved the efficiency of public services.⁵⁴ Similarly, it has been estimated that a successful digitalisation of P2G payments in Ghana has the potential to increase non-tax revenues of the Government by about 40%, equivalent to \$630 million.⁵⁵

50. Bank of Zambia, 2017, *National Financial Inclusion Strategy 2017-2022*, <http://www.boz.zm/National-Financial-Inclusion-Strategy-2017-2022.pdf>.

51. Lusaka Times, 2018, "Zambia: Time is Money – The Mobile Money Revolution in Zambia".

52. EY, 2016, *Reducing the Shadow Economy through Electronic Payments*.

53. Better than Cash Alliance, 2016, *Person-to-Government Payments: Lessons from Tanzania's Digitization Efforts*.

54. GSMA, 2017, *Person-to-Government (P2G) Payment Digitisation: Lessons from Kenya*.

55. GSMA, 2018, *P2G Payments via Mobile Money: Unlocking Opportunity for Consumers, Governments and Providers*.

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.⁵⁶ In a number of countries, including Zambia, 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 under-served population.⁵⁷

CASE STUDY HNI 3-2-1⁵⁸

Human Network International (HNI) partnered with Airtel in 2010 to create the 3-2-1 Service — an innovative information service which assists those on low incomes to take action to improve their own health and well-being.

The service provides individuals with information on an array of topics (e.g. healthcare, microfinance) in any moment of need. Callers dial a toll-free number, 3-2-1, and are able to select their local language and choose a topic they seek specific information about. Trusted and actionable information is then provided by local experts, on topics ranging from family planning to rice planting.

According to a survey conducted by HNI, the service resulted in a reported 67% increase in health knowledge among users.

Mobile connectivity can form part of the solution for improving Zambia's healthcare sector. 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 barriers⁵⁹ to accessing essential information and services, such as geographic isolation, gender disparities⁶⁰ and social stigmas.⁶¹

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.

CASE STUDY Makhalidwe Athu⁶²

Launched in 2015, the Makhalidwe Athu – All Children Reading Project aims to improve the literacy skills of Zambian children by using mobile phones.

Many schools in the Eastern Zambia face a shortage of storybooks in their local language due to a lack of resources and publishers. As a result, the growing demand for content among young Zambian readers is often unmet.

In the scheme, up to 1,200 households within 40 pilot communities across Zambia were delivered with short stories in their local language via SMS messaging, sent directly to their mobile phones.

Gender equality

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.⁶³

Zambia was ranked 116th in the world for gender equality according to the *2017 Global Gender Gap Report*,⁶⁴ and therefore there is much potential to improve opportunities to Zambian women in terms of employment, educational attainment, and political empowerment.

56. University of Cambridge, 2011, *Mobile Communications for Medical Care*.

57. PWC, 2014, *Emerging mHealth: Paths for Growth*.

58. HNI, <http://hni.org/what-we-do/3-2-1-service/>.

59. N. McKee et al., 2004, "Strategic Communication in the HIV/AIDS Epidemic".

60. T. A. Gurman et al., 2012, "Effectiveness of mHealth Behavior Change Communication Interventions in Developing Countries: A Systematic Review of the Literature".

61. J.G. Khan et al., 2010, "Mobile Health Needs and Opportunities in Developing Countries".

62. Creative Associates International, <https://allchildrenreading.org/wordpress/wp-content/uploads/2015/02/Zambia-One-Pager.pdf>.

63. GSMA, 2015, *Bridging the Gender Gap: Mobile Access and Usage in Low- and Middle-Income Countries*.

64. World Economic Forum, Global Gender Gap Index.



2. Mobile sector taxation in Zambia

As explained in Section 1, the mobile sector plays a key role in the Zambian economy. In addition to its socio-economic impact, the mobile sector makes an important contribution to the public finances of Zambia through tax payments. This section covers the tax regime applicable to the mobile sector and its contribution to the tax revenue of Zambia.

2.1 Taxes on mobile consumers

Table 1 below outlines the different taxes on mobile whose incidence falls on consumers.

Table 1

Key taxes paid by mobile consumers, 2018

Value Added Tax (VAT)	16%
Custom duty	15%
Airtime excise duty*	17.5%
International calls surcharge*	ZMW 0.09 per minute

* These taxes are mobile-specific.

Source: EY 2018 Worldwide VAT, GST and Sales Tax Guide

- **VAT.** The supply of mobile goods and services are taxed at the general rate of 16%.
- **Custom duty.** A customs duty of 15% applies to imported parts of handsets.⁶⁵
- **Airtime excise duty.** There is an airtime excise duty of 17.5% that applies to voice calls (per minute), SMS and MMS (per unit), and data (per megabyte). The tax also applies to free minutes provided by operators to consumers.
- **International calls surcharge.** A surcharge of ZMW 0.09 per minute applies to international calls.

65. This does not apply to parts imported from SADC (Southern African Development Community) countries.



2.2 Taxes and regulatory fees on mobile operators

Table 2 below outlines the different taxes paid by mobile operators.

Table 2

Key taxes paid by mobile operators, 2018

Corporate income tax*	40%
Property transfer tax	5%
Skills and development levy	0.5%
Personal income tax	37.5% (top rate)
National pension scheme	5%

Source: EY 2018 Worldwide Corporate Tax Guide

*This tax applies at a higher than standard rate to the mobile sector.

- **Corporate income tax.** Companies are subject to tax on their income derived from Zambian sources. The corporate tax rates vary from 10% to 40% depending on the source of income, with a standard rate of 35%.

Tax losses can be carried forward for up to five years to offset income from the same source. Capital allowances are available in the form of annual wear-and-tear allowances for certain capital assets; the allowance on implements, machinery and plants is calculated on a straight-line basis at 25% of the original cost of the asset.

- **Property transfer tax.** There is a tax on the transfer of shares of companies incorporated in Zambia, and land, buildings and structures located in Zambia.

- **Skills development levy.** A levy of 0.5% is payable by employers based on gross remuneration paid to employees.
- **Personal income tax.** Zambia has a progressive personal income tax system with a top rate of 37.5% on income over ZMW 74,400 per annum.
- **National pension scheme.** Both employers and employees are taxed at a rate of 5% each on contributions on monthly wages. This is subject to a maximum contribution of ZMW 792.05 per month.

On top of the taxes applying to mobile operators, there are also a number of different licences and fees required in order to be able to supply

telecommunication services. The details of these licences and the applicable fees can be seen in Table 3 below.

Table 3

Key regulatory fees paid by mobile operators, 2018

Numbering fee	▶ ZMW 0.3 per mobile subscriber
Licence fees (one-off)	▶ Different fees set by the regulator
Licence fees (annual)	▶ 3% on gross revenues
Spectrum fees (one-off)	▶ ZMW 3,600,000 for 3G spectrum
Spectrum fees (annual)	<ul style="list-style-type: none"> ▶ ZMW 46,666.80 per 200KHz for mobile/broadband systems in frequencies between 806-880 MHz; ▶ ZMW 46,666.80 per 200KHz for GSM bands between 880-960 MHz and 1710-1880 MHz; ▶ ZMW 46,666.80 per 200 KHz for the 2.1GHz band in frequencies between 1,900-2,200 MHz; ▶ ZMW 4,166.70 per 1 MHz per province for the 2.3 GHz band in frequencies between 2,300-2,400 MHz; ▶ ZMW 4,166.70 per 1 MHz per province for the 2.5 GHz band in frequencies between 2,500-2,690 MHz; ▶ ZMW 4,166.70 per 1 MHz per province for the 3.3 GHz band in frequencies between 3,400-3,600 MHz; ▶ ZMW 4,166.70 per 1 MHz per province for the 3.5 GHz band in frequencies between 3,400-3,600 MHz; ▶ ZMW 4,166.70 per 1 MHz per province for the 5.4 GHz band in frequencies between 5,470-5,720 MHz; and ▶ ZMW 4,166.70 per 1 MHz per province for the 10.5 GHz band in frequencies between 10.15-10.3 GHz and 10.5-10.65 GHz.

Source: Zambia Information and Communication Technology Authority (ZICTA) and local legislation

- **Numbering fee.** Operators pay a fee of ZMW 0.3 per mobile subscriber.
- **Licence fees.** Operators pay a one-off licence fee in order to obtain a licence. Subsequently they pay an additional annual licence fee of 3% of annual gross revenues.
- **Spectrum fees.** Operators pay a one-off fee for the initial right to use the spectrum. Subsequently they pay an annual spectrum fee as per the table above.

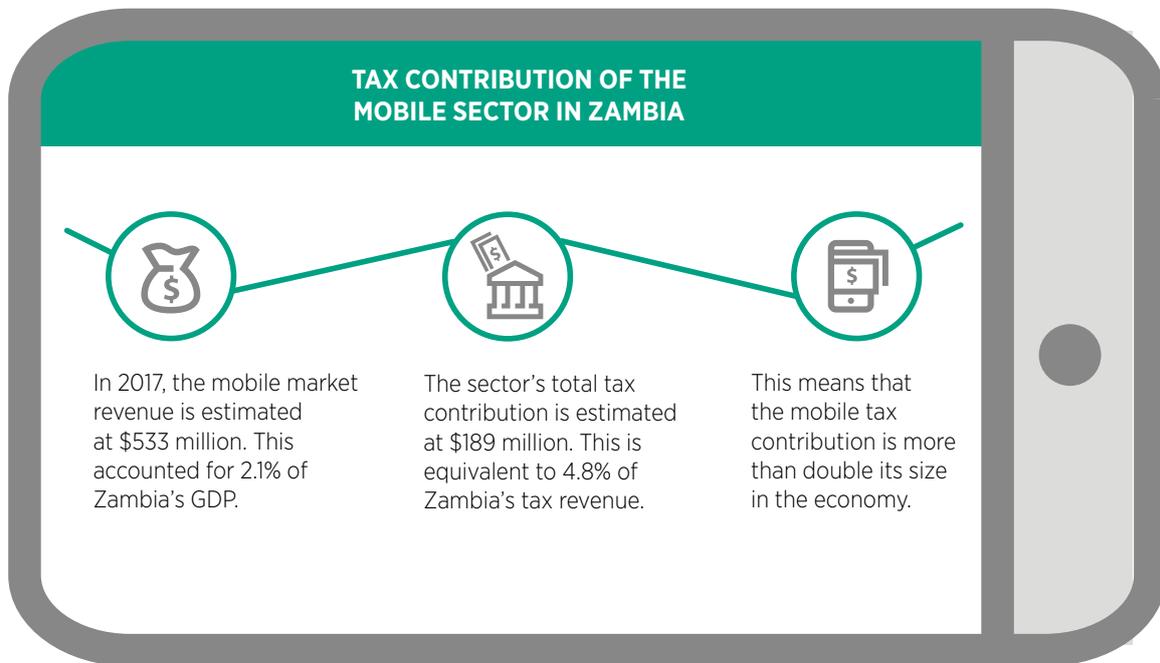
2.3 Tax contribution of the mobile sector

The mobile sector makes a large contribution in taxes and fees relative to its economic footprint. In 2017, the total tax contribution was estimated at \$189 million. This represents 35% of the total market revenue, compared to an average of 32% in a sample of other SSA countries.⁶⁶

While the mobile market revenue accounted for 2.1% of Zambia's GDP,⁶⁷ the sector's tax and fee payments accounted for around 4.8% of government total tax revenue.⁶⁸ This means that the mobile tax contribution is more than double its size in the economy. This ratio is higher in Zambia (2.3) than in neighbouring countries such as Cameroon (1.9), Ghana (1.5), Rwanda (1.3) and Senegal (1.1).⁶⁹

Figure 11

Tax and economic contribution of the mobile sector in Zambia in 2017



Source: GSMA Intelligence database, EY analysis and operator data

66. The sample includes the same countries listed in Figure 12 below.

67. Zambian GDP was of \$25.5 billion in 2017. Source: Oxford Economics.

68. The total tax revenue was estimated at ZMW 37,623m in 2017. Source: *Budget Speech 2017*. http://www.parliament.gov.zm/sites/default/files/images/publication_docs/2017 Budget Speech.pdf. This is approximately \$3,952 million (at an average exchange rate of ZMW 9.5 per US dollar).

69. Sources: GSMA Intelligence database, operator data, OECD, IMF, Oxford Economics, and EY analysis.



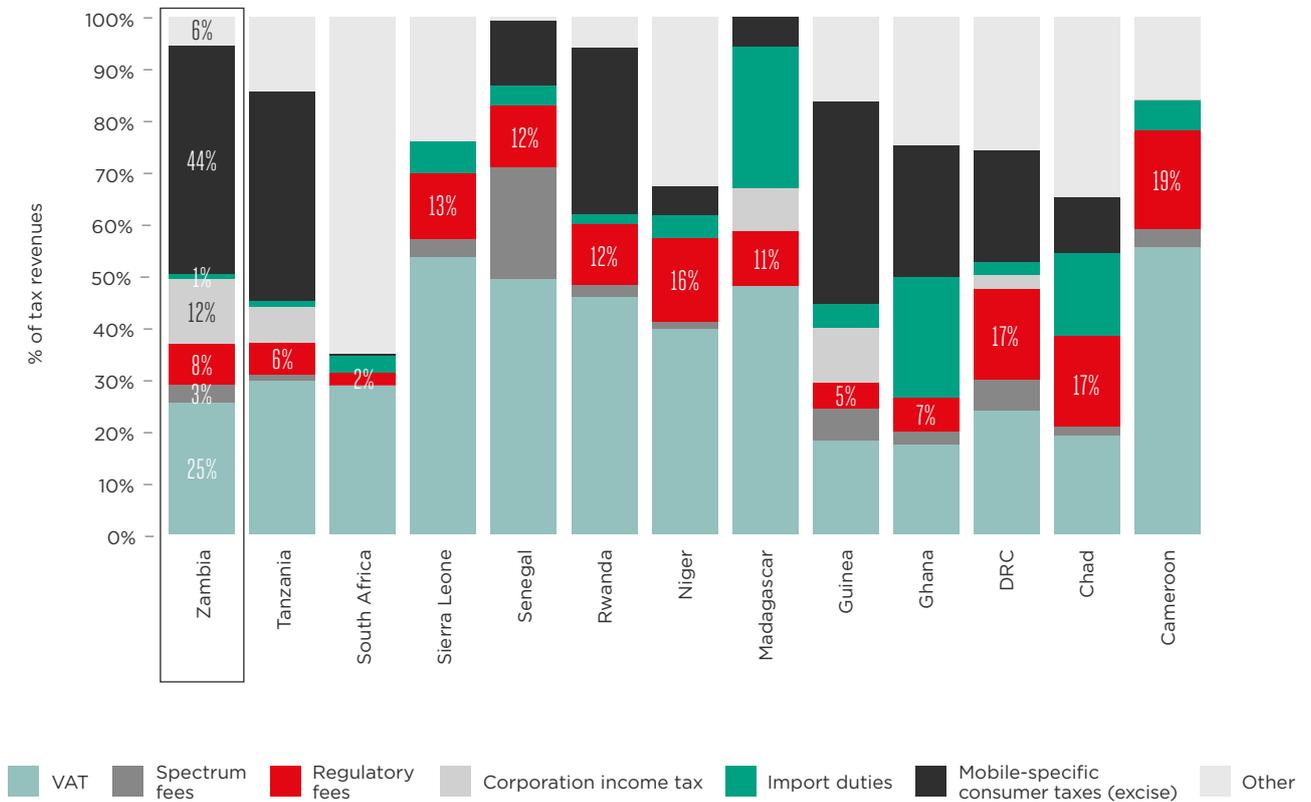
In Zambia, mobile-specific consumer taxes are the largest source of tax payments (44%), followed by VAT (25%) and corporation tax (12%). As Figure 12 shows, Zambia has the highest proportion of mobile-specific consumer taxes and of corporation tax in the sample.

In addition, the share of regulatory fees in Zambia (8%) is also above the levels seen in Ghana (7%), Tanzania (6%), Guinea (5%) and South Africa (2%). Annual licence fees represent the largest proportion in this category, at 7% of the total tax payments.

This is largely driven by the high excise duty on mobile consumers and the increased corporate tax rate on mobile operators.

Figure 12

Different taxes as a percentage of overall tax revenues in the mobile sector⁷⁰



Source: GSMA Intelligence database, EY analysis and operator data

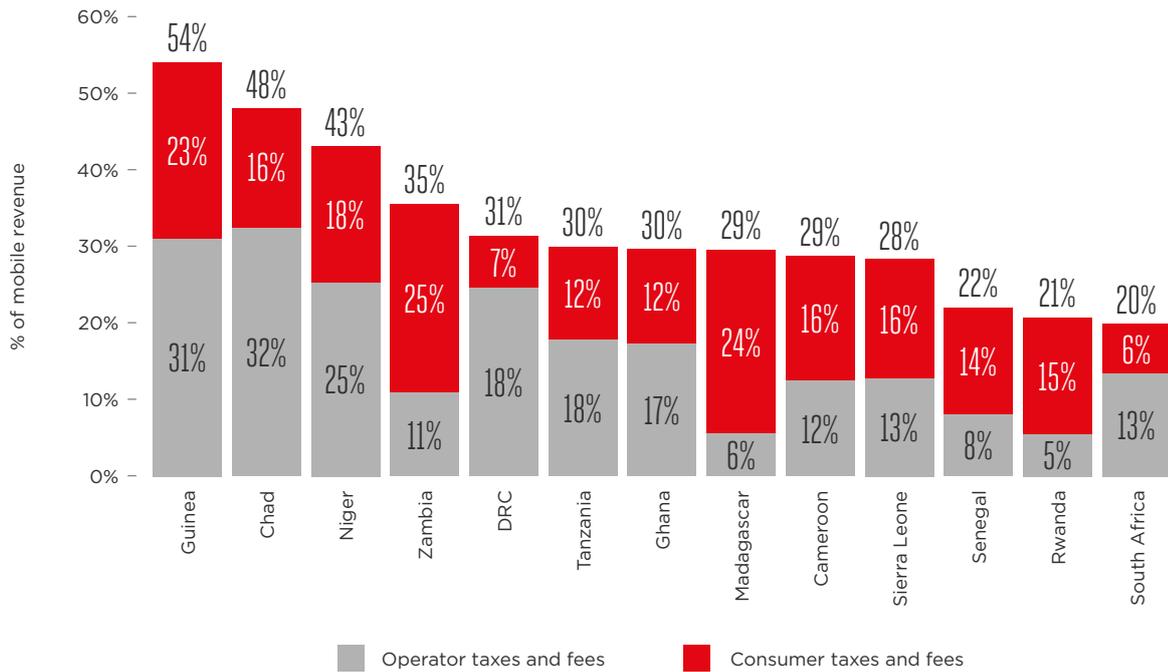
70. Other taxes include personal income tax, national pension authority and skills development levy.

As shown in Figure 13, Zambia has the fourth highest tax burden in the sample. Consumers pay 69% of the total taxes, while operators pay the remaining 31%. Zambia has the largest proportion of consumer's

payments in the sample (25% of the total market revenue). This is largely driven by the excise duty on airtime.

Figure 13

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



Source: GSMA Intelligence database, EY analysis and operator data

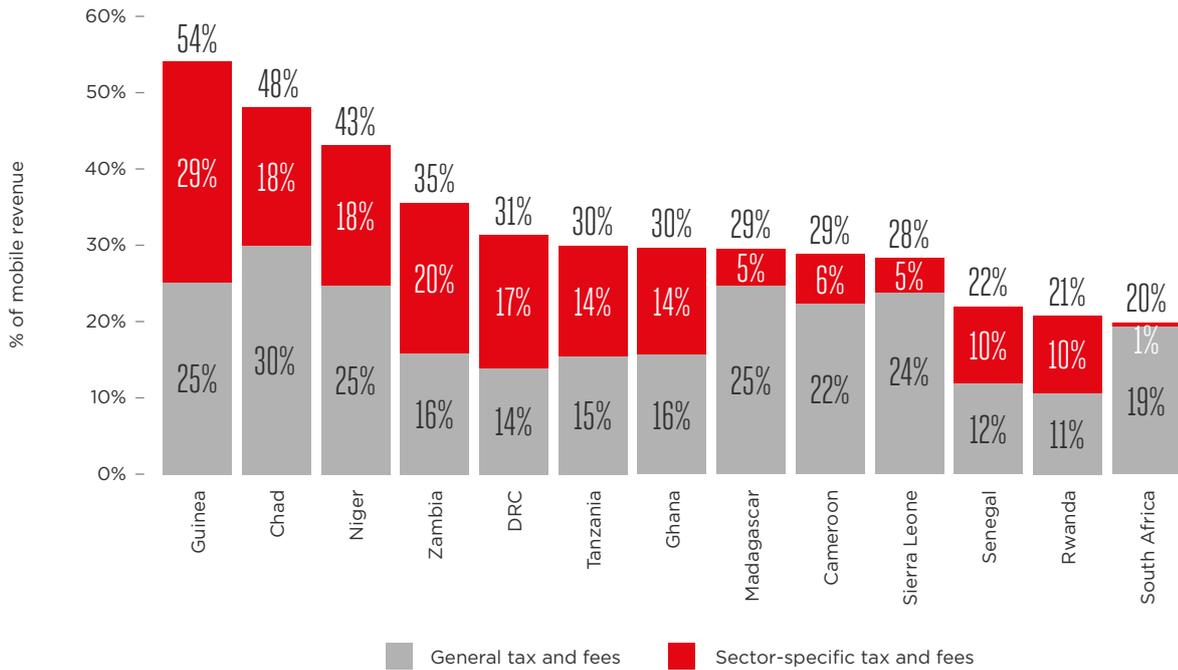


General taxes are equivalent to around 16% of total mobile sector revenue in Zambia. Furthermore, Zambia has the second largest share of mobile-specific taxes⁷¹

in the sample (20% of the total market revenue), only below Guinea (29%).

Figure 14

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



Source: EY 2018 Worldwide Corporate Tax Guide

71. In the case of Zambia, the mobile-specific burden includes annual spectrum fees, annual licence fees, numbering fee, excise duty on airtime and international calls surcharge. If corporate tax payments were included in this category (given the higher rate applicable on mobile companies), the mobile-specific burden would be even higher.

2.4 Mobile sector taxation compared to other sectors

Mobile operators are subject to a higher corporate tax burden compared to other sectors in Zambia. Table 4

summarises the main corporate taxes rates applying to different sectors.

Table 4

Corporate tax rates in Zambia, 2018

Standard rate	35%
Farming and agro processing	10%
Manufacture of organic and chemical fertilizers	
Non-traditional exports	15%
Income on commercial activities of public benefit organisations	
Telecommunication	First ZMW 250,000 - 35% Above ZMW 250,000 - 40%
Mining operations ⁷²	Profit up to 8% - 30% Profit above 8% - up to 45%

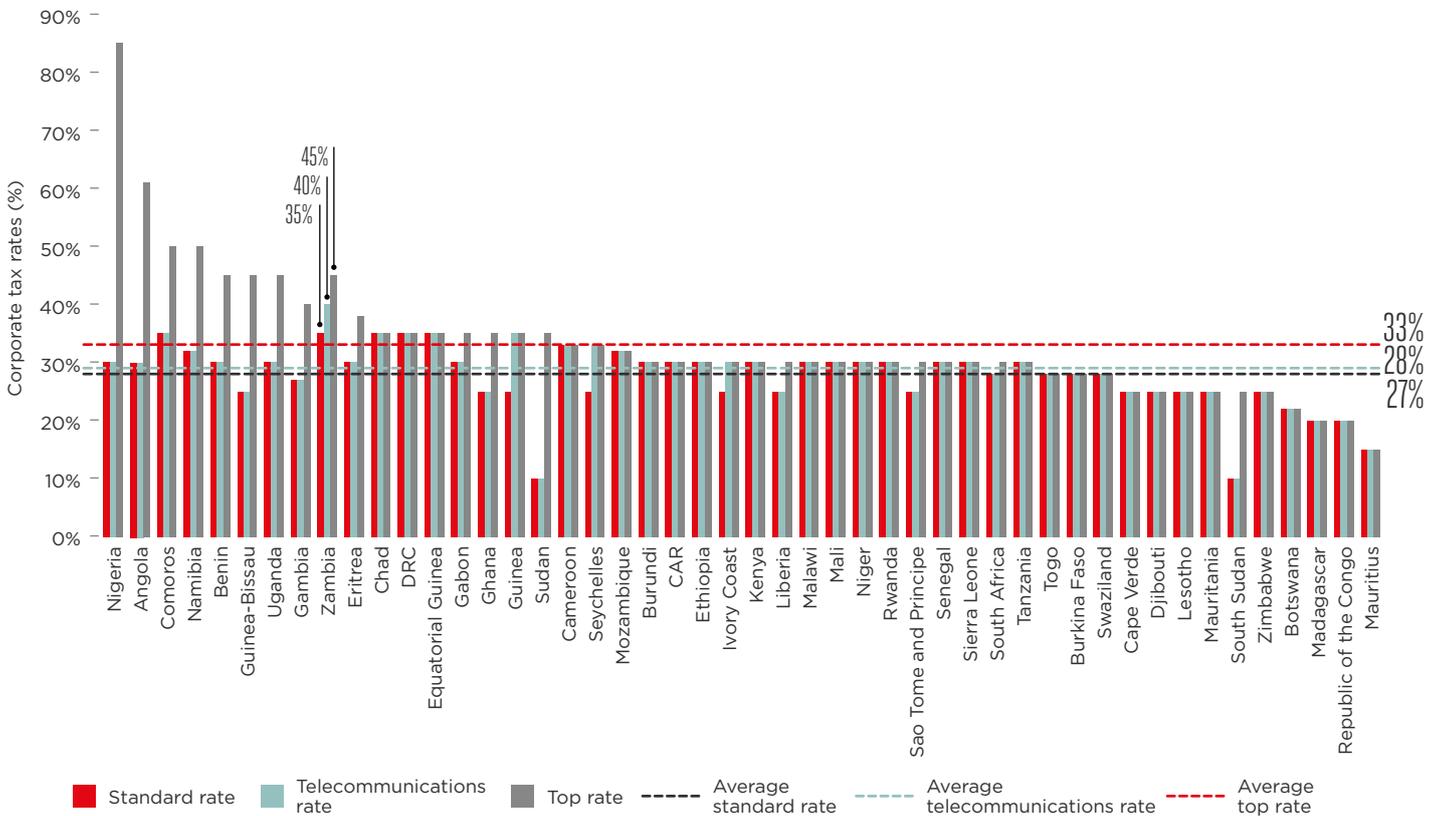
Source: 2017 EY Worldwide Corporate Tax Guide and IBFD

As shown in Figure 15, in comparison to other countries, the corporate tax rate applying to mobile operators in Zambia (35%) not only exceeds the

average rate for telecommunication companies in other countries (28%), but also the average top rate (33%).⁷³

Figure 15

Corporate tax rates across relevant countries



Source: EY 2018 Worldwide Corporate Tax Guide and IBFD

72. Mineral processing is taxed at 35%.

73. This is the maximum corporation tax rate applied across all the sectors of the economy.

Under VAT, mobile products and services are subject to the standard rate of 16%. In contrast, some goods and services are taxed at 0%. Others are exempt from

VAT altogether. Table 5 summarises some of the main sectors where this applies.

Table 5

VAT tax rates applicable in Zambia, 2018

16%	Standard rate
0%	<ul style="list-style-type: none"> ▶ Exports of goods; ▶ Books and newspapers; ▶ Foreign aid donations; ▶ Medical supplies and drugs; and ▶ Bread and wheat.
Exemptions	<ul style="list-style-type: none"> ▶ Health and educational services; ▶ Supply of water and sewerage services; ▶ Most public transport services; ▶ Real estate transactions; ▶ Most financial services; ▶ Real estate transactions; ▶ Most insurance services; and ▶ Food products.

Source: EY 2018 Worldwide VAT, GST and Sales Tax Guide





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

Governments raise tax revenues to fund the provision of public goods and services. However, the tax system can lead to unintended consequences for both governments and taxpayers in terms of the incidence of the tax burden, distributional effects, efficiency and costs of collection.

In order to prevent such unintended consequences, certain principles of tax policy design have been consistently recommended 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 (WB).⁷⁴

This section outlines the principles applying to the mobile sector, and identifies three policy options that could enhance the tax environment in Zambia.

74. IMF, OECD, UN and WB, 2011, *Supporting the Development of More Effective Tax Systems. A Report to the G-20 Development Working Group by the IMF, OECD, UN, and World Bank*, <https://www.oecd.org/ctp/48993634.pdf>.

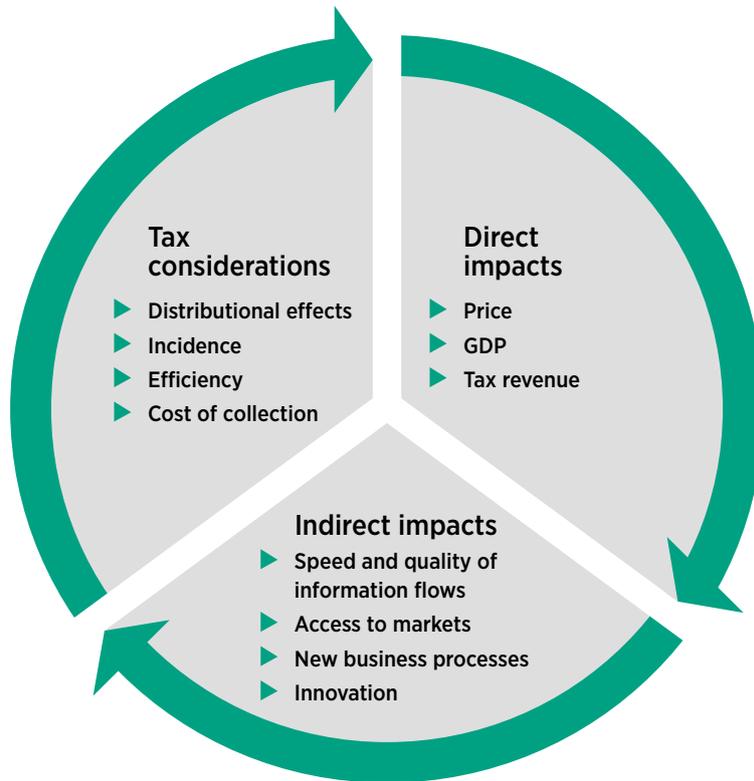
3.1 Principles of taxation applying to the mobile sector

As laid out in Figure 16 below, the tax system on the mobile sector is likely to have wider impacts in terms of prices, tax revenue and productivity. 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.

Figure 16

Factors shaping tax policy choices



Source: EY analysis

In order to make sure these impacts are positive, the principles of taxation identified below should be appropriately balanced.

Principles of taxation applying to the mobile sector

- **Taxation should be as broad based as possible.** Broad-based taxes with single and low rates 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 should be limited and be based on a clear rationale of externalities.** Specific taxes should be narrowly targeting a few goods mainly on the grounds that their consumption entails negative externalities on society. Given positive externalities, mobile phones and services would not generally be included in a list of goods and services singled out for exceptionally harsh tax treatment.⁷⁵
- **The tax system should be equitable.** Mobile operators and consumers should be treated equally to others in equal circumstances (“horizontal equity”). In addition, the tax system should also preserve “vertical equity”⁷⁶ by avoiding the imposition of regressive taxes which has a larger impact on consumers of mobile services in the lower income groups.⁷⁷
- **Taxes should not discourage investment.** A stable and transparent tax system in line with international standards is a strategy that would deliver sustained investment.⁷⁸
- **Taxes should not undermine the affordability of mobile services,** as excessive taxation can increase the cost of handsets and mobile services.⁷⁹
- **The tax system should be simple.** Tax rules should be clear and no more complex than necessary to achieve the policy aim, facilitating mobile businesses and consumers to make optimal decisions and respond to intended policy incentives.⁸⁰
- **Taxes should be easy to collect.** The collection of taxes should be as efficient as possible, i.e. low tax administration costs and minimisation of evasion and avoidance costs.⁸¹

75. ITU, 2013, *Taxing Telecommunication/ICT services: an overview*. <https://www.itu.int/en/ITU-D/Regulatory-Market/Documents/Taxation%20Study-final-en.pdf>.

76. *ibid.*

77. R.M. Bird and E.M Zolt, 2003, *Introduction to Tax Policy Design and Development*, <https://www.internationalbudget.org/wp-content/uploads/Introduction-to-Tax-Policy-Design-and-Development.pdf>.

78. *ibid.*

79. V. Tanzi and H. Zee, 2001, *Tax Policy for Developing Countries*, <https://www.imf.org/external/pubs/ft/issues/issues27/>.

80. IMF, OECD, UN, and WBG, 2016, *Enhancing the Effectiveness of External Support in Building Tax Capacity in Developing Countries*. Prepared for Submission to G20 Finance Ministers, <http://www.oecd.org/ctp/enhancing-the-effectiveness-of-external-support-in-building-tax-capacity-in-developing-countries.pdf>.

81. IMF, 2011, *Revenue Mobilization in Developing Countries*, <https://www.imf.org/external/np/pp/eng/2011/030811.pdf>.

3.2 An assessment of the mobile sector taxation in Zambia

An assessment of the current mobile tax regime in Zambia against the principles identified in section 3.1, identifies the following characteristics:

- The tax system of Zambia is relatively broad-based but the use of specific taxes is not clearly limited.** Mobile services have positive externalities for the wider economy in terms of connectivity and digital inclusion. Therefore, it is not clear why they should be penalised with specific taxes alongside products with negative externalities.
- Mobile operators are subject to a higher level of taxation than other sectors.** Mobile operators are taxed at a rate of 40% on profits above ZMW 250,000. On top of this, they have to pay a number of regulatory fees, including an annual licence fee of 3% on gross revenues.
- Mobile consumers are also subject to a high level of taxation.** This includes airtime excise duty that can in practice be higher than the headline 17.5% rate due to the taxation of free services provided by operators. The application of sector-specific taxes on mobile consumers can have a distortive effect in a market, leading to increased prices and reduced demand. This particularly affects those sectors of the population on lower income.
- The tax system is not conducive to investment.** The high tax burden puts margin pressure on operators, which may impact investment and innovation. The rules for tax losses and capital allowances increase this pressure, since mobile operators need to incur high levels of capital investment that will deliver a return only in the long term.
- The tax and regulatory system is generally simple.** The World Bank Doing Business 2018 report places Zambia 15 out of 190 global countries and 2 out of 48 Sub-Saharan African countries when it comes to the ease of paying taxes. As shown in Table 6 below, the time spent to prepare, file and pay taxes, the total tax and contribution rate and the post filing time, make Zambia's system very competitive in comparison to its region. This represents a strength that could be further enhanced by a more conducive tax system, for example by making the airtime excise duty, less complex to administer.

Table 6

Zambia tax index, 2018

Indicator	Zambia	Sub-Saharan Africa	OECD high income	Overall best performer
Tax payments (number per year)	11	37.2	10.9	3 (Hong Kong SAR, China)
Time (hours per year)	164	280.8	160.7	50 (Estonia)
Total tax and contribution (% of profit)	15.6	46.8	40.1	18.47 (32 economies)
Postfiling index (0-100)	85.94	54.39	83.45	99.38 (Estonia)

Source: World Bank, Doing Business 2018

3.3 Options for reform in the mobile sector in Zambia

Based on the forgoing assessment, this report identifies three options for reform:

- **Option 1** – A phased reduction of excise duty on mobile services (from 17.5% to 10%);
- **Option 2** – Reducing the corporation tax rate for the mobile sector (from 40% to 35%); and
- **Option 3** – Reduce annual licence fees (from 3% to 1.5%).

In addition, these reforms would also help Zambia to achieve the following objectives of Zambia's *Vision 2030*, and the *7NDP*:

- Establishing a knowledge-based economy that is fully competitive, dynamic, robust and resilient in an integrated global and liberal environment;
- Establishing a progressive society that is an innovative and forward-looking contributor to the scientific and technological advancement of the future;
- Maintaining efficiency, effectiveness, transparency and accountability in the use of public financial resources; and
- Achieving efficiency and effectiveness in local and central administration thereby enhancing the delivery of services and creating an appropriate institutional environment for attaining and sustaining socio-economic development.⁸²

The above could be achieved by alleviating the tax burden and complexity on the sector. This would lead to an increased tax collection in the medium term. Furthermore, the increasing use of mobile technologies, favoured by a more conducive tax system, can also help to modernise the tax administration in the long term.

They would especially support the *Smart Zambia Master Plan* as outlined in the *7NDP*, in particular the project objectives of:

- Reducing the cost of communication services in Zambia; and
- Establishing a high capacity fixed and wireless broadband infrastructure for government, business, citizens and ICT regional hub services.⁸³

3.3.1 A phased reduction of excise duty on mobile services (from 17.5% to 10%)

Zambia has the second highest excise tax on mobile services in SSA.⁸⁴ For mobile consumers, the effective tax rate can be higher than the headline 17.5% rate due to the design of the tax (for example, by taxing free minutes). For mobile operators, the current system can be difficult to administer in practice and can create uncertainty. There is an opportunity to alleviate this by reducing the rate of the excise duty on mobile services from 17.5% to 10%.

The rationale for change

- Excise taxes are generally imposed to reduce the consumption of goods that have negative costs associated with them. By contrast, mobile services generate positive externalities and would not normally be taxed similarly to goods with negative externalities.
- Excise duties negatively impact investment, market development and digital inclusion. A reduction in excise duties would increase penetration and usage of mobile services.
- The current excise duty rate of 17.5% on mobile services in Zambia is the second highest among the countries in Sub-Saharan Africa. As this tax is levied on both chargeable and free mobile services, the effective rate can be even higher. The phased reduction to 10% would move Zambia closer to its regional peers.
- The inclusion of free minutes in the tax base increases the tax burden and adds complexity to the administration of the tax. Free minutes are gifted to consumers by operators for customer loyalty and the cost of providing them are entirely borne by operators. Taxing the consumption of these calls effectively increases further the cost of supplying them and reduces businesses incentives to do so. This also increases the complexity of the tax base and consequently, makes the administration of the tax more difficult and uncertain. Removing free minutes from the base would decrease the cost of supplying them and lead to more of them being offered, increasing consumption of mobile calls and the benefits associated.

82. Ministry of National Development Planning. *Seventh National Development Plan 2017 – 2021*, <http://www.mndp.gov.zm/download/7NDP.pdf>.

83. *ibid.*

84. Only Gabon has a higher headline rate (18%). Source: GSMA Intelligence.



- A greater penetration and usage of mobile services would in turn have further economic and socio-economic benefits for Zambia.
- There would be increased revenue for mobile operators, leading to greater levels of investment in infrastructure for the future;
- There would be increased tax receipts in the medium term resulting from an increase in the use of mobile services;
- There would be increased digital inclusion and more Zambians would have greater access to services; and
- There would be increased productivity across the economy leading to increases in GDP.

3.3.2 Reducing the top corporation tax rate for the mobile sector from 40% to 35%

Currently, the mobile sector faces a higher rate of corporation tax than any other sector of the Zambian economy, with a top rate of 40% on profits over ZMW 250,000. This extra tax burden is unique to the mobile sector as the maximum rate for the rest of the economy is 35%. The corporation tax rate for the mobile sector should be reduced to a single rate of 35%, in line with the standard rate.

The rationale for change

- As shown in Figure 14, in comparison to other countries, the corporate tax rate applying to mobile operators in Zambia (35%) not only exceeds the average rate for telecommunication companies in other countries (28%), but also the average top rate (33%).⁸⁵ The exceptional higher rate of taxation on the mobile sector reduces the sector's ability to invest in mobile infrastructure, and weakens the attractiveness of the sector for foreign investment against other countries.
- Despite the positive externalities generated by the industry, mobile operators are subject to the highest corporate tax rate. The high and uneven tax burden on telecommunications companies discourages investment relative to other sectors. A reduction would harmonise the corporation tax rate with other sectors, and create a level-playing field.
- A reduction in the tax rate would create an improved investment environment for mobile operators, allowing for:

- Increased 3G and 4G coverage in rural areas, enhancing digital inclusion;
- Greater mobile penetration, particularly for mobile broadband enabled technologies; and
- Increased economic activity, driving improved tax receipts for the Government in the medium term.

3.3.3 Reduction of the annual licence fees from 3% to 1.5%

At present, Zambian mobile operators are charged annual licence fees at a rate of 3% of their gross revenue. On the basis that the regulatory cost does not increase linearly with gross revenue, this could be halved to 1.5%. This increases the costs for the operators, and ultimately, this undermines the affordability of mobile services.

The rationale for change

- High licence fees reduce funds available for investment into mobile networks that are necessary to enhance quality and coverage.
- The share of regulatory fees in Zambia (9%) is also above the levels seen in Ghana (7%), Tanzania (6%), Guinea (5%) and South Africa (2%). Annual licence fees represent the largest proportion in this category, at 7% of the total tax payments. A reduction of these fees would help to align Zambia to the levels seen in Sub-Saharan Africa.
- High licence fees are preventing greater investment. A reduction of the licence fees would allow operators to reinvest in enhancing mobile coverage in Zambia. The reinvestment could be towards increasing 3G and 4G coverage. This would promote mobile internet usage, which is currently low.
- A reduction in the licence fee will enable mobile operators to pass a proportion of the tax saving to consumers in the form of lower prices. This would reduce the total cost of mobile ownership and improve affordability, in alignment with the *Smart Zambia Master Plan*.

85. This is the maximum corporation tax rate applied across all the sectors of the economy.



3.4 Digital opportunities in the field of taxation

The three options for reform identified above would be self-sustaining in the medium term for Zambia and would lead to revenue gains for the Government. Section 4 will present detailed economic modelling to show the impacts delivered by these three options.

In addition, a more conducive tax system for the investment and development of the mobile sector can enable the further modernisation of tax administration and make tax collection more efficient. This would help to broaden the tax base and raise additional revenue for the Government, offsetting any potential loss of revenue in the short-term, thanks to innovative solutions, such as person-to-government (P2G) payments and e-government initiatives.

As the OECD notes in its latest interim report on tax digitalisation,⁸⁶ the increasing use of multi-sided platforms⁸⁷ facilitates the integration into

the formal economy. Previously unreported transactions are now carried out through those platforms, delivering an enhanced electronic audit trail and greater reporting of income.

In this way, multi-sided online platforms can drive growth and increase revenues, by providing new opportunities for economic activity and encouraging movement into the formal economy. This information can be integrated into data matching analysis to enhance tax compliance.⁸⁸

Technology is expanding the capabilities of tax administrations in a wide range of ways, to enhance the effectiveness of compliance activities, improve taxpayer services and reduce compliance burdens.⁸⁹ Some examples of experiences on how digitalisation and the use of technology could open up further opportunities for the tax administration are identified below:

Successful experiences in the field of digital tax administration

- In Hungary, the introduction of electronic cash registers saw an increase of VAT revenue by 15% in the targeted sectors, exceeding the costs of introducing the new system.⁹⁰
- In Rwanda, in the two years since the introduction of electronic cash registers in March 2013, VAT collected on sales increased by 20%.⁹¹
- In Mexico, an additional 4.2 million micro-businesses were brought into the formal economy after Mexico introduced mandatory electronic invoicing.⁹²
- Peru's tax administration (SUNAT) launched its first mobile app in February 2015. This provides constant tablet and mobile phone access to a range of services, including tax registration, invoices, a virtual tax guide and the ability to report tax evaders.⁹³
- The Australian Tax Office has incorporated a tool in its mobile app allowing taxpayers to record tax deductions on the go. Using the camera on their device, taxpayers can capture receipts and use location services to record work-related car trips for vehicle deductions, eliminating the need for paper records.⁹⁴
- Countries including Brazil, Côte d'Ivoire, Guinea, Kenya, Mauritius, Pakistan, Rwanda, Tanzania and Uganda have done well in driving digital P2G payments. Of these, Kenya stands out in terms of the number of P2G use cases. The central e-government platform (eCitizen) reports that over 90% of digital payments are made via mobile money, while 85% of Nairobi City County payment wallet re-loads (eJijiPay) are made via mobile money.⁹⁵

86. OECD, 2018, *Tax Challenges Arising from Digitalisation – Interim Report 2018. Inclusive Framework on BEPS*, <https://doi.org/10.1787/9789264293083-en>.

87. Multisided platforms bring together distinct groups of users benefitting from the presence of the other. *ibid.*

88. *ibid.*

89. *ibid.*

90. *ibid.*

91. *ibid.*

92. *ibid.*

93. *ibid.*

94. *ibid.*

95. GSMA, 2017. *Person-to-government (P2G) payment digitisation: Lessons from Kenya*. https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2017/09/P2G_Report_Final.pdf.

- Ghana has an existing e-government portal that offers services by government ministries, departments and agencies (MDAs) and an e-Payments portal that accepts digital payments through payment processing partners such as mobile money (through MTN, Vodafone and Airtel-Tigo), card payments (via Visa and MasterCard), payment switch (eTranzact) and bank transfers (through banks such as Zenith Bank and Ghana Commercial Bank).⁹⁶
- In Côte d'Ivoire 99% of secondary school students (1.5 million) pay their annual school registration fee payment via mobile money which has resulted in driving cost efficiencies, increased operational efficiency, and transparency for all the beneficiaries - students and their parents, secondary schools, and the government (Ministry of National and Technical Education - MENET). Prior to this initiative, schools and local government departments reported that a significant proportion of school fee payments were lost, and that armed robberies at payment locations were commonplace. Mobile money has helped to reduce both cash handling costs and the associated risks.⁹⁷
- In Guinea, following a request from the tax authorities, Orange Money launched an application in March 2017 that allows vehicle owners to make their annual vehicle tax payment via mobile money in exchange for stickers sold at Orange stores. The person-to-government (P2G) system provided the Government with an opportunity to increase its tax collection rate, which was approximately 1% before intervention. Users no longer have to travel to Conakry to get their stickers and hence save on transportation costs. The Government benefits from daily reporting on stickers purchased. According to Orange, this new service has seen the number of new mobile money users increase by 70,000, in addition to a 12% increase in the overall active customer base.⁹⁸

Some of the successful experiences identified above could be replicated in Zambia. In addition to the positive impact in terms of tax collection, this would also be in line with the objectives of Zambia's *Vision 2030*⁹⁹ and the *7th National Development Plan, 2017-2021 (7NDP)*.¹⁰⁰ These include strengthening tax

compliance and modernising tax administration.¹⁰¹ They would also help to meet the goal of providing better delivery of services to the public and citizens, through better access to information and more efficient government administration.¹⁰²

96. GSMA, 2018. *The opportunity for mobile money person-to-government payments in Ghana*. <https://www.gsma.com/mobilefordevelopment/tag/p2g-payments/>.

97. GSMA, 2015. *Paying school fees with mobile money in Côte d'Ivoire: A public-private partnership to achieve greater efficiency*. https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2015/10/2015_GSMA_Paying-school-fees-with-mobile-money-in-Cote-dIvoire.pdf.

98. GSMA, 2018. *Reforming mobile sector taxation in Guinea*. <https://www.gsma.com/publicpolicy/wp-content/uploads/2018/05/GSMA-Guinea-taxation-report-EN.pdf>.

99. Ministry of National Development Planning. *Vision 2030*, <http://www.mndp.gov.zm/download/M&E/Vision%202030.pdf>.

100. Ministry of National Development Planning. *Seventh National Development Plan 2017 – 2021*, <http://www.mndp.gov.zm/download/7NDP.pdf>.

101. *ibid.*

102. *ibid.*



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

4.1 Recommended options for tax reform

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

1. The reduction in excise duty on mobile services, from the current 17.5% rate to 10% in three stages: to 15% in 2019, 12.5% in 2020 and 10% in 2021. 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 reduction in corporation tax for the mobile sector, from the higher 40% rate to the single standard rate of 35%. This will facilitate investment in the mobile sector, allowing increased access to 3G and 4G technologies throughout Zambia; and

3. The reduction in licence fees, from 3% to 1.5% of revenue (excluding interconnection revenue and excise duty payments). A significant proportion of the tax saving will be passed through to subscribers in the form of lower prices, and it will also incentivise additional investment in the sector.

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.¹⁰³

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 Zambian mobile sector and the Zambian economy as a whole. While a combination of these tax reforms would be likely to lead to beneficial economic impacts for Zambia, 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 Zambian mobile sector has been created to calculate changes in the mobile sector resulting from each of the tax policy scenarios.

¹⁰³ 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.

This includes the change in subscribers, usage, technology, revenues, profits, reinvestment and expanded capacity in the sector.

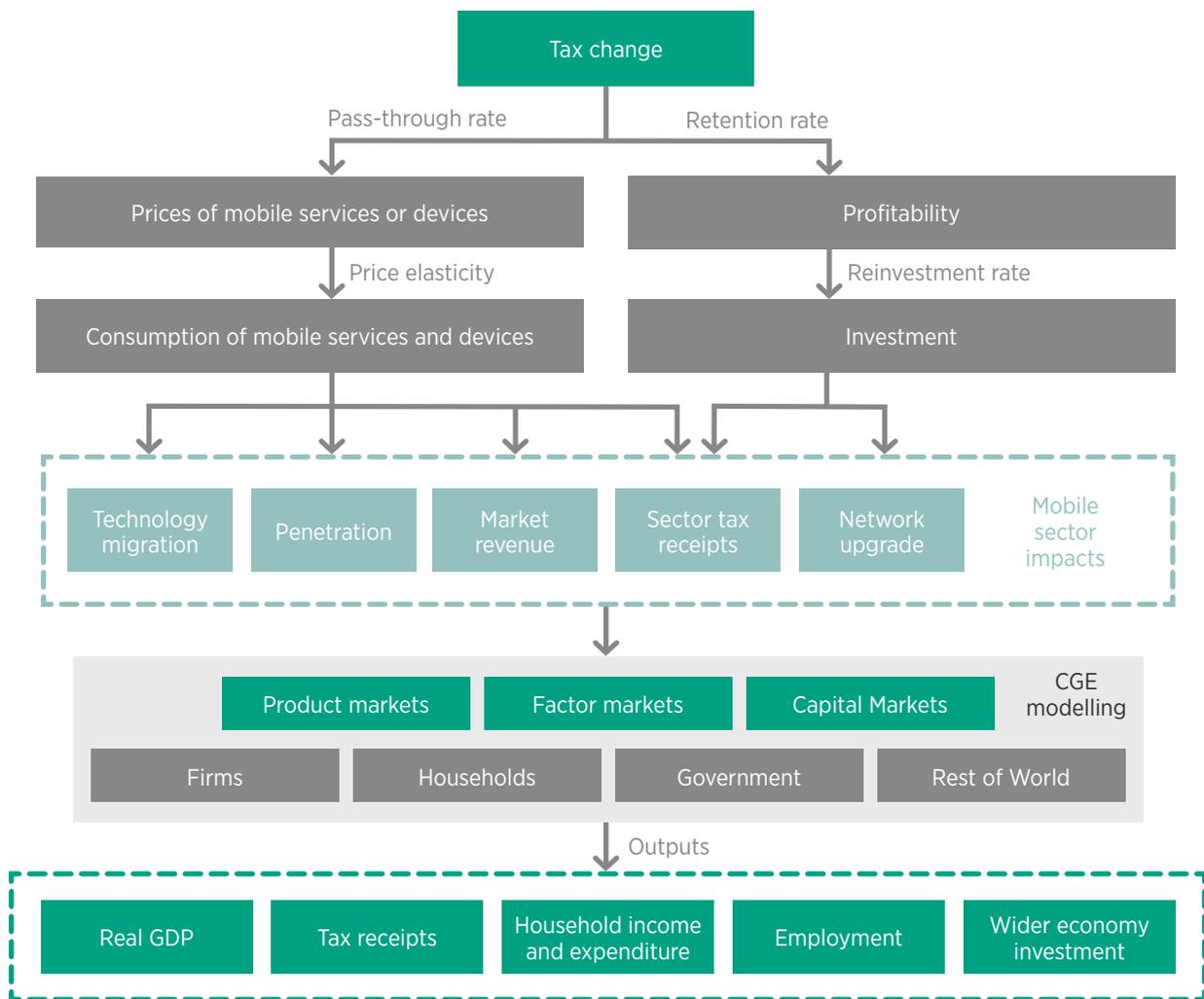
The wider economic impacts of each tax policy scenario are assessed via a ‘Computable General Equilibrium’ (CGE) model, namely the standard version of the Global Trade Analysis Project (GTAP) model and its associated dataset.¹⁰⁴ The GTAP model is contributed to, and widely used, by government agencies, 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).¹⁰⁵

A schematic of the modelling approach used in this study is shown in Figure 17 below.¹⁰⁶

Figure 17

Overview of the modelling approach



Source: EY analysis

104. Global Trade Analysis Project, <https://www.gtap.agecon.purdue.edu/>.

105. GTAP Consortium, <https://www.gtap.agecon.purdue.edu/about/consortium.asp>.

106. Please see Appendix A for more detail on the methodology approach used in this study to construct the scenario forecasts.

4.3 Reducing excise duty on mobile services

In this scenario the 17.5% excise duty would be reduced to 10% in three stages: to 15% in 2019, 12.5% in 2020 and 10% in 2021. This would decrease consumer prices and therefore improve the affordability of mobile services. The majority of the proposed reduction would be passed through to subscribers, translating into an effective reduction in the price of all mobile services (including data) of 5.3% by 2021.¹⁰⁷

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 excise duty would reduce input costs for all sectors that use mobile, increasing demand and freeing up resources which can be invested elsewhere.

This tax scenario is forecast to have the following impacts compared to the baseline scenario:¹⁰⁸

- **New connections:** an additional 1.0 million unique subscribers, or 1.7 million mobile connections by 2023. Of these new connections, more than 75% would be classified as low-income. This is equivalent to an increase of around 5.0% in unique subscriber penetration (8.2% in total connections). As a result of network investment and lower effective prices, unique mobile broadband penetration would increase by 4.0%;
- **Usage:** the reduction in the price of mobile services and the technology migration enabled by additional reinvestment would lead to a 12.8% increase in total data usage compared to the baseline;
- **Mobile market revenue:** total mobile sector revenue would increase by \$45 million (7.6%) 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;
- **Investment by operators:** as a result of the tax saving, Zambian mobile operators would increase investment by a total of \$4 million per annum. This will increase 3G coverage in Zambia, resulting in greater digital inclusion;

- **Productivity gain:** the increase in unique subscriber penetration of 5.0% would lead to a 1.0% gain in productivity across the economy, leading in turn to further increases in output, incomes and expenditure;
- **GDP increase:** total GDP would increase by \$287 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, employment would increase by approximately 9,800 jobs (0.2%);
- **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 \$263 million; and
- **Tax revenue impact:** this scenario would have an initial net cost to the Zambian Exchequer of \$8 million in 2019. However, the subsequent expansion of the mobile sector, and significant growth in the wider economy, mean that by year 4 both the annual impact and cumulative impact are positive. The gain in tax revenue is about \$22 million per annum by 2023.

The summary of the sector-specific and economic impacts in 2023 is shown in Figure 18.¹⁰⁹

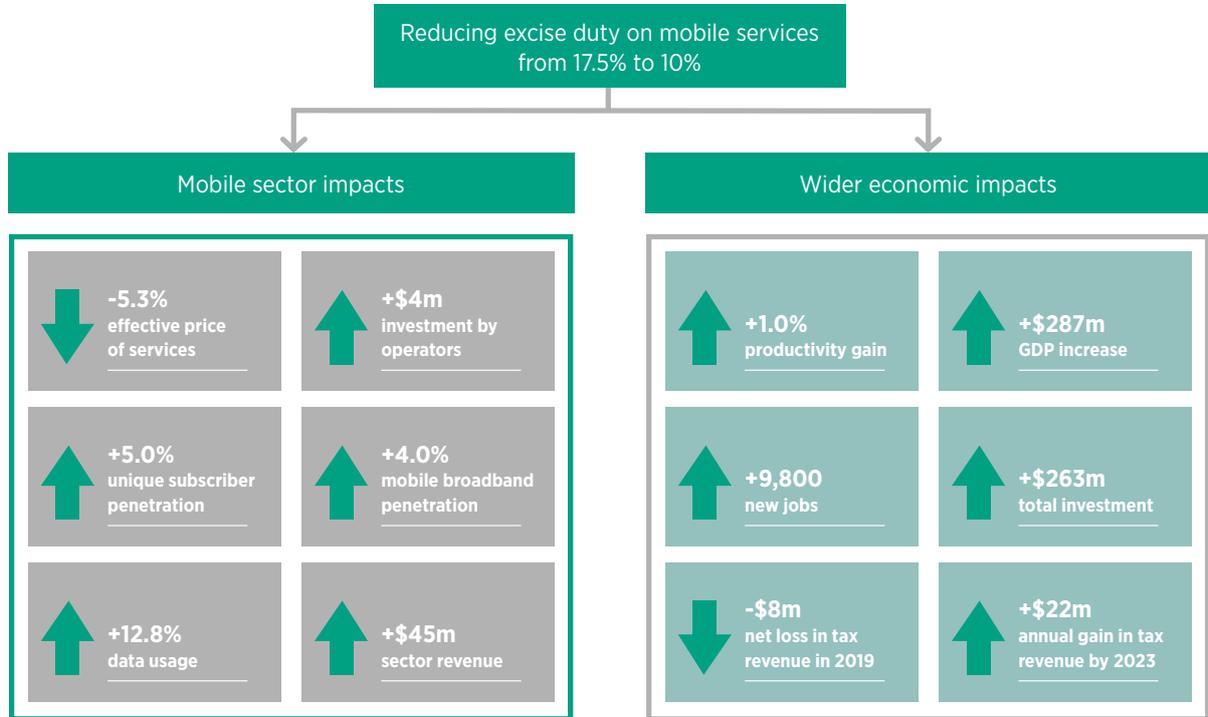
107. The 82% pass-through rate is endogenously generated from the GTAP model, and for this scenario it reflects the highly visible nature of the tax, and the level of price competition in the Zambian communications sector.

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. All figures represent the annual variance between the baseline scenario and the tax reform scenario at 2023. These results are not cumulative.

Figure 18

Annual impacts of reducing excise duty on mobile services, 2023



Source: EY analysis

4.4 Reducing the corporation tax rate for the mobile sector

The reduction of the corporation tax rate applied on the mobile sector, from a higher 40% rate on profits over ZMW 250,000 to a single standard rate of 35% would generate additional investment in the mobile sector, while also reducing consumer prices and improving affordability. As discussed in Section 1, further investment in mobile infrastructure is needed in order to support increased coverage and digital inclusion in Zambia.

The reduction of corporation tax will lead to a direct tax saving for operators, a portion of which will be passed through to subscribers, and the remainder either allocated to profits or reinvested to increase 3G coverage. By reducing distortions on the mobile sector, the standardisation of corporation tax will also help to improve Zambia's business environment, with Zambia currently ranking 97th out of 136 countries in the Enabling Trade Index.¹¹⁰

This tax scenario is forecast to have the following impacts compared to a “baseline” scenario of no change in current levels of taxation:¹¹¹

- **New connections:** an additional 176,000 unique subscribers, or 289,000 mobile connections by 2023. Of these new connections, more than 75% would be classified as low-income. This is equivalent to an increase of around 0.9% in unique subscriber penetration (1.4% in total connections). As a result of network investment and lower effective prices, unique mobile broadband penetration would increase by 0.4%;
- **Usage:** the reduction in the effective price of mobile services and the technology migration enabled by investment in the sector would lead to a 1.1% increase in total data usage compared to the baseline;
- **Mobile market revenue:** total mobile sector revenue would increase by \$7 million (1.2%) 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;
- **Investment by operators:** as a result of the tax saving, Zambian mobile operators would increase investment by a total of \$1 million per annum. This will increase 3G coverage in Zambia, resulting in greater digital inclusion;
- **Productivity gain:** the increase in unique subscriber penetration of 0.9% 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 \$50 million (0.2%) 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, employment would increase by approximately 1,500 jobs (0.03%) 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 \$46 million; and
- **Tax revenue impact:** this scenario would have an initial net cost to the Zambian Exchequer of \$1 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 \$6 million per annum by 2023.

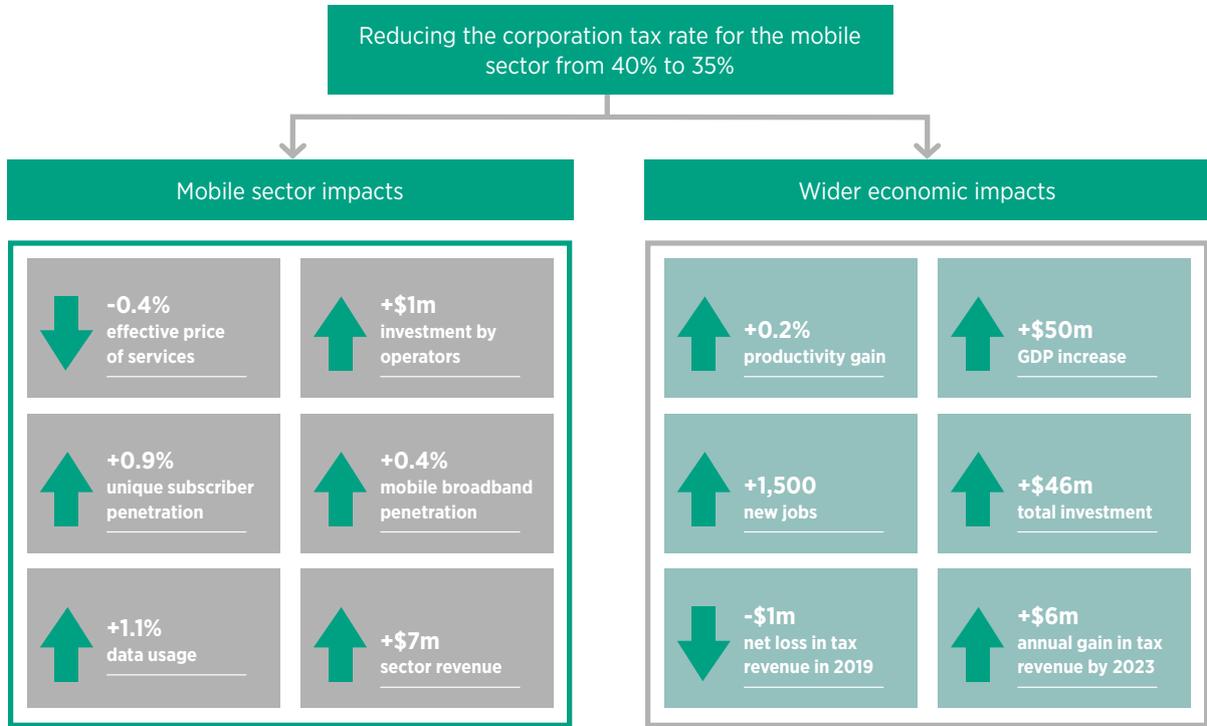
The summary of the sector-specific and economic impacts in 2023 is shown in Figure 19.

110. World Economic Forum, *The Global Enabling Trade Report 2016*, http://www3.weforum.org/docs/WEF_GETR_2016_report.pdf.

111. Please see Appendix A for more detail on the modelling approach and assumptions.

Figure 19

Annual impacts of reducing the corporation tax rate for the mobile sector, 2023¹¹²



Source: EY analysis

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

4.5 Reducing annual licence fees

The reduction of licence fees charged to mobile operators, from 3.0% to 1.5% of revenue excluding interconnection revenue and excise payments, would generate a tax saving for operators, a portion of which is passed through to subscribers in the form of a 1.0% price reduction. The remainder of the tax saving is either reinvested to expand 3G network coverage or retained as additional profit.¹¹³

This tax scenario is forecast to have the following impacts compared to a “baseline” scenario of no change in current levels of taxation:¹¹⁴

- **New connections:** an additional 284,000 unique subscribers, or 467,000 mobile connections by 2023. Of these new connections, more than 75% would be classified as low-income. This is equivalent to an increase of around 1.4% in unique subscriber penetration (2.3% in total connections). As a result of network investment and lower effective prices, unique mobile broadband penetration would increase by 0.8%;
- **Usage:** the technology migration enabled by investment in the sector and a decrease in prices would lead to a 2.5% increase in total data usage compared to the baseline;
- **Mobile market revenue:** total mobile sector revenue would increase by \$12 million (2.0%) 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;
- **Investment by operators:** as a result of the tax saving, Zambian mobile operators would increase investment by a total of \$1 million per annum. This will increase 3G coverage in Zambia, resulting in greater digital inclusion;
- **Productivity gain:** the increase in unique subscriber penetration of 1.4% would lead to a 0.3% gain in productivity across the economy, leading in turn to further increases in output, incomes and expenditure;
- **GDP increase:** total GDP would increase by \$80 million (0.3%) 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, employment would increase by approximately 2,600 jobs (0.04%) 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 \$72 million; and
- **Tax revenue impact:** this scenario would have an initial net cost to the Zambian Exchequer of \$4 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 \$8 million per annum by 2023.

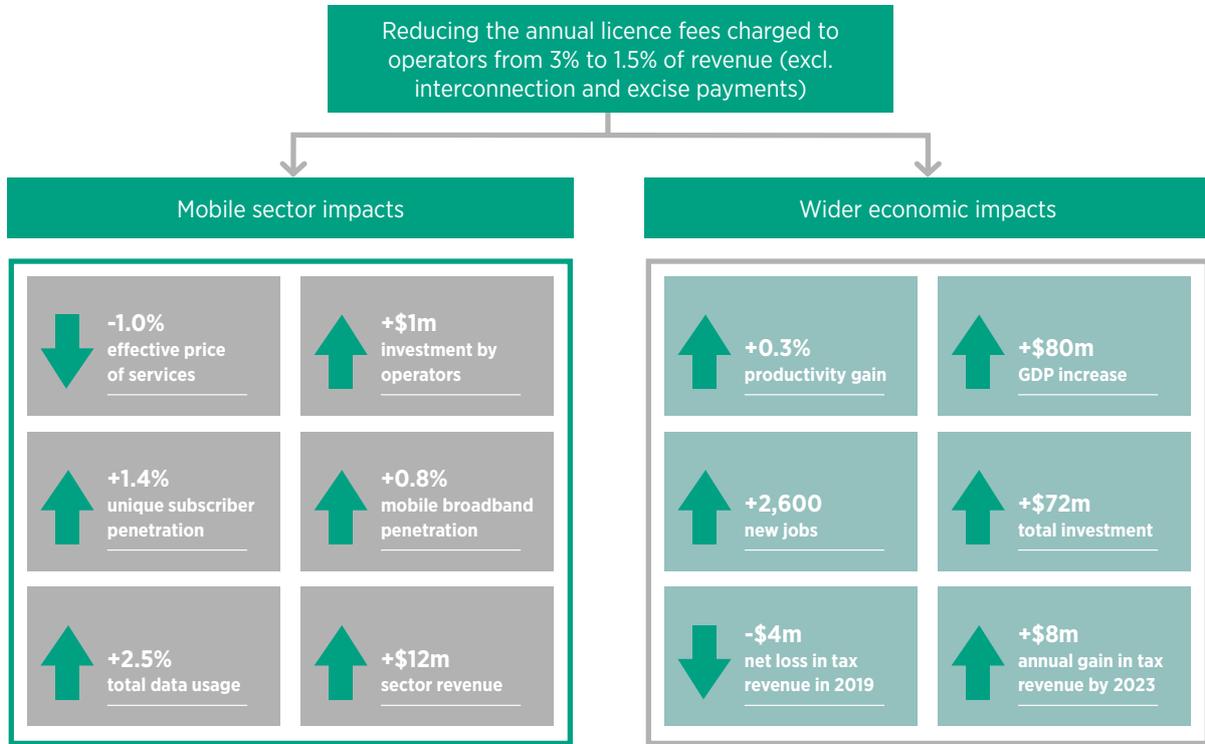
The summary of the sector-specific and economic impacts in 2023 is shown in Figure 20.

113. In the modelling, it is assumed that operators re-invest 60% of the portion of the tax reduction that they retain (i.e. the proportion that is not passed onto subscribers).

114. Please see Appendix A for more detail on the modelling approach and assumptions.

Figure 20

Annual impacts of reducing annual licence fees, 2023¹¹⁵



Source: EY analysis

116. 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 Zambia

The mobile industry has the potential to play an increasingly important role in achieving Zambia's economic and social development objectives, including those set out in the *7NDP* and the *Smart Zambia Master Plan*. The sector has already grown rapidly over the past decade, with the number of subscribers increasing at an average annual rate of 14% between 2008 and 2018. The sector now generates approximately \$533 million in revenue, equivalent to 2.1% 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. However, challenges in the sector

exist in the form of limited affordability among low-income individuals and the need for investment in mobile infrastructure to increase mobile broadband coverage.

By reducing the cost of mobile ownership and incentivising investment, the tax reforms outlined in this paper will help to connect individuals, enhancing digital inclusion and boosting productivity as a result. A more balanced and efficient taxation structure, which addresses some of the most distortive taxes on the mobile economy in Zambia would generate considerable socio-economic benefits in the country. A summary of the impacts is provided in Table 7.

Table 7

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

Indicator	Reduction in excise duty on mobile services	Reduction in the corporation tax rate for the mobile sector	Reduction in annual licence fees
New unique subscribers	+1,016,000	+176,000	+284,000
Sector revenue	+\$45m	+\$7m	+\$12m
Annual gain in tax revenue	+\$22m	+\$6m	+\$8m
GDP increase	+\$287m	+\$50m	+\$80m
Wider investment	+\$263m	+\$46m	+\$72m

The policy options for reform outlined in this report achieve a number of key objectives for the mobile sector, and wider Zambian economy. This includes supporting the 7NDP objectives of diversifying the Zambian economy, and increasing mobile internet penetration. The tax reforms will also help to transform Zambia into an ICT hub for the region, thereby pursuing the longer term objectives within the *Smart Zambia Master Plan*. 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 Zambian 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

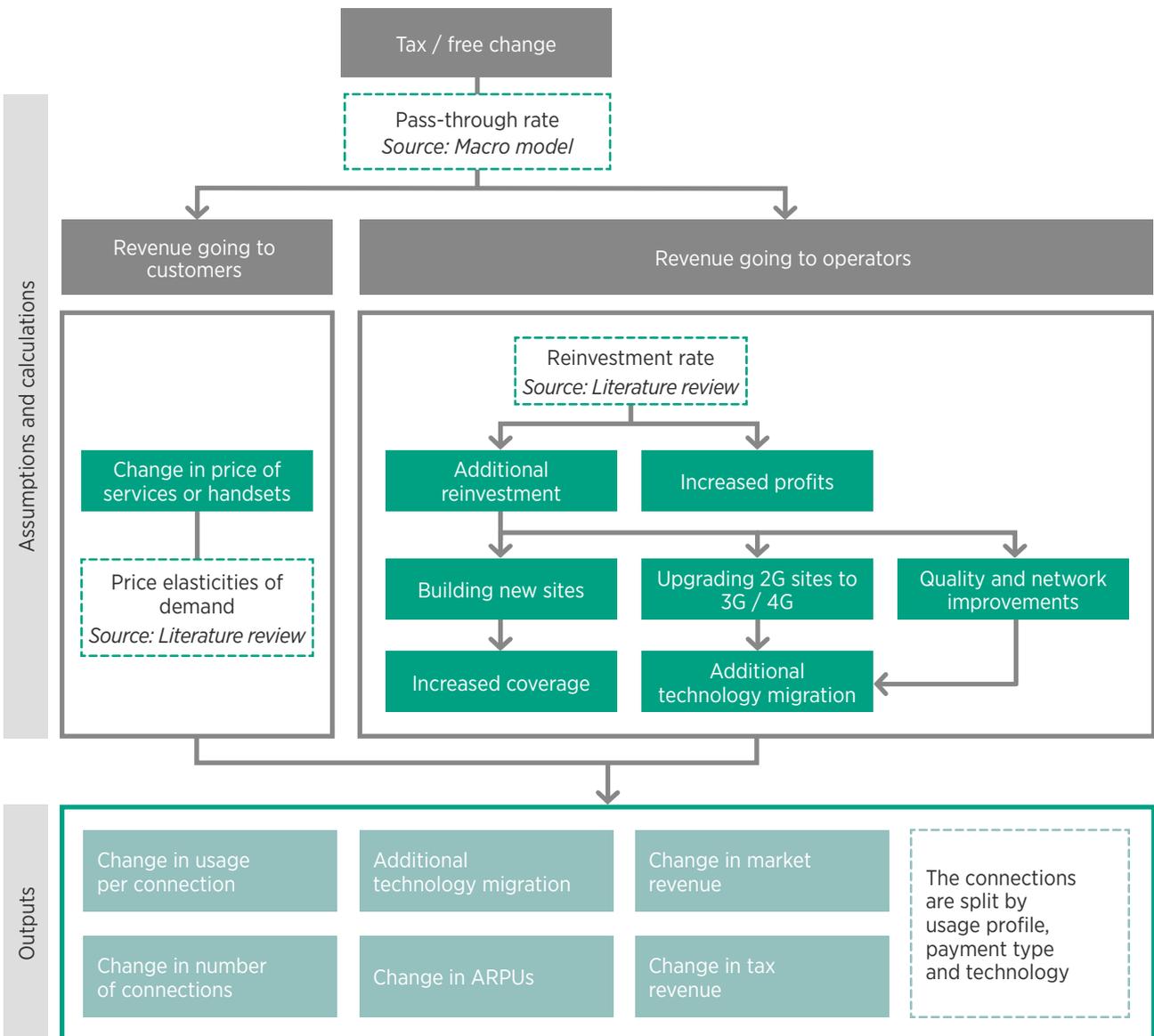
The telecoms market model covers the period 2017 – 2023, and uses data from local mobile operators and the GSMA Intelligence database. For modelling the scenarios, it has been assumed that the first phase of tax changes becomes

effective in 2019. 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.¹¹⁶

A schematic of this model is presented in Figure 21 below.

Figure 21

Overview of mobile sector modelling approach



Source: EY analysis

116. 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 2018-2023.

As illustrated in Figure 21, 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".¹¹⁷ 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.¹¹⁸ 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;
- 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; and
- A decrease in the effective price of data driven by investment made by operators to improve the capacity of existing mobile sites. As this improves the quality and speed of mobile broadband connections, subscribers are able to download more content. This further incentivises 2G customers to migrate to 3G and 4G technologies.

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.

Macro-economic modelling

Macro-economic modelling approach

The macro-economic 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 impact on total tax receipts, allowing for all indirect effects to work through the economy.

The macro-economic 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 Zambian economy. As lower taxes and consequent lower prices are passed

117. 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.

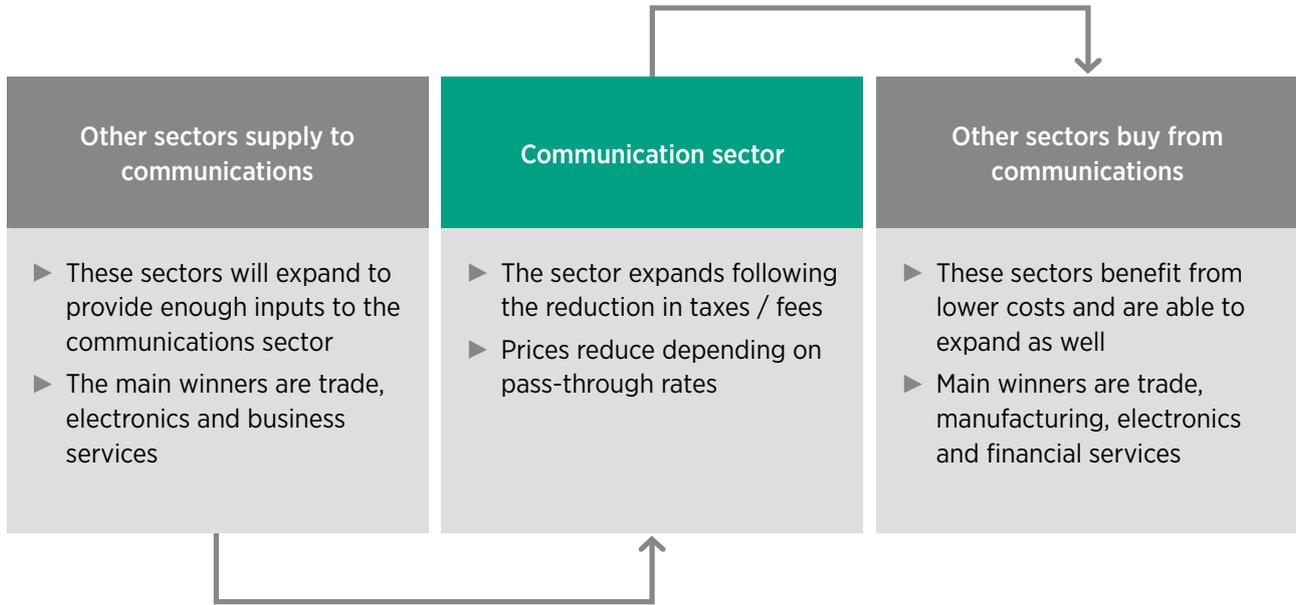
118. The percentage of the tax / fee change not passed through to subscribers which is reinvested by operators.

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 22).

Figure 22

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 Zambian 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.



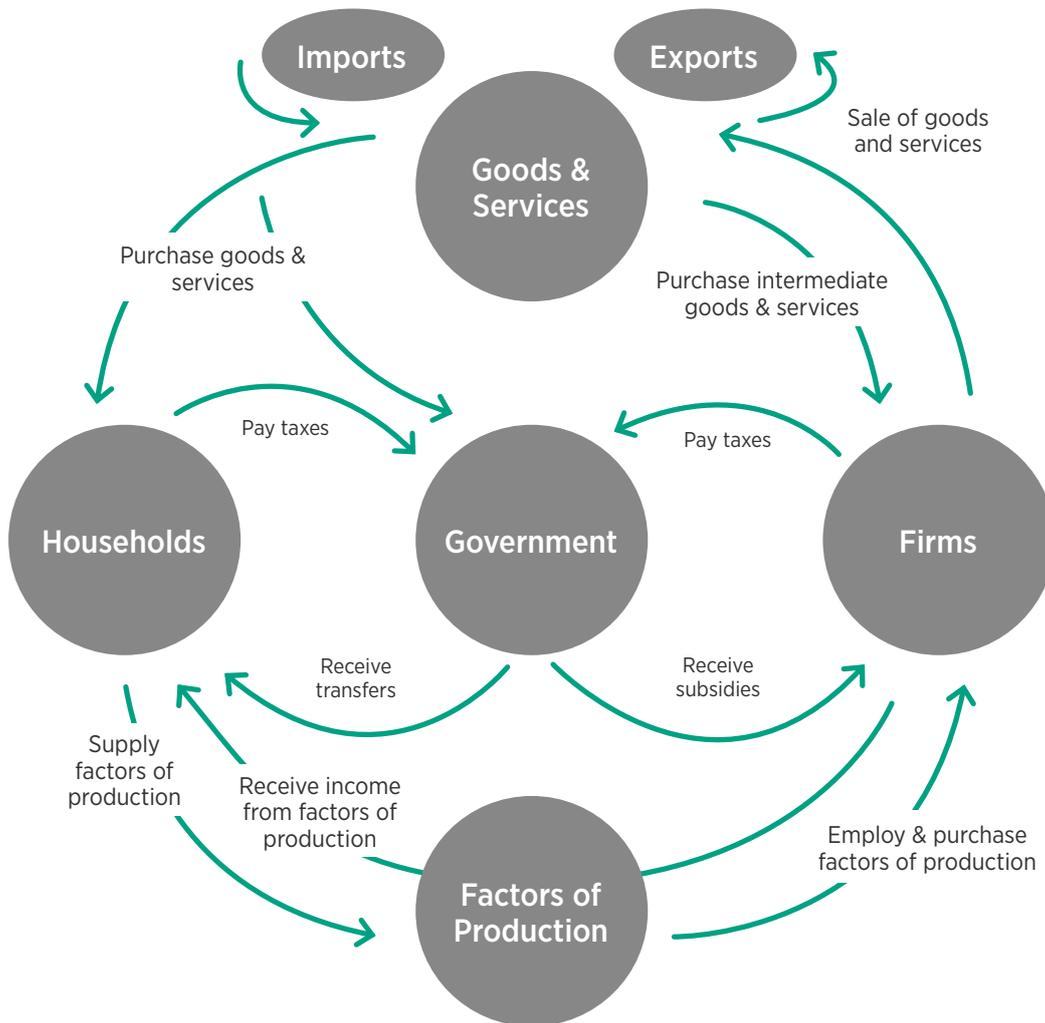
The CGE model

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 23). 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 23

Circular flow of the economy



Source: Adapted from M. Burfisher, 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.¹⁸⁹ This standard closure is amendable with a wide range of alternative options available depending on modelling assumptions adopted.

119. T.W. Hertel, 1997, *Global Trade Analysis: Modelling and Applications*.

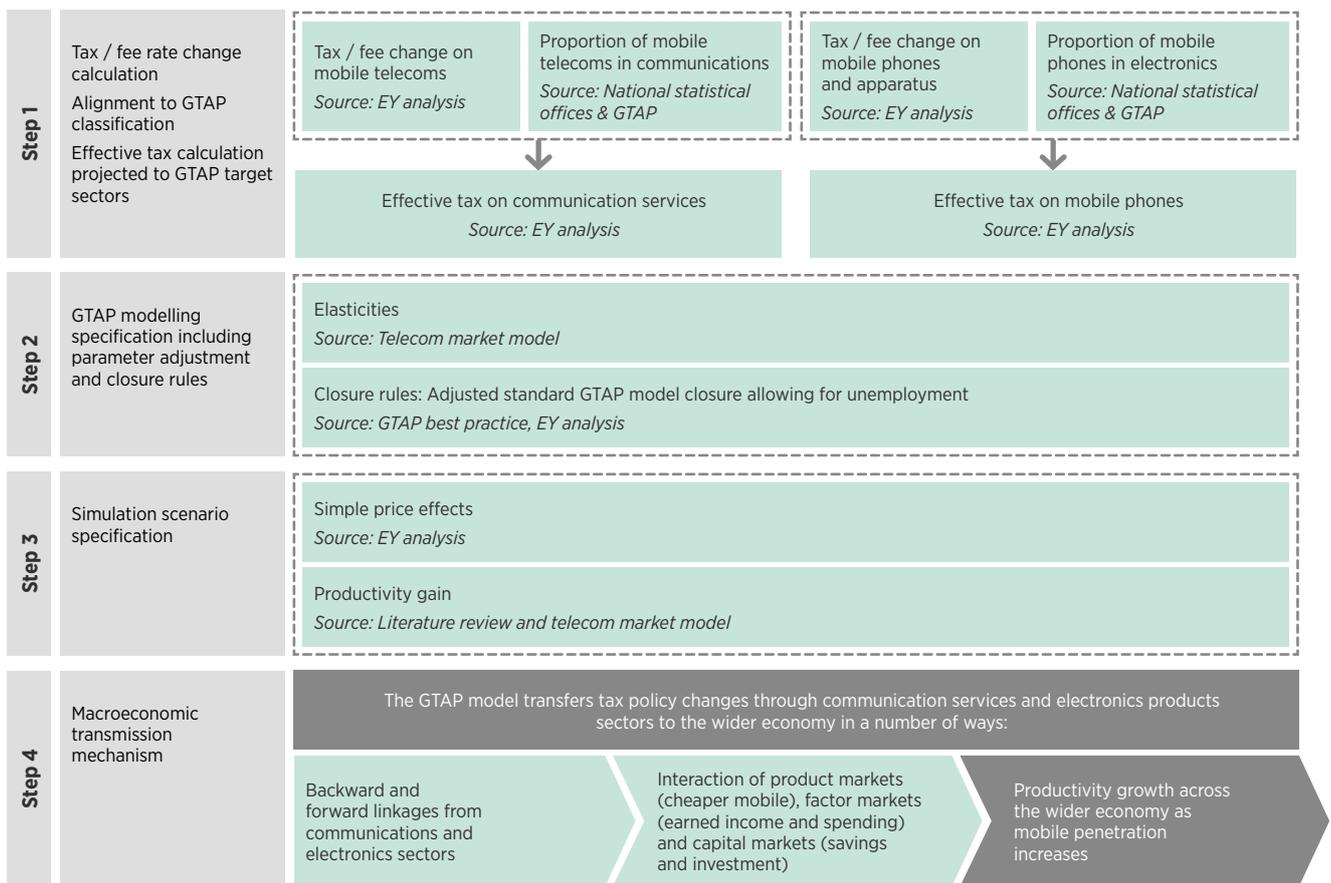
Scenario modelling

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;¹²⁰
- Second, GTAP model parameters (e.g. own-price and cross-price elasticities) and closure rules (e.g. related to employment assumptions)
- 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 24); and
- Finally, simulations are performed estimating the new equilibrium following the policy shocks introduced.

Figure 24

Overview of macro-economic modelling approach



Source: EY analysis

120. All taxes affecting the production and consumption of mobile services and mobile phones in Zambia (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 macro-economic modelling in GTAP and specifically for Zambia. 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 Zambia that are incorporated in the GTAP model, and which are based on input-output tables from national statistics and other empirical data on the Zambian 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.¹²¹ 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 Zambian economy.

Table 8 provides the pass-through rates derived in the GTAP model for each scenario.

Table 8

Pass-through rates derived for each scenario

Indicator	Reduction in excise duty on mobile services	Reduction in the corporation tax rate for the mobile sector	Reduction in annual licence fees
Pass-through rate	82%	68%	82%

In scenario 1, the operators pass 82% of the tax reduction on to subscribers in the form of lower prices. This relatively high pass-through rate is driven by competitive market dynamics in Zambia and the consumption nature of the tax.¹²² The competitive intensity may be explained by a significant potential for subscriber and penetration growth in the market, which incentivises operators to maintain share through price competitiveness.

A similar pass-through rate has been derived for a reduction in annual license fees (82%). As this tax is levied on revenue, it effectively works as a turnover tax. Evidence from the literature and previous GSMA studies suggests that, much like consumption taxes, turnover taxes typically exhibit high pass-through rates.¹²³

The level of pass-through rate for the reduction in corporation tax (68%) is lower than in the other scenarios. This is due to the nature of the corporation tax, which is levied on profits rather than sales. Therefore, mobile operators are able to retain a higher share of the tax saving, which is then channelled into increased investment, or retained as higher profits.

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

122. Consumption taxes are more visible to end-customers than some other business taxes, as they have a more direct and immediate impact on price.

123. See, for example, M. Smart and R. Bird, 2009, "The Economic Incidence of Replacing a Retail Sales Tax with a Value-Added Tax: Evidence from Canadian Experience".

Key assumptions for Zambia

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

Price elasticity of demand

The impacts 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; and
- 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;

All elasticities in this study are further varied by income groups of subscribers (low, middle and high).

To establish relevant price elasticities for Zambia, we have used a set of studies pertaining to low-income countries (Zambia is defined as a lower middle income economy by the World Bank).¹²⁴

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

- Usage elasticities: from -0.6 to -0.8 for voice and from -1.0 to -1.3 for data;
- Ownership elasticities: from -0.8 to -1.0 for mobile services; and
- Technology migration elasticities: from -0.2 to -0.3 for data.

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 and to cover increased operating costs of providing more mobile services. This assumption is based on a review of previous studies of the economic impacts of mobile taxation reforms.¹²⁵

According to the Zambian Information & Communications Technology Authority, 93% of population benefitted from mobile network coverage in 2017. GSMA Intelligence data suggests that 3G/4G covered around 40% of people at the end of 2017. Further investment is therefore required to both extend the network and upgrade the existing sites:

- In scenario 1, with relatively higher tax savings, the modelling assumes that reinvestment will be allocated in equal proportions between building new 2G and 3G sites and upgrading the existing 2G sites to 3G level; and
- In scenarios 2 and 3 with relatively lower tax savings, additional reinvestment is directed towards building new 2G and 3G sites.

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).¹²⁶

It has been assumed that a 1% increase in unique subscriber penetration leads to a 0.19% 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 low mobile penetration and limited infrastructure in Zambia.¹²⁷

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

124. World Bank, <https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups>.

125. See, for example, S. Gilchrist and C. Himmelberg, 1995, "Evidence on the role of cash flow for investment" and R. Katz, 2012, "Assessment of the economic impact of taxation on communications investment in the United States".

126. TFP is a measure for how efficiently an economy uses inputs during its production process.

127. This calculation is based on previous GSMA analysis which outlines the relationship between mobile penetration rates, infrastructure and productivity.



productivity change enters as a variable into the constant elasticity of substitution (CES) value-added production function.¹²⁸ The TFP shock works in the Zambian 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 macro-economic impacts

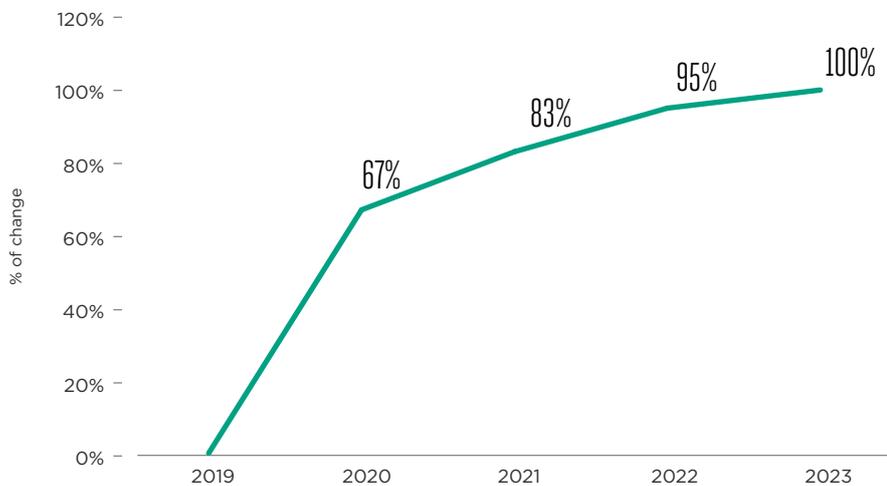
The standard GTAP model seeks to calculate differences in key economic variables between different possible states of the economy – a baseline case and a policy scenario – at a fixed point in time. This means that the standard model is a comparative static model and does not model year-by-year changes 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.¹²⁹

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 2020. The assumed path is illustrated in Figure 25 below.

Figure 25

Time path for the transition to the new equilibrium



Source: EY analysis

128. The factor substitution effect is zero, as the productivity of all factors changes in the same proportions.

129. See, for example, HMRC, 2014, *The Dynamic Effects of Fuel Duty Reductions*; HMRC, 2013, *The Dynamic Effects of Corporation Tax*; and J. Giesecke and N. Nhi, 2009, "Modelling Value-Added Tax in the Presence of Multiproduction and Differentiated Exemptions".

Closure rules in the macro-economic model

In order to account for specific labour market conditions in Zambia, 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. Data from the Zambian labour force survey demonstrates that the highest rate of unemployment is among people with a low/basic skill set.

Therefore the modelling allows for unemployment among service/shop workers in GTAP. This means that an expansion of demand leads to both an increase in employment and an increase in wages in the economy.



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: Phased reduction in excise duty on mobile services

This scenario models a phased reduction in excise duty on mobile services from the current 17.5% to 10% in three stages: to 15% in 2019, 12.5% in 2020 and 10% in 2021.

Table 9

Annual impact of phased reduction in excise duty on mobile services on selected variables

Indicator	2019	2020	2021	2022	2023
MOBILE SECTOR IMPACTS					
Cumulative change in effective price of services ¹³⁰ vs baseline	-1.8%	-3.6%	-5.3%		
Incremental connections (total)	162,000	540,000	1,016,000	1,410,000	1,668,000
Incremental unique subscribers (total)	93,000	313,000	598,000	844,000	1,016,000
Incremental connections (3G and 4G)	78,000	315,000	678,000	1,062,000	1,358,000
<i>of which technology migration</i>	14,000	57,000	131,000	226,000	330,000
Incremental connections by low-income subscribers	120,000	403,000	764,000	1,070,000	1,277,000
ARPU (total) vs baseline	-1.1%	-1.5%	-2.2%	-1.7%	-2.1%
Increase in mobile penetration (connections)	0.9%	2.9%	5.3%	7.1%	8.2%
Increase in mobile penetration (unique subscribers)	0.5%	1.7%	3.1%	4.3%	5.0%
Increase in mobile penetration (unique MBB subscribers)	0.2%	1.0%	2.1%	3.2%	4.0%
Data usage vs baseline	2.0%	6.0%	10.1%	12.4%	12.8%
Data usage per connection vs baseline	0.9%	2.4%	3.4%	3.5%	2.6%
Increase in market revenue (total)	\$ 0.1m	\$ 11m	\$ 23m	\$ 39m	\$ 45m
Increase in market revenue (total) vs baseline	0.0%	1.9%	4.1%	6.7%	7.6%
Additional investment	\$ 1m	\$ 3m	\$ 4m	\$ 4m	\$ 4m
Static tax impact ¹³¹	-\$ 12m	-\$ 24m	-\$ 36m	-\$ 37m	-\$ 38m
Impact on mobile sector taxation	-\$ 12m	-\$ 20m	-\$ 30m	-\$ 26m	-\$ 26m
WIDER ECONOMIC IMPACTS¹³²					
Full impact on communications sector taxation ¹³³	-\$ 10m	-\$ 17m	-\$ 25m	-\$ 22m	-\$ 22m
Receipts from all other sectors	\$ 2m	\$ 12m	\$ 25m	\$ 39m	\$ 44m
Total tax receipts	-\$ 8m	-\$ 5m	-\$ 1m	\$ 17m	\$ 22m
<i>Cumulative total receipts</i>	<i>-\$ 8m</i>	<i>-\$ 13m</i>	<i>-\$ 13m</i>	<i>\$ 3m</i>	<i>\$ 26m</i>
Real GDP	\$ 7m	\$ 192m	\$ 238m	\$ 272m	\$ 287m (1.12%)
Employment		Impact estimated for 2023 only			9,821 (0.16%)
Household income		Impact estimated for 2023 only			\$ 180m (1.22%)
Household expenditure		Impact estimated for 2023 only			\$ 152m (1.21%)
Investment		Impact estimated for 2023 only			\$ 263m (2.52%)

130. The reported change in price refers to an effective price as opposed to a headline price. Therefore, any bonus airtime is treated as a decrease in effective price.

131. This is the initial direct cost to the Exchequer, before behavioural change in the sector and the economy; overstates the true cost.

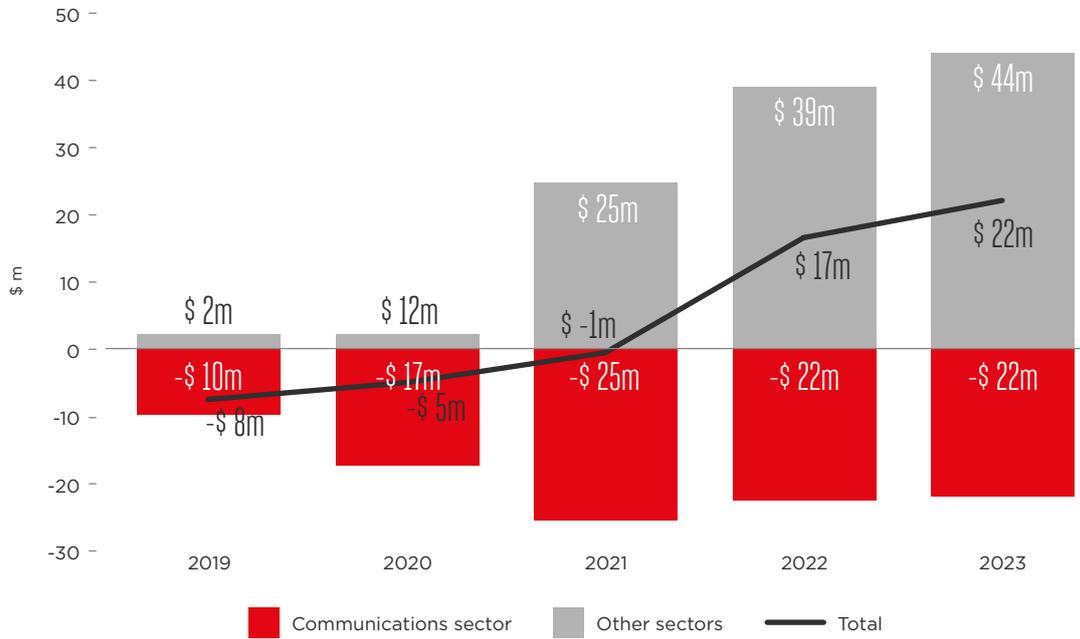
132. For some of the variables included below, the impact has been calculated as at 2023.

133. The productivity impact of the tax reform is assumed to take place starting from year 2, resulting in an increase in government tax receipts. The timing of the full impact on communications sector taxation is based on a combination of the phased implementation of the tax cuts, as well as the lagged manner in which the benefits will occur.



Figure 26

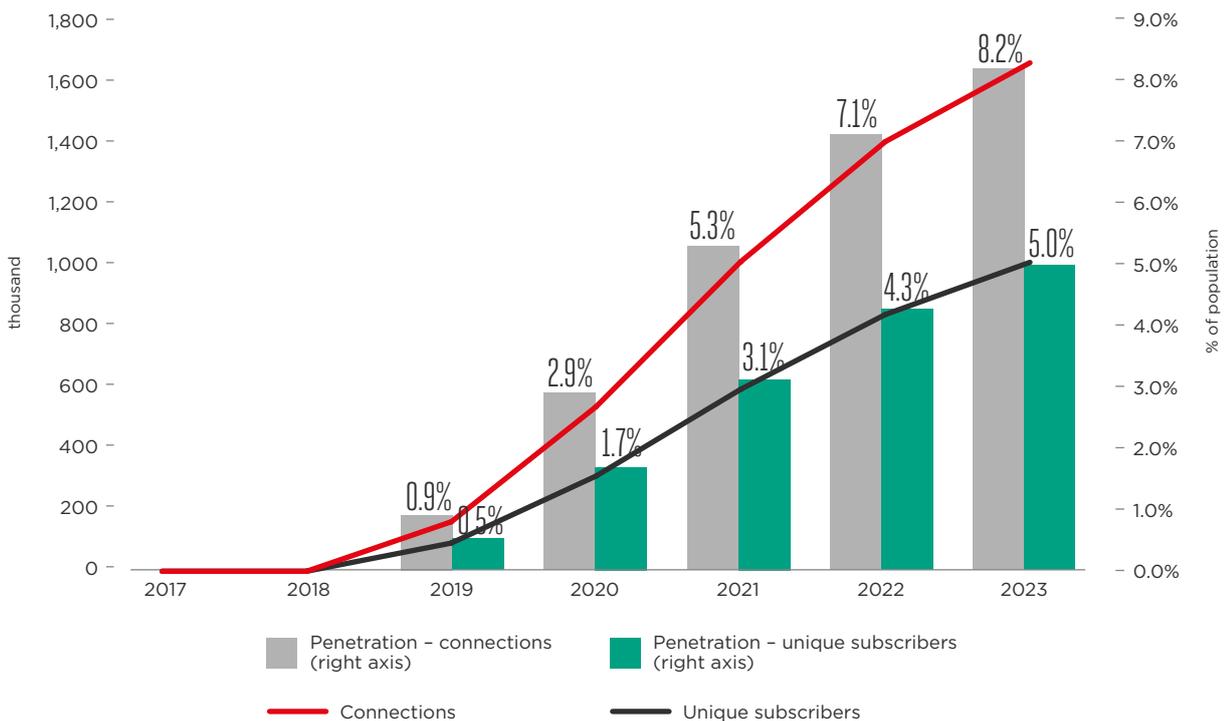
Phased reduction in excise duty on mobile services – annual impacts on tax receipts, \$ m



Source: EY analysis

Figure 27

Connections and penetration impacts of phased reduction in excise duty on mobile services



Source: EY analysis

Figure 28

Main drivers of the market revenue change following phased reduction in excise duty on mobile services



Source: EY analysis

146. This figure demonstrates the factors driving the change in mobile market revenue compared to the baseline case on no reform



Scenario 2: Reduction in corporation tax rate for the mobile sector

This scenario models the application of a single standard rate of corporation tax of 35%, rather than their current model whereby mobile operators pay a higher 40% rate of corporation tax on profits over ZMW 250,000.

Table 10

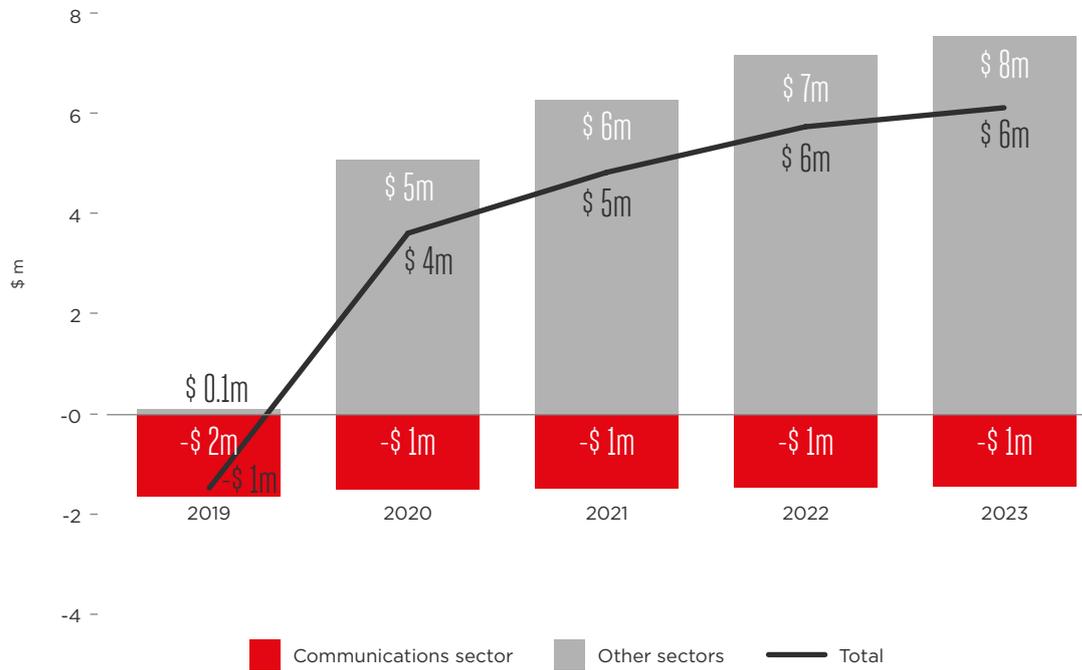
Annual impact of corporation tax rate reduction on selected variables

Indicator	2019	2020	2021	2022	2023
MOBILE SECTOR IMPACTS					
Change in effective price of services vs baseline	-0.4%				
Incremental connections (total)	51,000	128,000	181,000	234,000	289,000
Incremental unique subscribers (total)	29,000	74,000	106,000	140,000	176,000
Incremental connections (3G and 4G)	18,000	50,000	73,000	105,000	138,000
<i>of which technology migration</i>	1,000	1,000	0,000	0,000	0,000
Incremental connections by low-income users	39,000	98,000	140,000	182,000	226,000
ARPU (total) vs baseline	-0.3%	-0.2%	-0.3%	-0.4%	-0.5%
Increase in mobile penetration (connections)	0.3%	0.7%	0.9%	1.2%	1.4%
Increase in mobile penetration (unique subscribers)	0.2%	0.4%	0.6%	0.7%	0.9%
Increase in mobile penetration (unique MBB subscribers)	0.1%	0.2%	0.2%	0.3%	0.4%
Data usage vs baseline	0.4%	0.9%	0.9%	1.0%	1.1%
Data usage per connection vs baseline	0.1%	0.0%	-0.2%	-0.4%	-0.6%
Increase in market revenue (total)	\$ 0.4m	\$ 3m	\$ 5m	\$ 6m	\$ 7m
Increase in market revenue (total) vs baseline	0.1%	0.6%	0.8%	1.0%	1.2%
Additional investment	\$ 1m	\$ 1m	\$ 1m	\$ 1m	\$ 1m
Static tax impact	-\$ 3m	-\$ 3m	-\$ 3m	-\$ 3m	-\$ 3m
Impact on mobile sector taxation	-\$ 3m	-\$ 2m	-\$ 2m	-\$ 1m	-\$ 1m
WIDER ECONOMIC IMPACTS					
Full impact on communications sector taxation	-\$ 2m	-\$ 1m	-\$ 1m	-\$ 1m	-\$ 1m
Receipts from all other sectors	\$ 0.1m	\$ 5m	\$ 6m	\$ 7m	\$ 8m
Total tax receipts	-\$ 1m	\$ 4m	\$ 5m	\$ 6m	\$ 6m
<i>Cumulative total receipts</i>	<i>-\$ 1m</i>	<i>\$ 2m</i>	<i>\$ 7m</i>	<i>\$ 13m</i>	<i>\$ 19m</i>
Real GDP	\$ 0.4m	\$ 33m	\$ 41m	\$ 47m	\$ 50m (0.20%)
Employment		Impact estimated for 2023 only			1,529 (0.03%)
Household income		Impact estimated for 2023 only			\$ 31m (0.21%)
Household expenditure		Impact estimated for 2023 only			\$ 26m (0.21%)
Investment		Impact estimated for 2023 only			\$ 46m (0.44%)



Figure 29

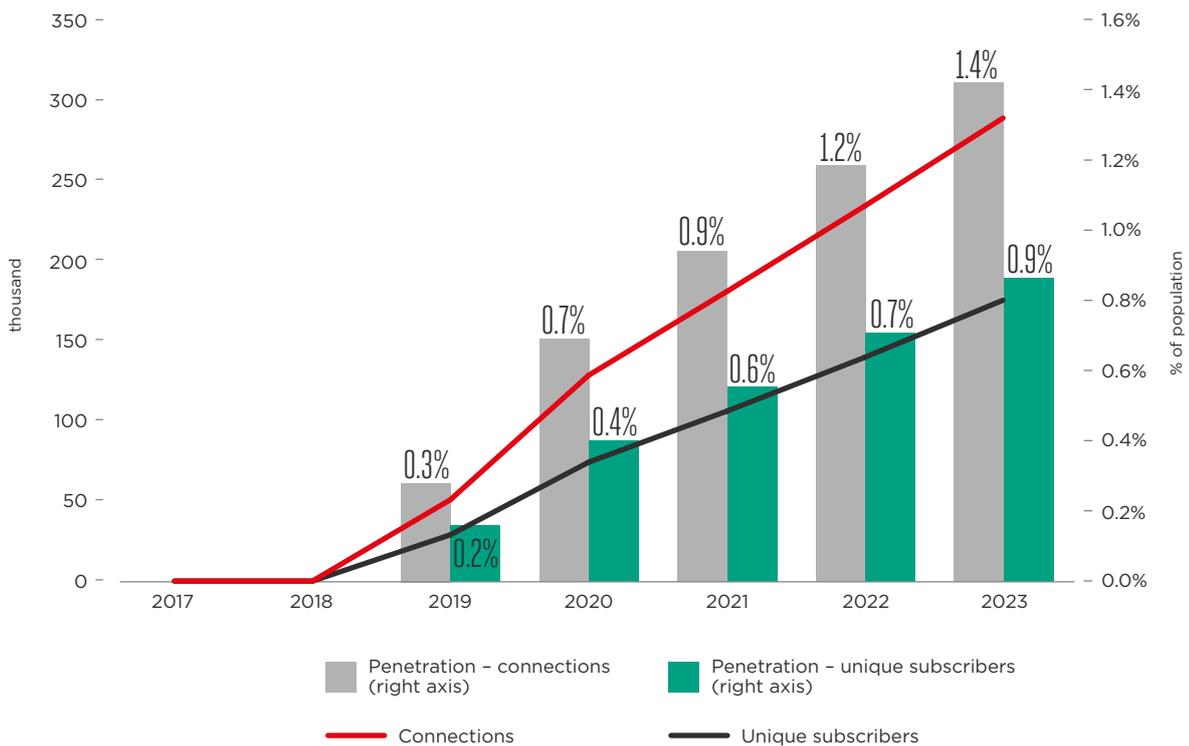
Corporation tax rate reduction - annual impacts on tax receipts, \$ m



Source: EY analysis

Figure 30

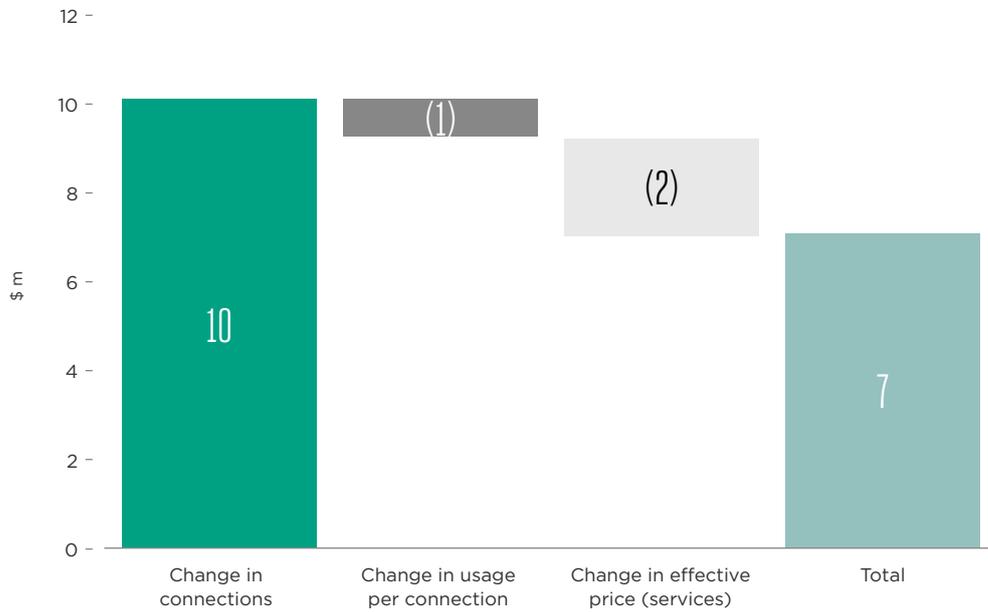
Connections and penetration impacts of corporation tax rate reduction



Source: EY analysis

Figure 31

Main drivers of the market revenue change following corporation tax rate reduction



Source: EY analysis



Scenario 3: Reduction in annual licence fee

In Zambia mobile operators are charged annual license fees at a rate of 3% of their revenue excluding interconnection revenue and excise duty payments. This scenario models a reduction in the rate to 1.5%.

Table 11

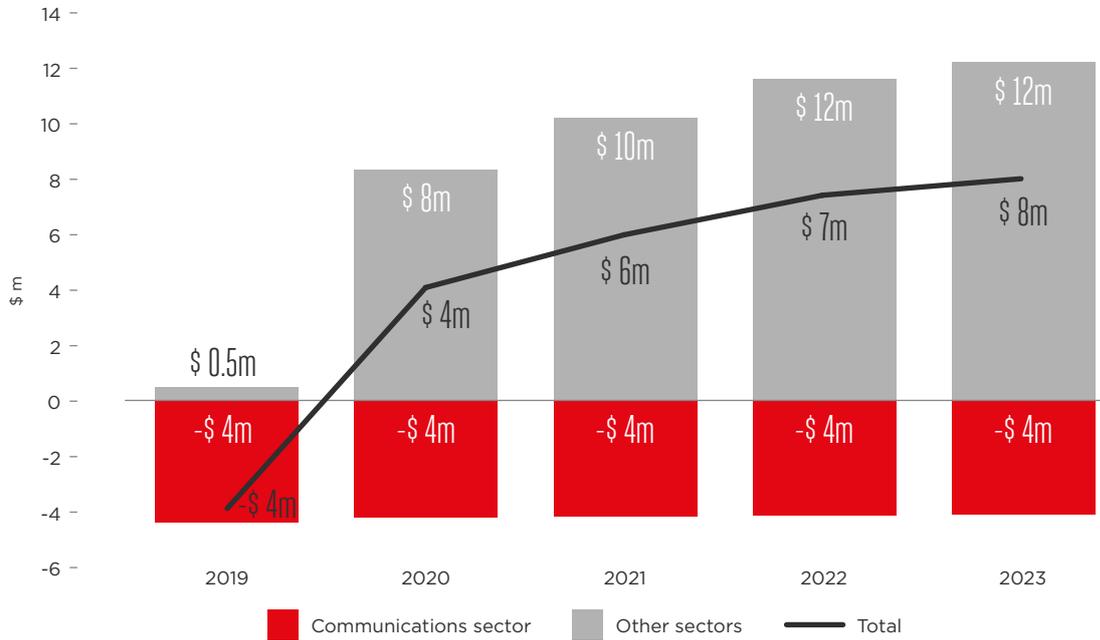
Annual impact of reduction in annual licence fees on selected variables

Indicator	2019	2020	2021	2022	2023
MOBILE SECTOR IMPACTS					
Change in effective price of services vs baseline	-1.0%				
Incremental connections (total)	106,000	250,000	320,000	393,000	467,000
Incremental unique subscribers (total)	60,000	145,000	189,000	235,000	284,000
Incremental connections (3G and 4G)	42,000	114,000	152,000	203,000	254,000
<i>of which technology migration</i>	2,000	3,000	0,000	0,000	0,000
Incremental connections by low-income users	79,000	188,000	244,000	302,000	361,000
ARPU (total) vs baseline	-0.7%	-0.3%	-0.5%	-0.6%	-0.7%
Increase in mobile penetration (connections)	0.6%	1.3%	1.7%	2.0%	2.3%
Increase in mobile penetration (unique subscribers)	0.3%	0.8%	1.0%	1.2%	1.4%
Increase in mobile penetration (unique MBB subscribers)	0.1%	0.4%	0.5%	0.6%	0.8%
Data usage vs baseline	1.1%	2.3%	2.3%	2.4%	2.5%
Data usage per connection vs baseline	0.4%	0.6%	0.3%	0.0%	-0.3%
Increase in market revenue (total)	\$ 0.3m	\$ 7m	\$ 8m	\$ 10m	\$ 12m
Increase in market revenue (total) vs baseline	0.1%	1.3%	1.5%	1.8%	2.0%
Additional investment	\$ 1m	\$ 1m	\$ 1m	\$ 1m	\$ 1m
Static tax impact	-\$ 7m	-\$ 7m	-\$ 7m	-\$ 7m	-\$ 8m
Impact on mobile sector taxation	-\$ 7m	-\$ 5m	-\$ 4m	-\$ 4m	-\$ 4m
WIDER ECONOMIC IMPACTS					
Full impact on communications sector taxation	-\$ 4m	-\$ 4m	-\$ 4m	-\$ 4m	-\$ 4m
Receipts from all other sectors	\$ 0.5m	\$ 8m	\$ 10m	\$ 12m	\$ 12m
Total tax receipts	-\$ 4m	\$ 4m	\$ 6m	\$ 7m	\$ 8m
<i>Cumulative total receipts</i>	-\$ 4m	\$ 0.2m	\$ 6m	\$ 14m	\$ 22m
Real GDP	\$ 1m	\$ 54m	\$ 66m	\$ 76m	\$ 80m (0.31%)
Employment		Impact estimated for 2023 only			2,606 (0.04%)
Household income		Impact estimated for 2023 only			\$ 50m (0.34%)
Household expenditure		Impact estimated for 2023 only			\$ 42m (0.34%)
Investment		Impact estimated for 2023 only			\$ 72m (0.69%)



Figure 32

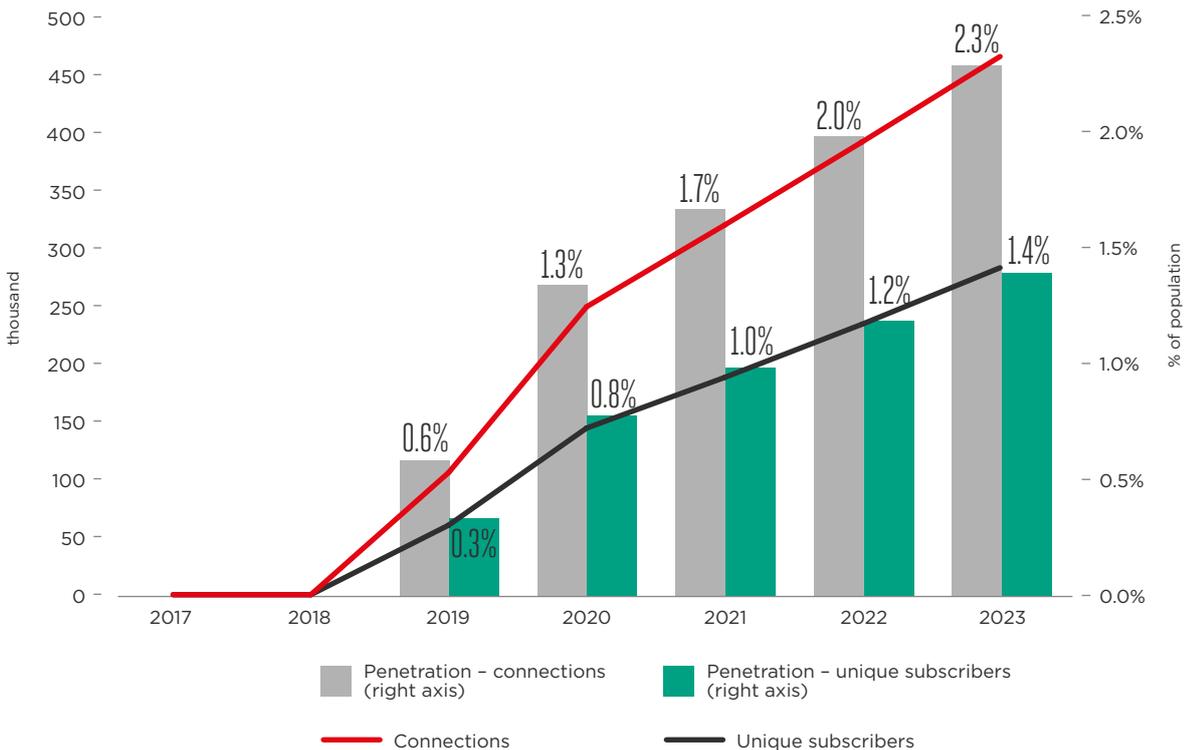
Reduction in annual licence fees – annual impacts on tax receipts, \$ m



Source: EY analysis

Figure 33

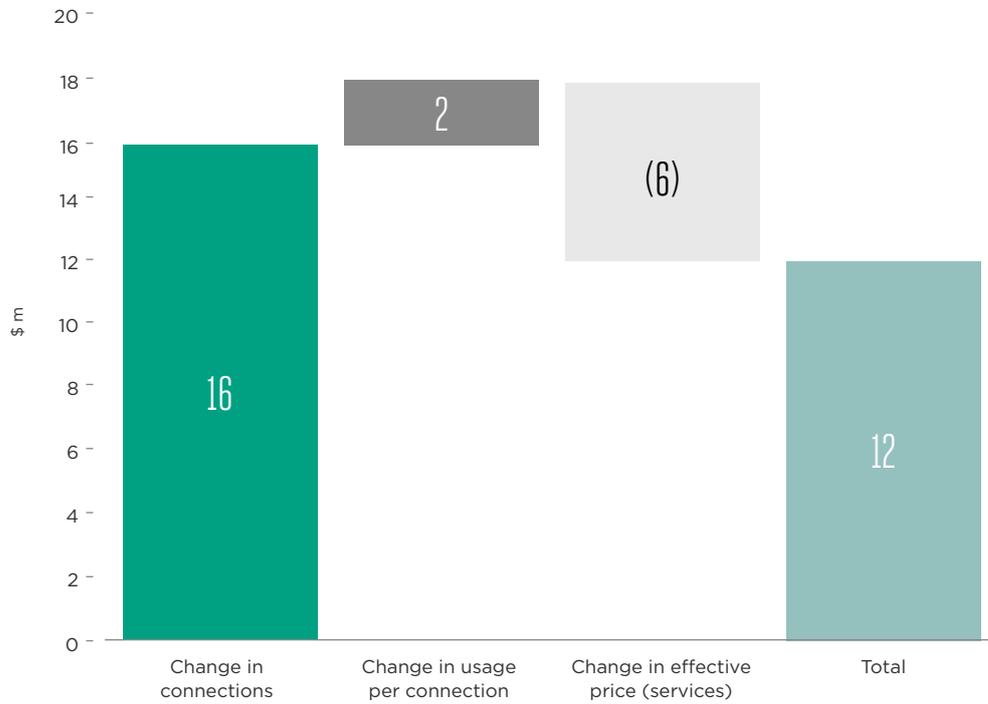
Connections and penetration impacts of reduction in annual licence fees



Source: EY analysis

Figure 34

Main drivers of the market revenue change following reduction in annual licence fees



Source: EY analysis





Please visit the GSMA website at
www.gsma.com/publicpolicy/resources

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