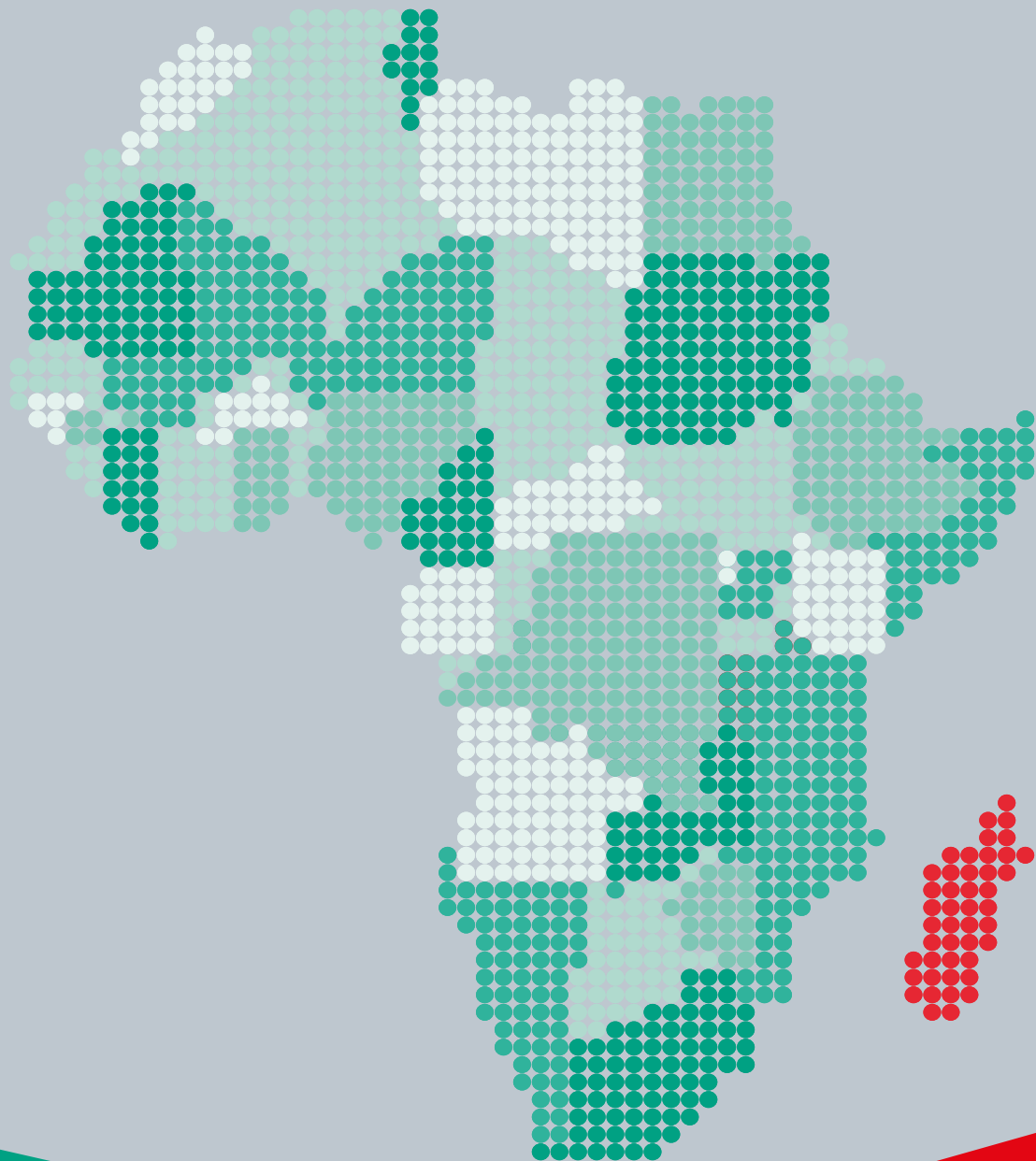




Reforming mobile sector taxation in Madagascar:

Unlocking economic and social benefits through
tax reform in the mobile sector





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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 across the world. Mobile penetration, and specifically 3G and 4G penetration, enhances digital connectivity by expanding internet and broadband access, which in turn facilitates 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 tax revenue maximisation, and incentivising investment and economic growth.

In order to assess the potential benefits of a more efficient tax structure in the mobile sector, one which focuses on facilitating investment and unlocking digital inclusion, the GSMA¹ has commissioned EY to undertake a study of the impacts of potential tax reforms on the Malagasy mobile sector and the wider economy.

This report analyses recent developments and the tax structure in Madagascar's mobile market, 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 mobile market in Madagascar has demonstrated significant growth over the past decade, however a significant share of the population remain unconnected to mobile services

The mobile market in Madagascar has expanded rapidly over the past decade, with the number of unique subscribers growing from 2.0 million in 2008 to 7.6 million in 2018, an increase of almost 300%. Mobile sector expansion in Madagascar has been driven by significant

capital expenditure by mobile operators who, on average, have made annual capital investments equivalent to around 18% of their revenue during the last decade.

Total mobile sector revenues were \$238 million in 2017,² equivalent to 1.8% of Malagasy gross domestic product (GDP), while the sector contributed approximately \$67 million of direct economic value to Madagascar in 2017 (0.5% of GDP).³ This contribution to GDP is relatively low compared to international benchmarks, suggesting considerable scope for expansion.

However, a significant proportion of the population (70.8% of the population, or 18.5 million people) is still unconnected to mobile network. Unique subscriber mobile penetration⁴ in Madagascar stood at 29.2% in Q1 2018, which ranks Madagascar 46th out of 48 in Sub-Saharan Africa (SSA) making it one of the least developed mobile markets in the world.

Further significant investment is required to drive the expansion of the mobile market, and to improve the affordability of services for consumers. In particular, a focus on expanding network coverage, and investments in the quality of data services, could accelerate the growth of the sector in Madagascar.

The digital agenda in Madagascar is supported by the programme “*Digital for all*”, which recognises Information and Communication Technologies (ICT) as an important enabler of economic development and promotes the implementation of ICT projects.⁵ The programme currently contains ten projects, including the development of the broadband network, increasing broadband coverage and the creation of public Wi-Fi hotspots.

Facilitating the growth of the mobile sector also aligns with the Government's broader economic and social objectives for the Malagasy economy, which are set out in the *National Development Plan 2015-2019*.⁶ This includes achieving sustainable economic growth, increasing priority infrastructure and social investment, and achieving human development objectives.

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

2. GSMA Intelligence database.

3. *ibid.*

4. There is an important difference between the number of mobile connections – the metric traditionally used by the industry to measure market size and penetration – and the term ‘unique mobile subscribers’. The latter refers to a single individual that has subscribed to a mobile service and that person can hold multiple mobile connections (i.e. SIM cards).

5. Ministère des Postes, des Télécommunications et du Développement Numérique, Le Numérique pour Tous, <http://www.mptdn.gov.mg/category/projet-cbi-2017>.

6. Ministère de l'Economie et de la Planification, 2015, *Plan National de Développement 2015-2019*, https://www.cabri-sbo.org/uploads/bia/madagascar_2015_planning_external_national_plan_author_region_french_pdf.



In this context, incentivising further investment to improve the availability and quality of mobile networks, as well as improving the affordability of mobile services, should become a policy priority for the Government, particularly given the low level of unique mobile subscriber penetration and a very low level of fixed broadband penetration in Madagascar (1 subscription per 1,000 people in 2017).⁷

Significant improvements in affordability of mobile services are required in Madagascar to make progress towards meeting the United Nations targets and accelerate growth in penetration and usage

As it currently stands, for the poorest 20% of the population in Madagascar, a low consumption basket (500MB of data) would account for 40.2% of monthly income.⁸ Significant improvements in affordability are therefore required to achieve the United Nations (UN) current 5% affordability target and make progress towards achieving the UN “1 for 2” (1 GB of data costing less than 2% of monthly income) target set for 2025.⁹

The tax burden on the mobile sector is high; this could limit the growth potential of the mobile sector in Madagascar

In 2017, the total tax contribution of the sector was estimated at \$57 million. This represents 24% of the total market revenue. The mobile sector makes a disproportionately large contribution in taxes and fees relative to its economic footprint. While the mobile market revenue accounted for 1.8% of Madagascar’s GDP,¹⁰ the sector’s tax and fee payments accounted for around 4.1% of government total tax revenue.¹¹ This means that the mobile tax contribution is 2.3 times its size in the economy.

The tax burden is largely driven by the excise duty on mobile services (31%), import duties on equipment and handsets (16%) and regulatory fees (15%). These three taxes constitute 62% of the total tax payments made by the mobile industry. This high tax burden could limit the expansion of the mobile sector and the affordability of mobile services. In particular, import duties on handsets result in increased prices to consumers, creating a bigger burden for those on lower incomes.

Through policy reform, the Government of Madagascar has the opportunity to simplify and rebalance the taxation of the mobile sector, supporting job creation and a better business climate

Madagascar has enjoyed increasing rates of economic growth since the Government embarked on a programme of economic and governance reforms in 2014. The average rate of GDP growth in 2014-2017 increased to 3.5% from 1.6% in 2010-2013.¹² The medium-term outlook remains positive for the Malagasy economy; the International Monetary Fund (IMF) forecasts economic growth to reach 5.0% in 2018 and 5.4% in 2019.¹³

The need to ensure sustainability of higher rates of economic growth is recognised in Madagascar’s *National Development Plan 2015-2019*. This plan focuses on the objective of increased public investment into priority infrastructure and social projects, in order to reduce poverty and promote inclusive and sustainable growth, while maintaining macroeconomic stability and a strong fiscal position.¹⁴

Promoting greater investment in the mobile industry and improving the affordability of mobile services align with this strategy and, due to the links between the telecoms sector and the wider economy, can be used as a vehicle to achieve the underlying objectives of modernising key economic sectors, facilitating foreign investment and improving Madagascar’s telecommunications infrastructure.

Tax reform in the sector would unlock investment in Madagascar’s mobile networks and improve affordability, promoting greater adoption of mobile services. 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 in Madagascar have been identified, in line with the best practice principles of taxation,¹⁵ which would reduce the level of mobile-specific taxation, make the tax system more equitable and realise positive externalities¹⁶ from the wider proliferation of mobile services.

7. World Bank databank.

8. For more detail on the methodology of calculation of the total cost of mobile ownership (TCMO) please see Appendix A. Sources: GSMA, Tarifica.

9. Broadband Commission for Sustainable Development, 2018, *2025 Targets: “Connecting the Other Half”*, <https://broadbandcommission.org/Documents/publications/wef2018.pdf>.

10. Madagascar’s GDP was of \$13.1 billion in 2017. Source: Oxford Economics.

11. The total tax revenue was estimated at \$1,389 million in 2017. Source: Ministère des finances et du Budget, *Loi de Finances Rectificative 2018*, <http://www.dgbudget.mg/lois/LFR>.

12. Oxford Economics database.

13. IMF, 2018, *Republic of Madagascar: Third Review under the Extended Credit Facility and Request for Modification of Performance Criteria*, <https://www.imf.org/en/Publications/CR/Issues/2018/07/25/Republic-of-Madagascar-Third-Review-Under-the-Extended-Credit-Facility-and-Request-for-46120>.

14. Ministère de l’Economie et de la Planification, 2015, *Plan National de Développement 2015-2019*, https://www.cabri-sbo.org/uploads/bia/madagascar_2015_planning_external_national_plan_author_region_french_.pdf.

15. For a more detailed discussion of principles of taxation of the mobile sector please see Section 3.1.

16. A positive externality arises when consumption of a good or services benefits a third party, not directly involved in the transaction. In relation to this study, consumption of mobile services creates wider socio-economic benefits, as described in Section 1.3.

The following reforms are forecast to lead to increased penetration, an acceleration in the rate of technology migration to smartphones and 3G/4G connections, as well as supporting GDP growth and taxation revenue more widely in the medium-term:¹⁷

- **Elimination of excise duty on mobile services.¹⁸**

This tax reform would result in a significant reduction in the effective price of mobile services, leading to increased demand by households and businesses, and driving expansion in the other sectors of the Malagasy economy. A share of the tax saving would be reinvested by mobile operators into both the expansion and upgrade of mobile networks. The expected impacts of this tax reform on the mobile sector and wider economy are as follows:¹⁹

- Unique subscriber penetration would increase by 4.3% (1,284,000 unique subscribers) by 2023, while mobile broadband (MBB) penetration would grow by 2.9% (873,000 unique MBB subscribers), driving growth in mobile data usage per connection of 3.4%. Mobile sector revenues would be \$26 million higher per annum (8.3%) by 2023; and
- GDP would grow by \$194 million (1.5%), and annual tax receipts would be \$11 million higher per annum by 2023, a cumulative fiscal gain of \$15 million over five years.

- **Elimination of customs duties on handsets.²⁰**

Elimination of the customs duty on imported handsets would lead to a significant improvement in the affordability of mobile ownership for the Malagasy population, especially those at the bottom of the income pyramid. This would drive an increase in mobile penetration and usage of mobile services, with most new subscribers coming from a low-income background. This reform is forecast to have the following impacts:

- Unique subscriber penetration would increase by 1.5% (441,000 unique subscribers) by 2023, while mobile broadband penetration would grow by 1.6% (468,000 unique MBB subscribers), driving growth in mobile data usage per connection of 0.9%. Mobile sector revenues would be \$11 million higher per annum (3.6%) by 2023; and
- GDP would grow by \$71 million (0.5%), and annual tax receipts would be \$9 million higher per annum by 2023, a cumulative fiscal gain of \$30 million over five years.

- **Reduction in the regulation tax on the telecommunications and Information and Communication Technologies (ICT) sector.**

This scenario reduces the regulation tax on the telecommunications and ICT sector from 2% to 1% of revenue for the mobile industry.²¹ This tax policy reform would reduce the tax burden on mobile operators and result in tax savings, which would be used to both reduce prices of mobile services for subscribers and to increase investment into mobile networks. This reform is forecast to have the following impacts:

- Unique subscriber penetration would increase by 0.5% (151,000 unique subscribers) by 2023, while mobile broadband penetration would grow by 0.3% (103,000 unique MBB subscribers), driving growth in mobile data usage per connection of 0.4%. Mobile sector revenues would be \$3 million higher per annum (1.0%) by 2023; and
- GDP would grow by \$22 million (0.2%), and annual tax receipts would be \$1.6 million higher per annum by 2023, a cumulative fiscal gain of \$3.2 million over five years.

The growth in the sector should also lead to wider societal benefits, through increased mobile ownership and access to mobile data and broadband services, particularly among low-income communities, as around 75% of new subscribers would come from low-income groups. The boost to mobile penetration should lead to growth in productivity and hence an increase in GDP, household incomes, employment and investment across the economy. All scenarios should aid the Government of Madagascar in meeting the goals of the *National Development Plan 2015-2019*, due to the positive impact that the mobile sector has on the wider economy.

Moreover, the reforms are shown to be self-financing in terms of their impact on government revenues in the medium-term, and should generate increased tax revenues by 2023. In addition, a more conducive tax system for the investment and development of the mobile sector should enable 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, thanks to innovative solutions such as mobile money person-to-government (P2G) payments and e-government initiatives.

17. The forecasts provided in this report estimate the isolated impacts of tax reform on the Malagasy 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.

18. The economic modelling was performed before the enactment of the Finance Act 2019 and is based on a pre-reform 10% rate.

19. A model of the Malagasy 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.

20. The economic modelling was performed before the enactment of the Finance Act 2019 and is based on a pre-reform 10% rate.

21. This scenario applies the tax cut to the mobile sector only and does not consider the wider telecom and ICT industries.



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

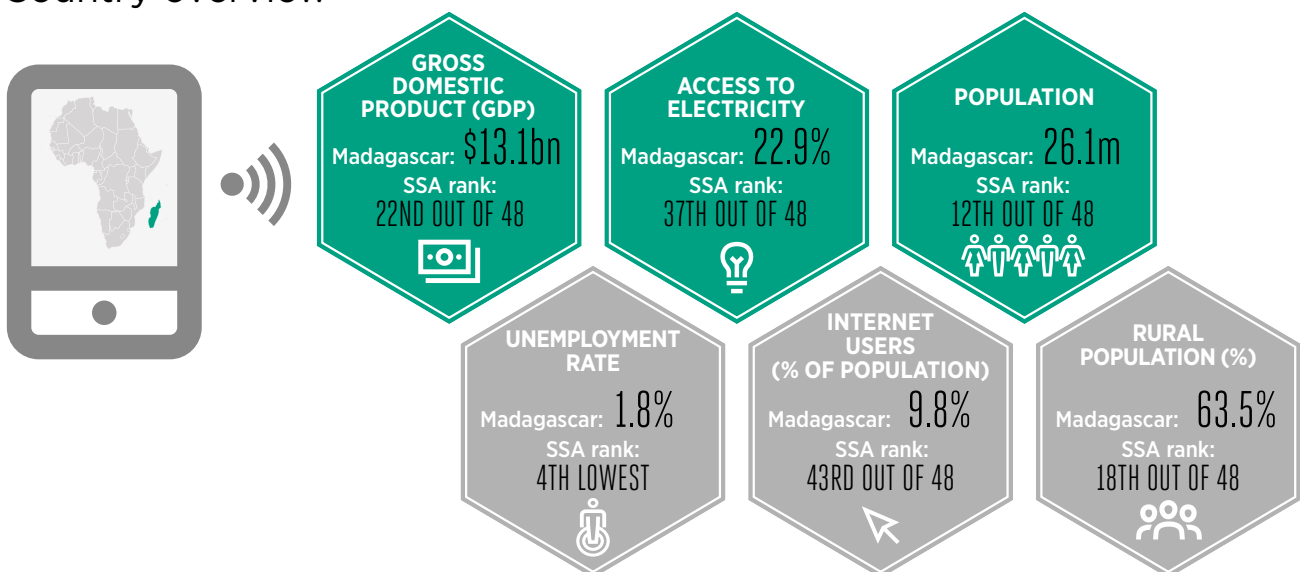
1.1 Country overview

Figure 1 provides an overview of key economic and demographic statistics for Madagascar. The Malagasy economy is the 22nd largest in Sub-Saharan Africa (SSA) with a gross domestic product (GDP) of \$13.1 billion in 2017.²² Of the 26.1 million people in Madagascar, 63.5% reside in rural areas.²³ Madagascar has the 4th lowest level of unemployment in SSA standing at 1.8% in 2017;²⁴ however, the majority

of the population work in subsistence agriculture with limited earnings opportunities.²⁵ In addition, access to electricity is low in Madagascar with an electrification rate of just 22.9% of the population in 2016;²⁶ this represents a barrier to the roll-out of digital technologies and is a contributing factor of the low percentage of population who are users of fixed or mobile internet (9.8% in 2017).²⁷

Figure 1

Country overview



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

22. Oxford Economics database.

23. Oxford Economics database, World Bank databank.

24. World Bank databank.

25. World Bank, 2010, *Labour Markets Conditions in Madagascar*, <http://siteresources.worldbank.org/INTMADAGASCAR/Resources/LaborMarkets.pdf>.

26. World Bank databank.

27. *ibid.*

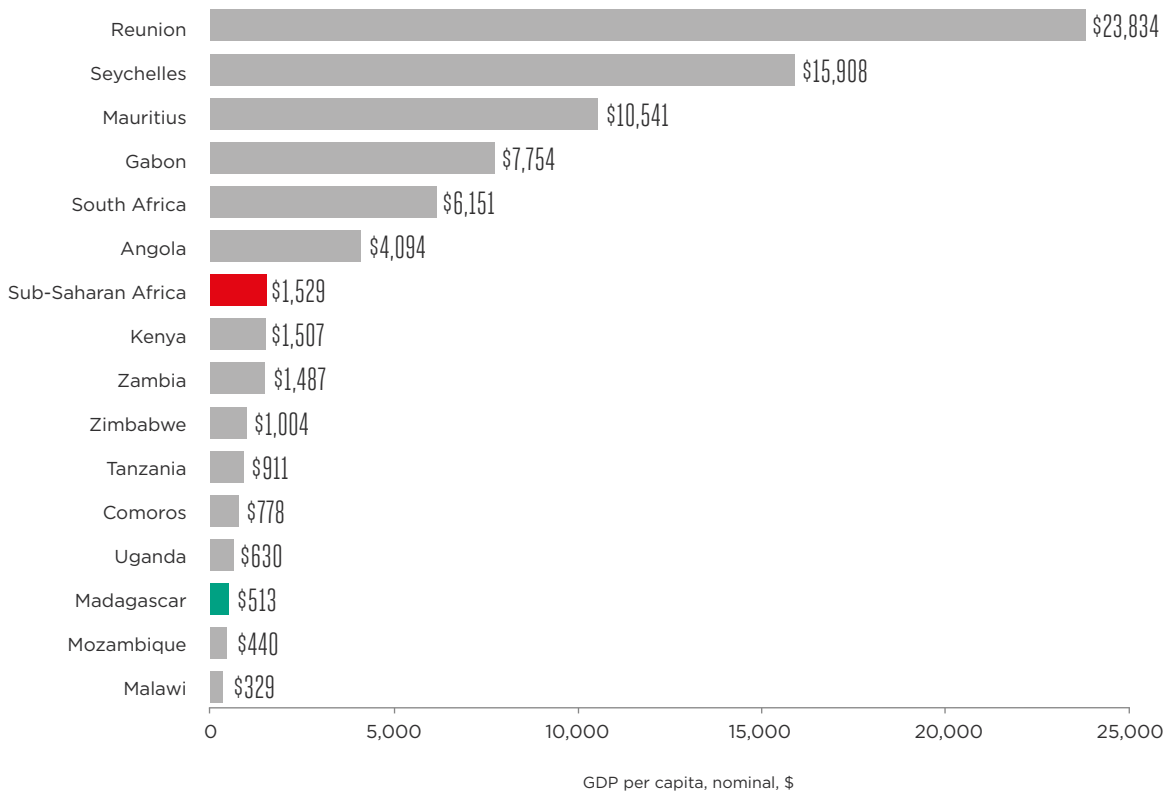
1.1.1 The Malagasy economy

Economic growth has picked up in Madagascar in recent years, but structural reforms are required in order to achieve the Government's development objectives

Madagascar economic and social development has been held back by weak economic growth and political instability. As shown in Figure 2, the level of GDP per capita in Madagascar is below the average for the region, at approximately \$513 in 2017.²⁸

Figure 2

GDP per capita (nominal \$) in comparator countries, 2017



Source: Oxford Economics database

However, following the Government embarking on a programme of economic and governance reforms in 2014, Madagascar has enjoyed increasing rates of economic growth. The average economic growth rate increased to an average of 3.5% in 2014-2017 from 1.6% in 2010-2013.²⁹ The medium-term outlook is also positive for the Malagasy economy; the International Monetary Fund (IMF) forecasts economic growth of 5.0% in 2018 and 5.4% in 2019.³⁰

Despite this progress, the Malagasy economy remains vulnerable to external shocks. The majority of its exports are accounted for by a few commodities and products, including vanilla, nickel and garments. Diversification of the Madagascar's economy is therefore required to increase the sustainability of economic growth and mitigate risks of external shocks.³¹

28. Oxford Economics database.

29. *ibid.*

30. IMF, 2018, *Republic of Madagascar: Third Review under the Extended Credit Facility and Request for Modification of Performance Criteria*, <https://www.imf.org/en/Publications/CR/Issues/2018/07/25/Republic-of-Madagascar-Third-Review-Under-the-Extended-Credit-Facility-and-Request-for-46120>.

31. World Bank Group, 2018, *Madagascar Economic Update: Fostering Financial Inclusion*, <http://documents.worldbank.org/curated/en/789051532448517077/Madagascar-economic-update-fostering-financial-inclusion>.

Continued economic growth will also need to be supported by improvements in infrastructure and the business environment. Madagascar currently ranks 162nd out of 190 in 2018 Doing Business index of the World Bank³² and 121st out of 137 in the Global Competitiveness index, performing particularly poorly in respect to mobile phone subscriptions, where it was placed second to last in the index.³³

The need to increase sustainability of economic growth and increase investment into infrastructure is recognised in Madagascar's *National Development Plan 2015-2019*. This plan focuses on the objective of increased public investment into priority infrastructure and social projects, in order to help reduce poverty and promote inclusive and sustainable growth.³⁴

In its vision of development for Madagascar for the period from 2014 to 2024, the World Bank suggests a range of goals for the Government, including a simpler and more equitable tax system, economic growth driven more by the private sector, increased population access to electricity, improvement in education and health provision, and accessible and affordable telecommunications services.³⁵

The digital agenda in Madagascar is supported by the programme “*Digital for all*”, which recognises ICT as an important enabler of economic development and promotes the implementation of ICT projects.³⁶ The programme currently contains ten projects, including the development of the broadband network, increasing broadband coverage and creation of public Wi-Fi hotspots.

Reforming the taxation of the mobile sector will support the Government of Madagascar in achieving its development goals as set out in the *National Development Plan 2015-2019* and longer-term goals suggested by the World Bank. Specifically, improved affordability of mobile services and increased network investment will lead to growth in the sector that will generate a range of economic and social benefits and support the diversification of the Malagasy economy.

1.1.2 Fiscal outlook

The Government of Madagascar faces a challenge of maintaining fiscal sustainability while scaling up public investment in vital infrastructure development and social projects

Rising GDP growth and increasing tax revenue collection have helped Madagascar to achieve a relatively strong fiscal performance despite several shocks in 2017, including a drought, followed by a cyclone and an outbreak of plague. The overall government balance stood at -2.4% in 2017, deteriorating from -1.3% in 2016.³⁷

A key objective of the fiscal policy, as stated by the Government of Madagascar in the *National Development Plan 2015-2019*, is to increase tax revenue collection by expanding the tax base and recovering tax payments from the informal sector. A further key objective is to rationalise government expenditure to ensure that a higher proportion is allocated for higher priority spending, including infrastructure and social projects, to promote inclusive growth.³⁸

A significant proportion of the financial resource required to scale up investment into infrastructure will come in the form of loans from multilateral institutions. This has the potential to create risks for financial sustainability in conditions where the economy is vulnerable to external shocks. In order to ensure fiscal sustainability and increase tax revenue in the medium-term, government policies should create an equitable fiscal environment and incentivise investment into the most productive sectors, which have the potential to generate productivity gains and wider benefits across different sectors of the Malagasy economy.

Reform of the taxation applied to the mobile sector should be an integral part of the wider reform of the fiscal environment. In particular, it could provide incentives for increased private sector investment, both in the sector and across the economy more widely.

32. World Bank, 2018, *Doing Business 2018*, <http://www.doingbusiness.org/content/dam/doingBusiness/media/Annual-Reports/English/DB2018-Full-Report.pdf>.

33. World Economic Forum, 2018, *The Global Competitiveness Report 2017-2018*, <https://www.weforum.org/reports/the-global-competitiveness-report-2017-2018>.

34. Ministère de l'Economie et de la Planification, 2015, *Plan National de Développement 2015-2019*, https://www.cabri-sbo.org/uploads/bia/madagascar_2015_planning_external_national_plan_author_region_french_.pdf.

35. World Bank, 2014, *Opportunités et Défis pour une Croissance Inclusive et Résiliente*, <http://documents.worldbank.org/curated/en/130911468086644653/pdf/883230REPLACEMENT00Box385221B00PUBLIC0.pdf>.

36. Ministère des Postes, des Télécommunications et du Développement Numérique, *Le Numérique pour Tous*, <http://www.mptdn.gov.mg/category/projet-cbi-2017>.

37. IMF, 2018, *Republic of Madagascar: Third Review under the Extended Credit Facility and Request for Modification of Performance Criteria*, <https://www.imf.org/en/Publications/CR/Issues/2018/07/25/Republic-of-Madagascar-Third-Review-Under-the-Extended-Credit-Facility-and-Request-for-46120>.

38. Ministère de l'Economie et de la Planification, 2015, *Plan National de Développement 2015-2019*, https://www.cabri-sbo.org/uploads/bia/madagascar_2015_planning_external_national_plan_author_region_french_.pdf.

1.2 Market overview

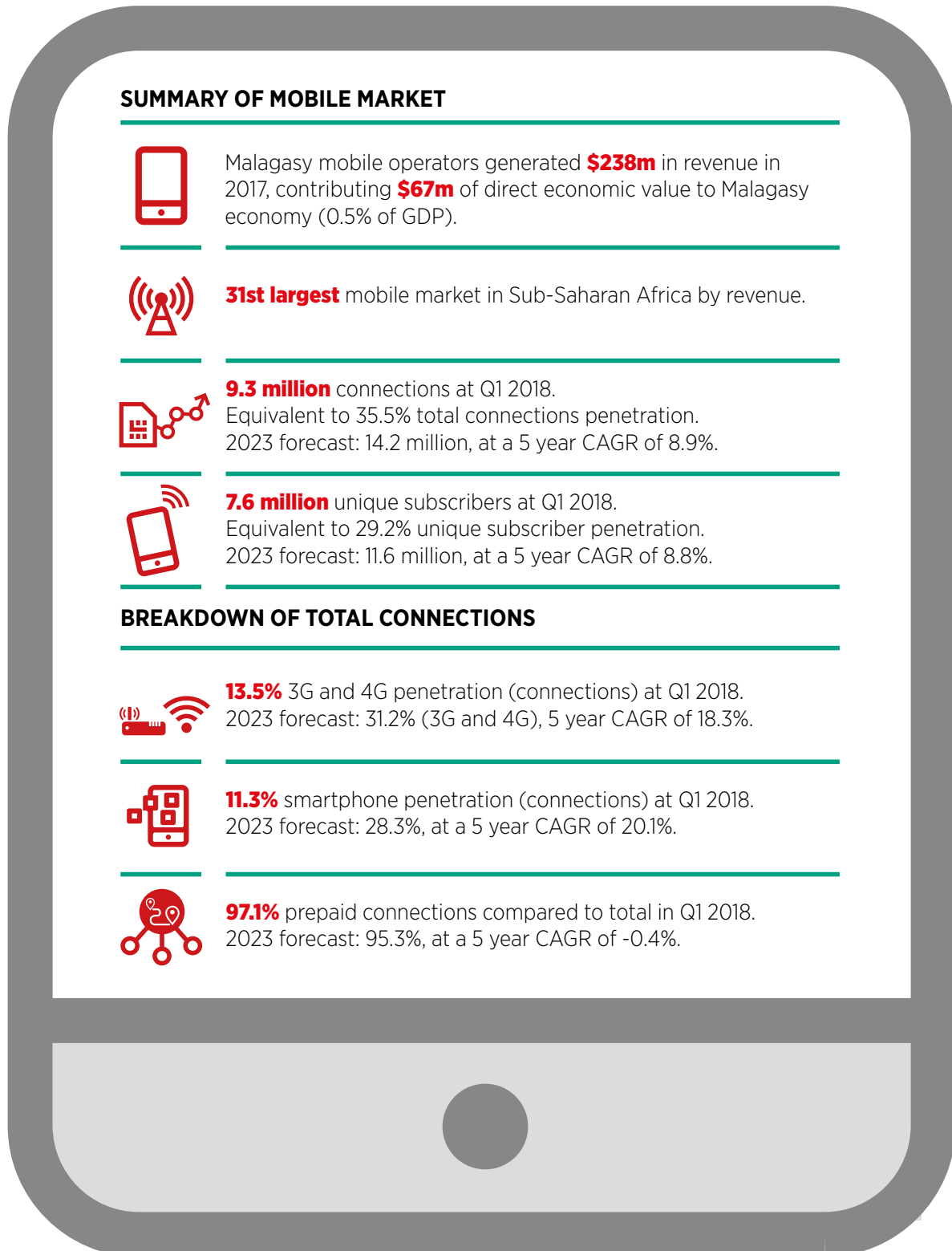
The mobile market in Madagascar has expanded rapidly over the past decade, with the number of unique subscribers increasing by 5.6 million between 2008 and 2018. However, as demonstrated in Figure 3, which provides an overview of the Malagasy mobile

market, a significant opportunity exists to further develop the sector by increasing total penetration and smartphone usage. This would contribute to achieving the goals set out in the *National Development Plan 2015-2019*.



Figure 3

Malagasy mobile market in figures³⁹



Source: GSMA Intelligence database, EY analysis

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



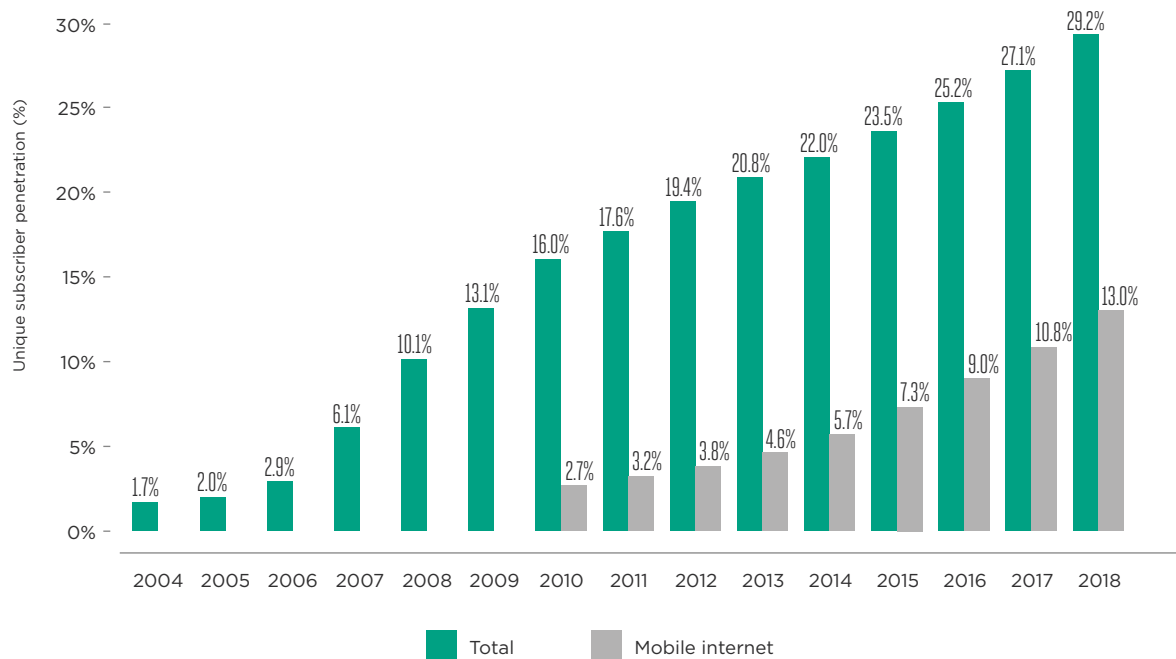
1.2.1 Market penetration and technology migration

The mobile market is expanding in Madagascar, and there exists an opportunity to further increase market penetration and migrate more customers to 3G and 4G technologies

As shown in Figure 4, unique subscriber penetration⁴⁰ in Madagascar increased considerably during the last 15 years. Unique subscriber penetration increased from 1.7% in Q1 2004 to 29.2% by Q1 2018 (equivalent to 35.5% penetration in total connections). About 45% of unique subscribers had access to mobile broadband in Q1 2018. However, there is still considerable room for expansion as 18.5 million people (70.8% of the population) are not connected to the mobile network.

Figure 4

Unique mobile subscriber penetration in Madagascar, 2008-2018



Source: GSMA Intelligence database

As shown in Figure 5, there is considerable scope to increase unique subscriber penetration in Madagascar, as this is low compared to many regional peers. In particular, Madagascar ranks 46th out of 48 in SSA

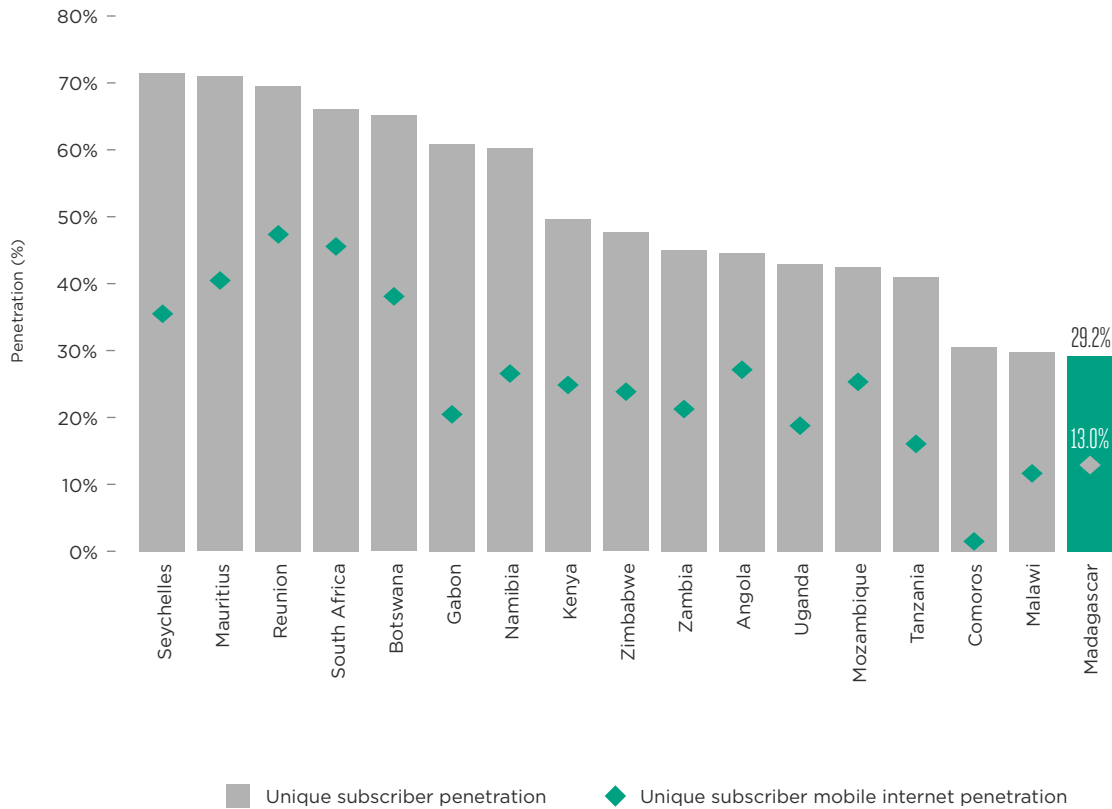
with respect to this indicator. Further, with just 13.0% of people having access to mobile broadband, Madagascar ranks 35th out of 48 in the region for mobile internet unique subscriber penetration.

40. There is an important difference between the number of mobile connections – the metric traditionally used by the industry to measure market size and penetration – and the term ‘unique mobile subscribers’. The latter refers to a single individual that has subscribed to a mobile service and that person can hold multiple mobile connections (i.e. SIM cards).



Figure 5

Mobile penetration (unique subscribers – all and with mobile internet) in selected comparator countries, 2018



Source: GSMA Intelligence database

As shown in Figure 6, the dominant technology in the Malagasy mobile market is 2G, with a penetration rate (total connections) of 22.0% in Q1 2018. However, market penetration is expanding for 3G and 4G services, with 4G projected to become the dominant

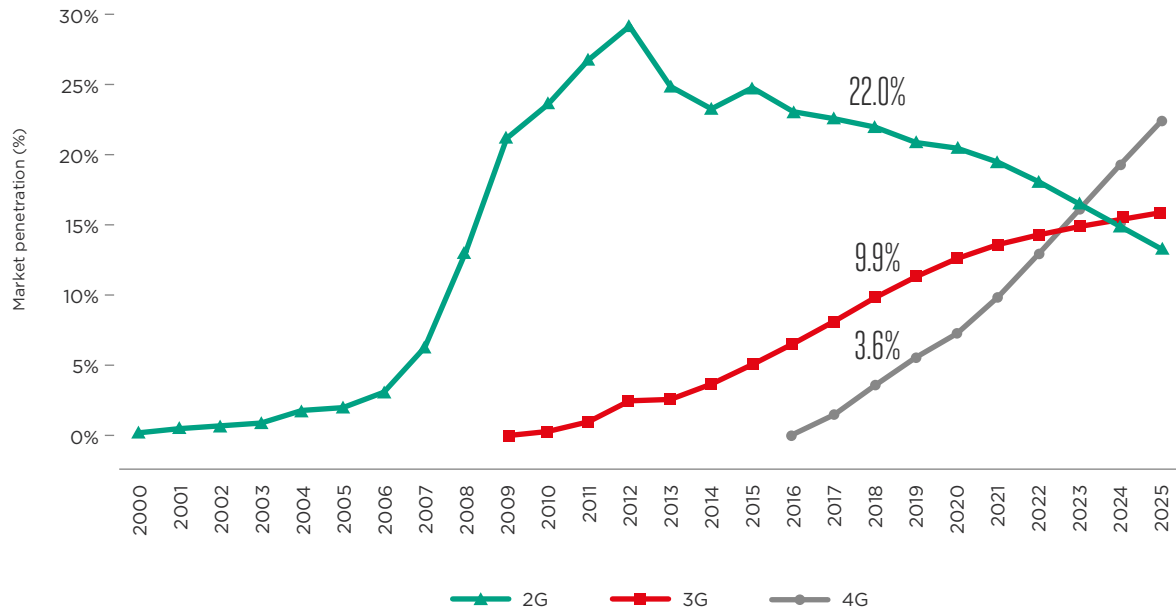
technology by 2024. This is supported by a significant expansion of the network coverage for mobile broadband-enabled services in Madagascar, with 3G and 4G population coverage reaching 63% and 34% respectively in Q1 2018.⁴¹

41. GSMA Intelligence database.



Figure 6

Market penetration rate (total connections), by technology



Source: GSMA Intelligence database

Given a very low level of fixed broadband subscriptions in Madagascar (1 per 1,000 people in 2017),⁴² the expansion of mobile broadband enabled (3G and 4G) technologies will be vital for increasing access to online services and supporting the growth of the digital economy. The tax policy reform agenda should be

targeted at stimulating growth in connectivity, and the use of mobile broadband in Madagascar, both of which would contribute towards achieving the Government's economic and social goals set out in the *National Development Plan 2015-2019*.

42. World Bank databank.

1.2.2 Affordability of mobile services and handsets in Madagascar

Improvements to the affordability of mobile services and handsets are required to promote faster development of the market and increase mobile connectivity in Madagascar

Lack of affordability can represent a significant connectivity barrier, particularly so for the low-income population. 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 capita⁴³ typically have lower penetration rates.⁴⁴ 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.⁴⁵

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

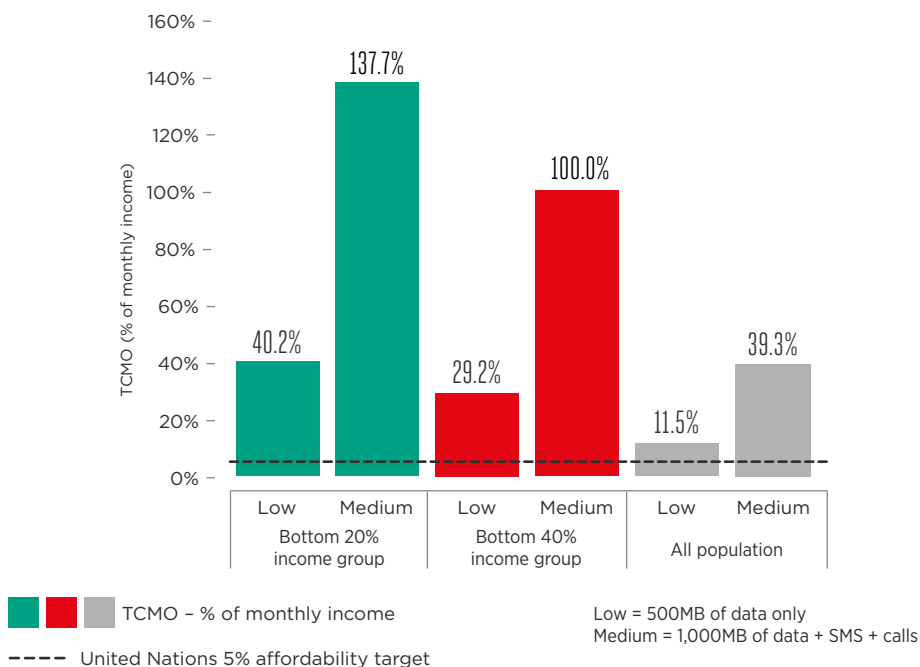
countries, income groups and consumption baskets.⁴⁶

Figure 7 below shows the TCMO as a proportion of monthly income for the two lowest income quintiles in Madagascar, compared to the entire population. At present, even basic packages represent an affordability challenge for Madagascar’s lowest income groups, as the poorest 20% of the Malagasy population would need to spend 40.2% of their monthly earning for a low consumption basket (500MB of data). In Madagascar, in addition to usage and device costs, low electrification rates mean that subscribers incur additional time and cash costs for charging phones. This is particularly a barrier to the adoption of smartphones, which tend to have shorter battery lives compared to more basic handsets.

The TCMO in Madagascar is significantly higher than 5% of monthly income, which is the current UN affordability threshold. More effort is needed to make mobile services more affordable and make progress toward achieving the “1 for 2” UN target (1 GB of data costing less than 2% of monthly income) set for 2025.⁴⁷

Figure 7

TCMO as a proportion of monthly income in Madagascar, 2017



Source: GSMA Intelligence database, Tarifica

43. Defined as Gross National Income (GNI) per capita.

44. 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>.

45. 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.

46. For more detail on the methodology of calculation of the total cost of mobile ownership (TCMO) please see Appendix A. Sources: GSMA Intelligence database, Tarifica.

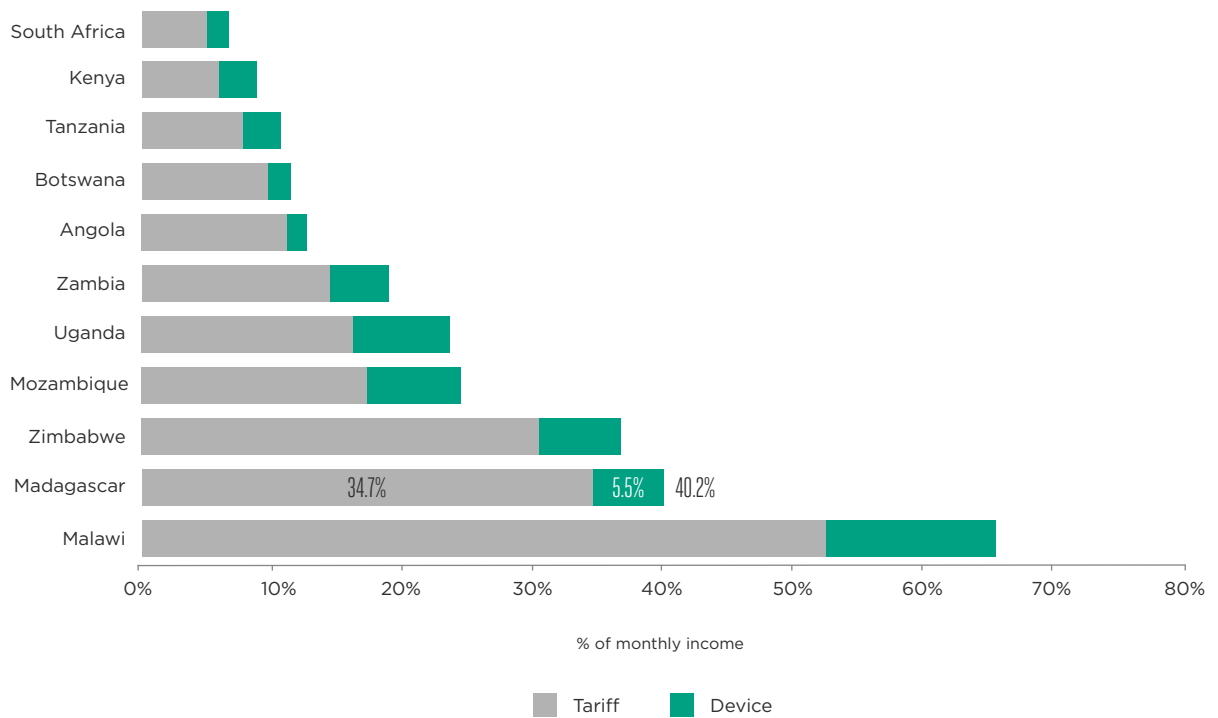
47. Broadband Commission for Sustainable Development, 2018, *2025 Targets: “Connecting the Other Half”*, <https://broadbandcommission.org/Documents/publications/wef2018.pdf>.

As Figure 8 below demonstrates, the TCMO for the bottom 20% of the income distribution (low consumption basket) in Madagascar (40.2% of income) is one of the highest in the region. It is the 5th highest

out of 31 comparator countries. Both tariff cost (34.7% of income) and device cost (5.5% of income) in Madagascar are among the highest in SSA, ranked 5th and 13th out of 31 respectively.

Figure 8

TCMO as a proportion of monthly income for the bottom 20% of income distribution (500MB consumption package), 2017



Source: GSMA Intelligence database, Tarifica

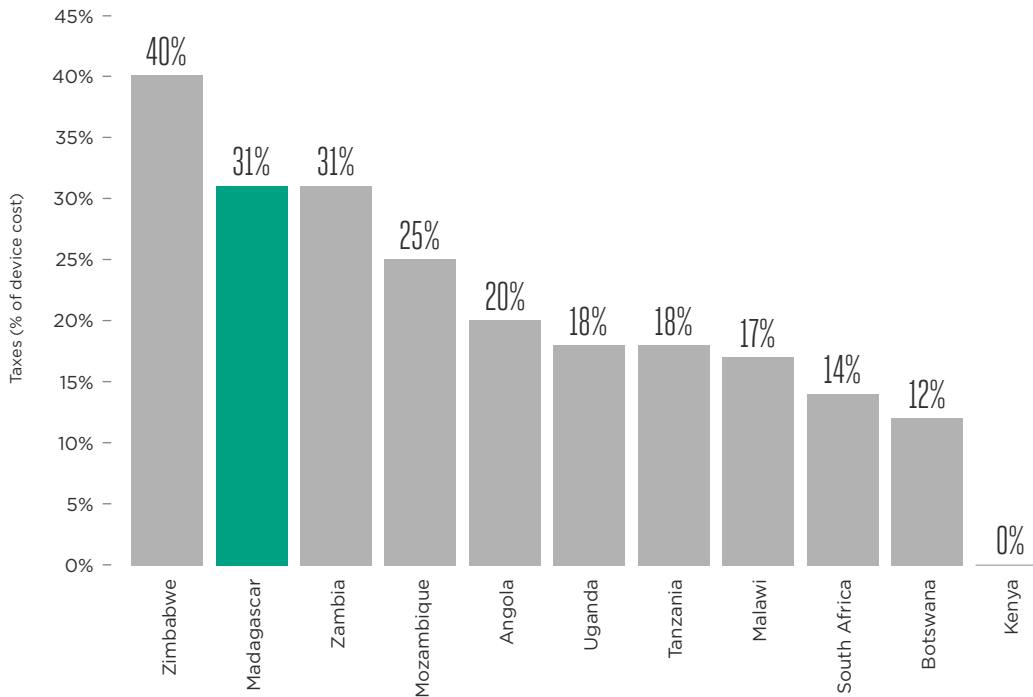


A key reason for a higher handset cost as a percentage of income in Madagascar, compared to the other SSA countries, is a high proportion of taxes comprising the total cost of the device. As shown

in Figure 9 below, taxes on handsets in Madagascar represent a significant share of the total cost of devices per month (31%). This is the 7th highest level out of 31 comparator countries in SSA.

Figure 9

Device taxes as a proportion of total device cost, 2017



Source: GSMA Intelligence database, Tarifica

Low affordability of mobile services and mobile devices in Madagascar, especially for the bottom income groups of the population, represents a significant barrier for expansion of the mobile sector and knowledge

economy. Improved affordability and connectivity would allow the Malagasy population to enjoy many benefits of the mobile economy and support the Government in achieving its development objectives.

1.2.3 Investment environment and opportunities for development

An average of 18% of revenue per annum has been invested by mobile operators in Madagascar over the past ten years. However further investment is required to improve both network coverage and the quality of mobile data services

In order to improve the availability and quality of mobile services, and to manage increasing levels of network traffic, significant levels of capital expenditure are required to finance investment in network infrastructure. In Madagascar, the economics of mobile network expansion is made more challenging due to limitations of the road and electricity infrastructure.

Driven by significant investment by Madagascar’s mobile operators, network coverage for mobile broadband-enabled services in Madagascar has

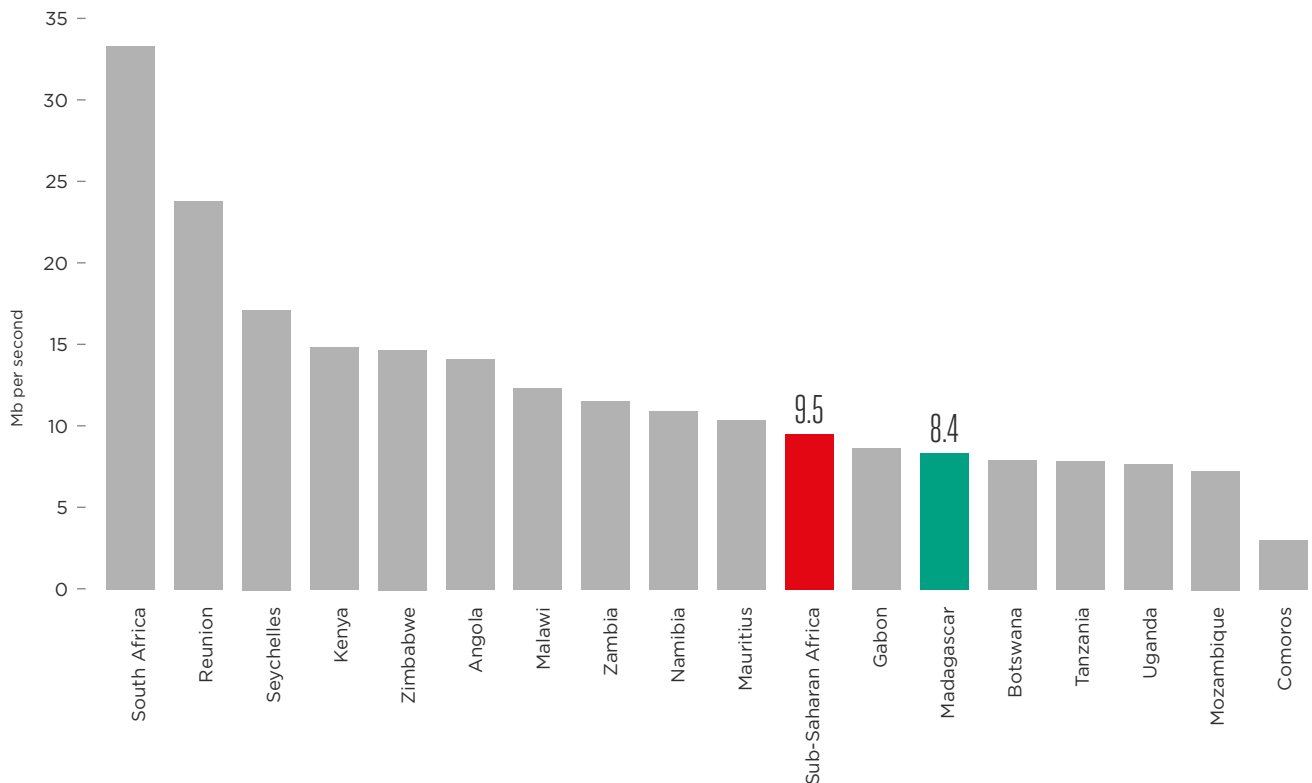
expanded significantly during the past decade, with 3G and 4G population coverage reaching 63% and 34% respectively in Q1 2018.⁴⁸

Beyond increasing the availability of mobile services via network roll-out, further improvements in network quality are required in Madagascar to increase the reliability and speed of mobile data services and also to address growing demand for mobile data traffic. Analysis of Speedtest Intelligence® data from Ookla® (see Figure 10) demonstrates that, at 8.4Mb per second, the average download speed across all technologies in Madagascar is below the regional average (9.5Mb per second). In particular, Madagascar ranks 26th out of 48 SSA countries in terms of download speed using mobile broadband.

The availability and quality of mobile broadband play a crucial role in enabling greater online access and digital inclusion within Madagascar, as penetration of fixed internet is very low at 1 subscription per 1,000 people.⁴⁹

Figure 10

Download speed (Mb per second) – Madagascar and comparator countries, 2017



Source: Speedtest Intelligence® data from Ookla®

48. GSMA Intelligence database.

49. World Bank databank.

1.3 The socio-economic contribution of the mobile sector

Mobile operators contributed \$67 million in direct value added to the economy in 2017

Total mobile sector revenues were \$238 million in 2017,⁵⁰ equivalent to 1.8% of Malagasy GDP. Mobile operators contributed approximately \$67 million of direct economic value to Madagascar in 2017 (0.5% of GDP).⁵¹ This contribution to GDP is relatively low compared to international benchmarks, suggesting considerable scope for expansion.

The mobile sector also supports a much wider mobile ecosystem, including mobile distribution providers and retail companies. These companies create further economic activity in Madagascar 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. Improvements in mobile connectivity can improve communication and trade within an economy, while also making a country more attractive for foreign investment. Improved connectivity can also boost tourism, and allow firms to access a broader pool of labour.⁵²

The effects of mobile connectivity on an economy are largely delivered through its impact on productivity. 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% on average.⁵³ Further, a literature review by the International Telecommunication Union (ITU) finds that a 10% increase in mobile broadband penetration leads to an increase in GDP of between 0.25% and 1.38%.⁵⁴

Mobile networks promote digital inclusion and can bridge the digital divide

Where fixed broadband coverage is low, mobile networks are central to promoting digital inclusion, due to the lower cost of network roll-out. Mobile technology also removes other barriers to access broadband services including the affordability of PC or laptop ownership and access to a bank account. This is particularly true for Madagascar's large rural population, which represents 63.5% of the total population, as it will need to rely on mobile services to gain improved access to the knowledge and digital economy.

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

Mobile money services have the power to transform financial systems and promote a move away from cash based economies. They provide affordable financial services to low-income subscribers and enable safety, security and convenience for financial transactions for those who do not have access to traditional financial services. Furthermore, the digitalisation of person-to-government (P2G) and business-to-government (B2G) payments can generate significant efficiencies, while encouraging greater financial inclusion within the economy.⁵⁵

The use of mobile money in Madagascar has been increasing in recent years, with more Malagasy people owning a mobile money account than an account with a financial institution in 2017. The proportion of adults having a mobile money account increased to 12.1% in 2017 from 4.4% in 2014. However, Madagascar still lags behind many other Southern and Eastern African countries, including Kenya (72.9%), Uganda (50.6%), Zimbabwe (48.6%), Mozambique (21.9%) and Malawi (20.3%).⁵⁶ Therefore, there exists significant potential to increase the role of electronic payments, by further promoting mobile payment platforms.

50. GSMA Intelligence database.

51. *ibid.*

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

53. 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 and LECC, 2009, *Economic Impact of Broadband: An Empirical Study*, http://www.itu.int/net/wsis/stocktaking/docs/activities/1286203195/Report_BroadbandStudy_LECC_March6%5B1%5D.pdf.

54. 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.

55. See examples of digitalisation of P2G and B2G payments in Better than Cash Alliance, 2016, *Person-to-Government Payments: Lessons from Tanzania's Digitization Efforts*; GSMA, 2017, *Person-to-Government (P2G) Payment Digitisation: Lessons from Kenya*; GSMA, 2018, *P2G Payments via Mobile Money: Unlocking Opportunity for Consumers, Governments and Providers*.

56. World Bank, Global Findex database.



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.⁵⁷ Furthermore, mobile services can be used to overcome traditional barriers to accessing essential information and services, such as geographic isolation, gender disparities and social stigmas.⁵⁸

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. Mobile phone technology has been shown as a potential enabler of higher literacy in emerging economies, by teaching individuals to read and providing access to reading materials.⁶⁰

CASE STUDY

Mobile technology for community health⁵⁹

In some areas in Madagascar, which are not covered by professional healthcare services, community health volunteers play a crucial role in raising awareness of health, and treating simple illnesses. In 2017, the USAID Mikolo Project and the Ministry of Public Health developed a tailored smartphone application that can be used by volunteers to guide them through the case management process and provide a record of all activity that can be supervised by staff at healthcare centres.

After a successful implementation of a pilot programme between April and September 2017, involving 50 volunteers, the Ministry of Public Health decided to roll out this m-Health programme to an additional 550 volunteers throughout four regions of Madagascar.

CASE STUDY

Digital schools in Madagascar⁶¹

In 2014, the Ministry for Education of Madagascar launched a programme of digital education in schools. Since then, the initiative, supported by Orange Foundation, was rolled out more widely across the country. In the school year starting in 2016, a total of more than 15,000 students attended digital schools.

As part of the programme, school children are provided with access to digital education kits, which enable mobile access to a wide range of educational resources, including school curriculum materials and books, as well as other online educational content, for example, Khan Academy resources.⁶²

57. University of Cambridge, 2011, *Mobile Communications for Medical Care*, <http://www.csap.cam.ac.uk/media/uploads/files/1/mobile-communications-for-medical-care.pdf>.

58. N. McKee et al., 2004, "Strategic Communication in the HIV/AIDS Epidemic"; T. A. Gurman et al., 2012, "Effectiveness of mHealth Behavior Change Communication Interventions in Developing Countries: A Systematic Review of the Literature"; J.G. Khan et al., 2010, "Mobile Health Needs and Opportunities in Developing Countries".

59. Management Sciences for Health, 2018, "Mobile Technology for Community Health", <https://www.msh.org/news-events/stories/mobile-technology-for-community-health>.

60. World Bank, 2014, "What we are learning about reading on mobile phones and devices in developing countries", <https://blogs.worldbank.org/edutech/governance/reading-mobile-phones>.

61. Orange Foundation, 2016, *Digital schools in Madagascar: 15,000 more beneficiaries at the start of the 2016 school year*, <https://www.fondationorange.com/Digital-schools-in-Madagascar-15-000-more-beneficiaries-at-the-start-of-the>.

62. Orange Foundation, 2015, *Digital technology is changing education in Madagascar*, <https://www.fondationorange.com/Digital-technology-is-changing-education-in-Madagascar>.

Gender equality

Mobile technologies 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

In 2015, Madagascar ranked 80th out of 144 in the Gender gap index by the World Economic Forum.⁶⁴ Greater accessibility and improved affordability of mobile services would contribute towards achieving greater gender equality and empowerment of women in Madagascar.

CASE STUDY

Information via mobile to tackle gender-based violence⁶⁵

3-2-1 is a service from HNI to provide a gender mobile information service to women in Madagascar. This provides an opportunity for mobile customers to improve their knowledge of human rights and education. In the six months after it was launched, the service had been accessed by over 230,000 unique users, with over half a million queries.

A survey of female users of this service has demonstrated that it contributed to an increased SIM and mobile ownership among women, improved knowledge of human rights, education and gender equality and improved economic and political engagement. After accessing some of the gender based content, 91% of female users reported an increase in their decision making power within their household.



63. 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/2016/03/GSM0001_03232015_GSMAReport_Executive-Summary_NEWGRAYS-web.pdf.

64. World Economic Forum, 2017, *The Global Gender Gap Report 2017*, http://www3.weforum.org/docs/WEF_GGGR_2017.pdf.

65. GSMA, 2015, *HNI Madagascar: Information via Mobile to Tackle Gender-Based Violence*, <https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2015/08/HNI-case-study-final-1.pdf>.



2. Tax contribution of the mobile sector in Madagascar

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

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

Value added tax (VAT)	20%
Customs duties on handsets, scratch cards and SIM cards	5% - 20%
Excise duty	8%

Source: EY 2018 Worldwide VAT, GST and Sales Tax Guide and Madagascar's legislation

- **VAT.** The value of the supply of mobile goods and services is taxed at the general rate of 20%.
- **Excise duty.** Mobile consumers pay an excise duty of 8% of the price for mobile data, messages and voice.
- **Customs duty.** A customs duty of 5% is applied on the customs value of mobile handsets. Furthermore, a tariff of 20% is applied on the customs value of scratch cards and SIM cards.

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

Corporate income tax	20%
Personal income tax on employment	20%
Social security contributions	18%
Advertising tax	1%
Stamp duty	Various
Customs duty (mobile equipment)	5% or 20%

Source: EY 2018 Worldwide Corporate Tax Guide, EY analysis, IBFD and Madagascar's legislation

- **Corporate income tax.** Companies incorporated in Madagascar are subject to tax on their worldwide income. Foreign companies are subject to tax on income derived from activities within Madagascar. The standard rate of corporate income tax is 20%.
- **Personal income tax on employment.** Madagascar's income tax system differentiates between employment income, non-employment income, and investment income. Employment income is levied on a monthly basis and is withheld by the employer. The tax rate is 20% for monthly taxable income over MGA 250,000. The rate is 0% for income up to MGA 250,000.
- **Social security contributions.** Employers pay contributions to the CNAP (*Caisse Nationale de Prévoyance Sociale*), including pensions and compensation for industrial accidents and occupational diseases. The employer contribution rate is 13% on the gross monthly remuneration.

In addition, employers pay monthly contributions to an OSIE (*organisations sanitaires inter-entreprises*) for medical insurance. The employer contribution rate is 5% on the gross monthly remuneration.

- **Advertising tax.** Audio-visual advertisements are taxed with a rate of 1% on the amount paid by advertisers (excluding agency fees and VAT).
- **Stamp duty.** The specific rate varies between MGA 2,000 and MGA 16,000 depending on the type of deed or act.
- **Customs duty.** Imports of base stations are levied at a rate of 5% on the customs value. Furthermore, a customs duty of 10% is applied to equipment parts. A tariff of 20% applies on the customs value of other network equipment.

In addition to 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

One-off licence fees	Various
One-off spectrum fees	Various
Annual spectrum fees	Various
Regulation taxes	<ul style="list-style-type: none"> ▶ 2% - telecommunications and ICT sector ▶ 2% - contribution to the Telecommunications Development Fund ▶ 1% - terminal sales
Tax on pylons, relays, antennas or masts	MGA 600,000 per antenna, mast or relay MGA 1,000,000 per pylon
Copyright fee	6%

Source: Local legislation and operator data

- **One-off licence fees.** Operators pay a one-off fee set by the regulator in order to obtain a licence.
- **Spectrum fees.** Operators pay a one-off fee for the initial right to use the spectrum. Subsequently they pay annual spectrum fees on an annual basis.
- **Regulation taxes.** Mobile operators are subject to a 2% regulation tax on the telecommunications and ICT sector, and a 2% regulation tax contribution to the Telecommunication Development Fund. Both rates are applied on the total revenue (less the revenue from the sale of terminal equipment).
- **Tax on pylons, relays, antennas or masts.** The rates vary across provinces subject to a maximum of MGA 600,000 per antenna, masts and relays, and of MGA 1,000,000 per pylon.
- **Copyright fee.** A 6% fee is paid on the free on board (FOB) price of each mobile handset for the reproduction of copyright material.

Furthermore, operators also pay a 1% regulation tax as a device provider on the revenue from the sale of terminal equipment.

2.3 Tax contribution of the mobile sector

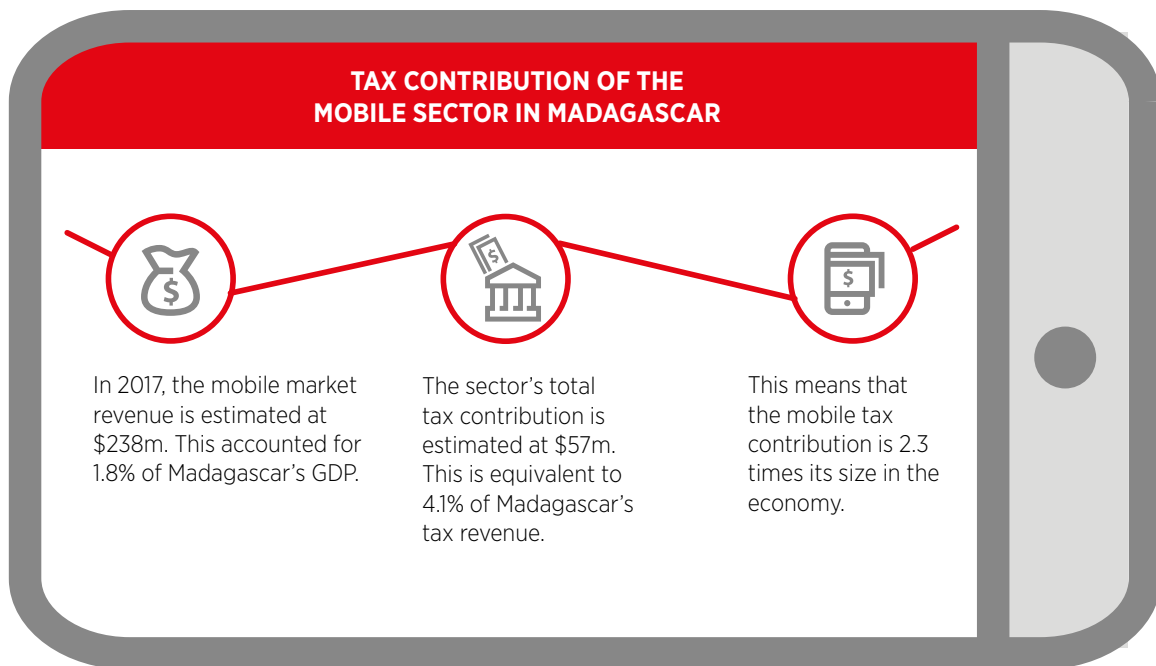
In 2017, the total tax contribution was estimated at \$57 million. This represents 24% of the total market revenue

The mobile sector makes a large contribution in taxes and fees relative to its economic footprint. While

the mobile market revenue accounted for 1.8% of Madagascar's GDP,⁶⁶ the sector's tax and fee payments accounted for around 4.1% of government total tax revenue.⁶⁷ This means that the mobile tax contribution is 2.3 times its size in the economy.

Figure 11

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



Source: GSMA Intelligence database, EY analysis and operator data

66. Madagascar's GDP was of \$13.1 billion in 2017. Source: Oxford Economics.

67. The total tax revenue was estimated at \$1,389 million in 2017. Source: Ministère des finances et du Budget, *Loi de Finances Rectificative 2018*, <http://www.dgbudget.mg/lois/LFR>.

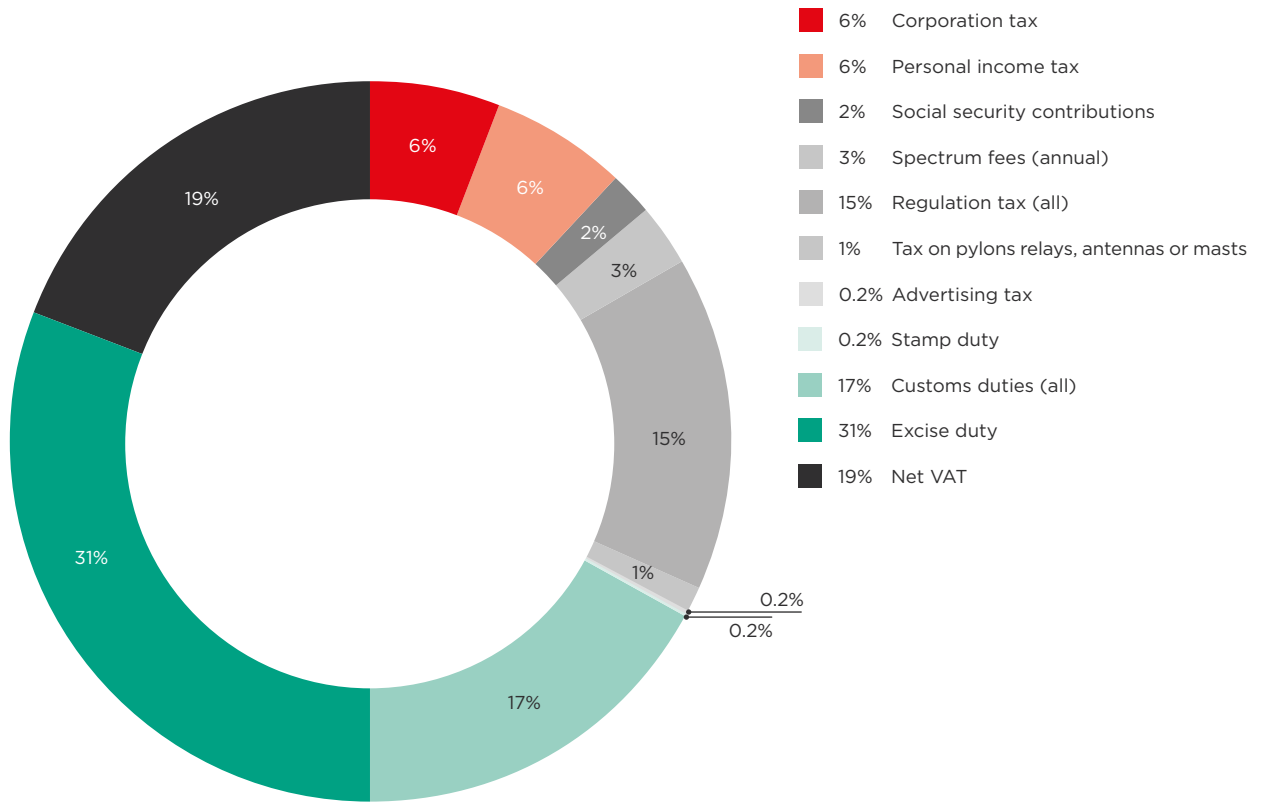


As shown in Figure 12, in Madagascar, excise taxes are the largest sources of tax revenue generated by the mobile

sector, responsible for 31% of the overall tax revenues, followed by VAT (19%) and customs duties (17%).

Figure 12

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

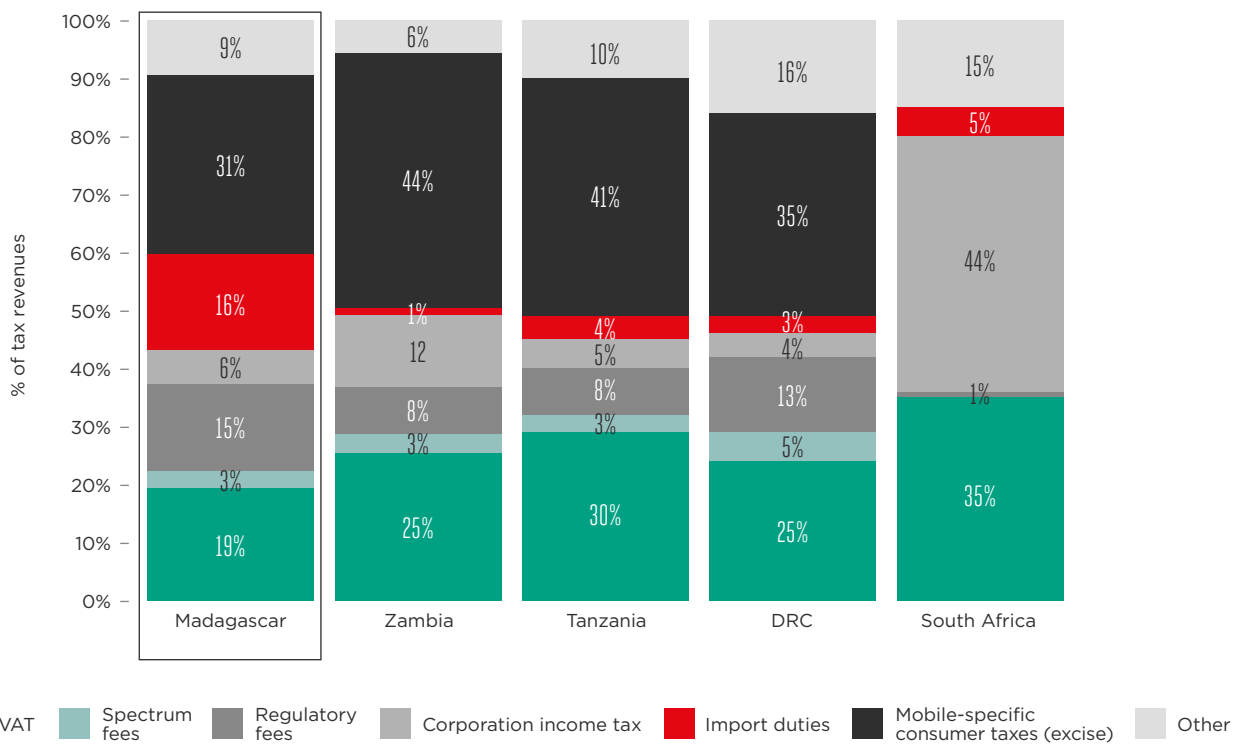


Source: GSMA Intelligence database, EY analysis and operator data

Madagascar has the highest proportions of import duties (16%) and regulatory fees (15%) when looking at different taxes as a percentage of overall tax revenues in a sample of regional countries. This is visually depicted in Figure 13.

Figure 13

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



Source: GSMA Intelligence database, EY analysis and operator data

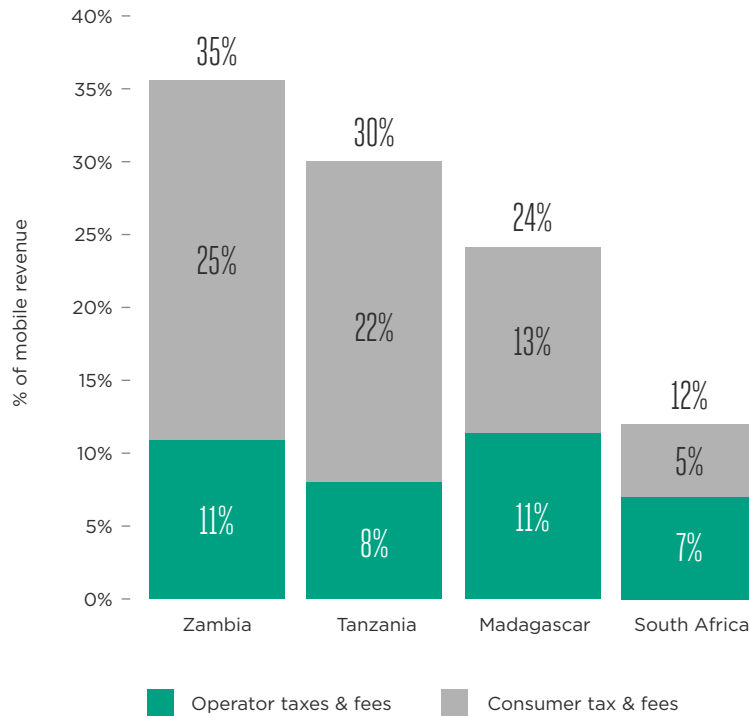


In Madagascar, the tax burden is 24%. Out of this, operators pay 11% of the total taxes, while consumers have a burden of 13%. As shown in Figure 14,

Madagascar and Zambia have the highest tax burden on operators (both at 11%).

Figure 14

Operator vs consumer taxes (as percentage of mobile sector revenue)

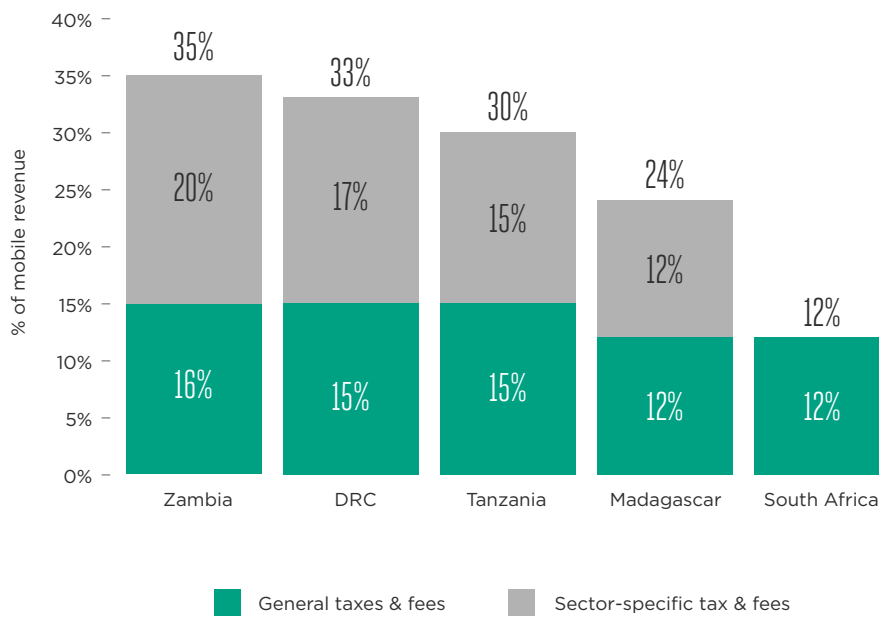


Source: GSMA Intelligence database, EY analysis and operator data

General taxes are equivalent to around 12% of total mobile sector revenue in Madagascar, while mobile-specific taxes are equivalent to 12%.

Figure 15

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



Source: GSMA Intelligence database, EY analysis and operator data



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

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

In order to prevent such unintended consequences, certain principles of tax policy design have been

developed by international organisations such as the International Monetary Fund (IMF), the Organisation for Economic Cooperation and Development (OECD), the United Nations (UN) and the World Bank (WB).⁶⁸

By applying these principles, this section identifies three policy options that could enhance the tax environment in Madagascar.



68. IMF, OECD, UN and WBG, 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>.

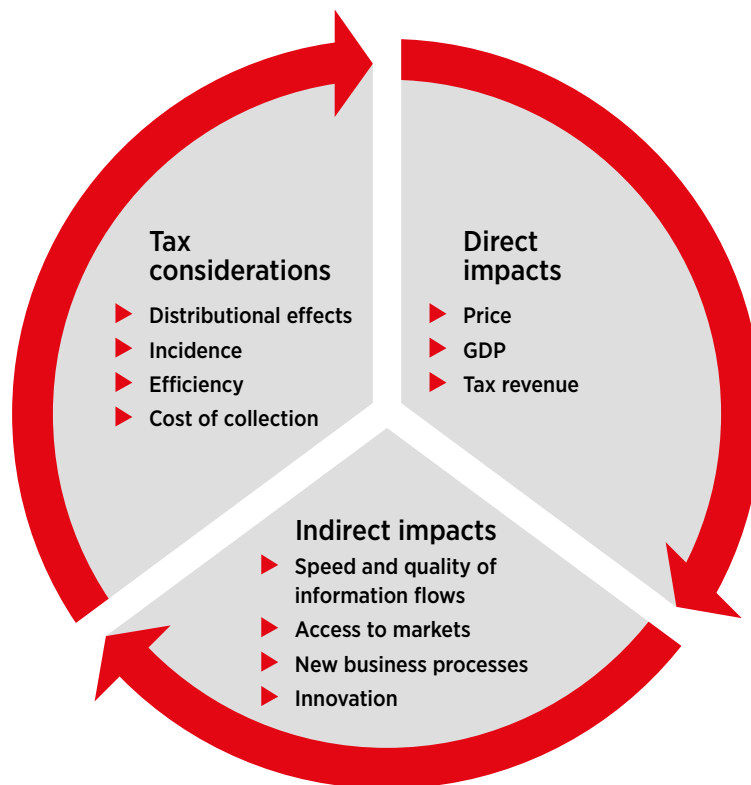
3.1 Principles of taxation applying to the mobile sector

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

- **Taxes should not discourage investment.** A stable and transparent tax system in line with international standards is a strategy that would deliver sustained investment.⁶⁹
- **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.⁷⁰
- **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”⁷¹ by avoiding the imposition of regressive taxes which has a larger impact on consumers of mobile services in the lower income groups.⁷²
- **Taxes should not undermine the affordability of mobile services,** as excessive taxation can increase the cost of handsets and mobile services.⁷³ Furthermore, the tax collection should be allocated to improve mobile infrastructure, thereby increasing the coverage and digital inclusion, especially in rural zones.
- **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.⁷⁴
- **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.⁷⁵

3.2 An assessment of the mobile sector taxation in Madagascar

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

- **The tax system of Madagascar is broad-based, but there are various mobile-specific taxes and regulatory fees.** There

are still various mobile-specific taxes on both consumers and mobile service operators.

As described in section 2, mobile consumers are subject to an excise duty on mobile services. They also pay customs duty on handsets. At the same time, mobile operators

69. *ibid.*

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

71. *ibid.*

72. 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>.

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

74. 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>.

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

pay multiple regulation taxes. They also pay a tax on pylons, relays, antennas or masts.

From a tax policy perspective, the use of specific taxes should be limited, as excessive levels of taxation can have a negative impact on the development of the sector and accessibility for lower income groups in particular.

- **The current tax system has a high incidence on the mobile sector.** As shown in section 2.3, the tax burden in Madagascar comes to 24% of the total market revenue. This tax burden can undermine the affordability of mobile services and make the Madagascar system less conducive to investment. In *Vision 2024*, the World Bank also acknowledged the impact of the tax burden on mobile services.⁷⁶
- **The tax burden limits the positive externalities generated by the industry.** The mobile sector is pivotal for the growth of the wider economy. A simpler and more equitable tax system should encourage the expansion of the sector and the digital inclusion of the most disadvantaged people. Furthermore, spectrum fees would be normally set at a reasonable level to cover the costs of spectrum

management, to reduce the risk of undermining the ability of operators to invest additional revenue into the expansion of the network. This would also support Madagascar in achieving the objectives set out in *Vision 2024* to create a tax system more conducive to investment.⁷⁷

- **There is scope to improve the tax system.** Under the category measuring the ease of paying taxes, the World Bank Doing Business 2018 report places Madagascar 131 out of 190 countries. This indicates a significant opportunity to improve the tax system.

Compared to other countries in the Sub-Saharan African region, Madagascar's tax system is better than the average in three out of four categories (tax payments, time, and total tax and contribution). However, Madagascar's ranking suffers from a poor ranking in the post filing index category.

There is an opportunity to improve the administration of the tax system to increase Madagascar's competitiveness in the region. The leading best performers worldwide also offer a model for Madagascar to emulate and improve its global competitiveness.

Table 4

Madagascar tax index, 2018

Indicator	Madagascar	Sub-Saharan Africa	OECD high income	Overall best performer
Tax payments (number per year)	23	37.2	10.9	3 (Hong Kong SAR, China)
Time (hours per year)	183	280.8	160.7	50 (Estonia)
Total tax and contribution (% of profit)	38.1	46.8	40.1	18.5 (32 economies)
Post filing index (0-100)	21.84	54.39	83.45	99.38 (Estonia)

Source: World Bank, Doing Business 2018⁷⁸

76. World Bank, 2014, *Opportunités et Défis pour une Croissance Inclusive et Résiliente*, <http://documents.worldbank.org/curated/en/130911468086644653/pdf/883230REPLACEM00Box385221B00PUBLICO.pdf>.

77. *ibid.*

78. *Doing Business* presents quantitative indicators on business regulations and the protection of property rights that can be compared across 190 economies and over time. Source: World Bank, Doing Business 2018: *Reforming to Create Jobs*, <http://www.doingbusiness.org/en/reports/global-reports/doing-business-2018>.

3.3 Options for tax reform in the mobile sector to develop the digital economy in Madagascar

Based on the preceding assessment, this report identifies three options to reform and improve the current tax system:

- **Option 1** – Elimination of excise duty on mobile services;
- **Option 2** – Elimination of customs duties on handsets; and
- **Option 3** – Reduction in the regulation tax on the telecommunications and ICT sector.

As mentioned in section 2.3, Madagascar has one of the highest proportions of import duties and regulatory fees when looking at different taxes as a percentage of overall tax revenues in a sample of regional countries. These reforms should help alleviate the tax burden and complexity on the mobile sector. This should 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 and reduce the digital divide.

These reforms should also help Madagascar progress towards the goals and objectives set out by the World Bank in *Vision 2024*, the vision document for Madagascar's future development.⁷⁹ These goals and objectives include:

- Accessible, affordable and widely used mobile services, thus bringing major economic benefits (wealth creation and employment) as well as social and security progress in the country;
- Set out the best possible legal framework for both operators and users, and a stable investment environment; and
- Rationalise the taxation of the sector in order to allow for further private sector investment in the ICT sector.

3.3.1 Elimination of excise duty on mobile services

Excise duty currently applies at a rate of 8% on mobile services. This duty applies to the provision of voice, data and text (SMS). In order to increase the affordability of mobile services and improve the business environment of Madagascar, one option for reform would be to eliminate the excise duty.

The rationale for change

- Given their positive externalities, mobile services would not normally be taxed similarly to goods with negative externalities. By removing this excise duty, Madagascar could improve the affordability of mobile services, thereby encouraging the access and adoption of communication services in line with its policy objectives.
- Excise duties can negatively impact on investment and market development. A reduction in excise duties should help businesses to maximise the potential of mobile services to improve efficiency and customer service. This should lead to increased productivity across the economy leading to GDP growth.
- A greater penetration and usage of mobile services should in turn have further economic and socio-economic benefits for Madagascar:
 - There should be increased revenue for mobile operators, leading to greater levels of investment in infrastructure for the future;
 - There should be increased tax receipts in the medium term resulting from an increase in the use of mobile services; and
 - There should be increased productivity across the economy leading to increases in GDP.
- This would also be consistent with the strategy outlined in *Vision 2024*, which has identified that excise taxation on mobile services, as if they were luxury items, is one of the factors that do not allow further development of the sector.⁸⁰

79. World Bank, 2014, *Opportunités et Défis pour une Croissance Inclusive et Résiliente*, <http://documents.worldbank.org/curated/en/13091146808644653/pdf/883230REPLACEM00Box385221B00PUBLICO.pdf>.

80. *ibid.*

3.3.2 Elimination of customs duties on handsets

A customs duty of 5% is payable on imported handsets. This increases the cost of mobile telephones for consumers, adversely affecting the affordability and accessibility of mobile phones and services. One option for reform would be to eliminate the customs duties on handsets.

The rationale for change

- The elimination of customs duties should improve the affordability of mobile access for the citizens of Madagascar, especially for those in the low-income category. This should increase the penetration rate in Madagascar for mobile telephones. This should also help to make progress toward achieving the “1 for 2” UN target (1 GB of data costing less than 2% of monthly income) set for 2025.⁸¹
- The greater affordability of mobile handsets should also lead to increased mobile internet penetration rate (3G and 4G) which is currently low in Madagascar. As mentioned in section 1.2.1, with only 13.0% of people having access to mobile broadband, Madagascar ranks 35th in the SSA region in respect of mobile internet unique subscriber penetration.
- Greater mobile access should lead to increased digital inclusion and more Malagasy should have access to a wider range of digital services, for example, mobile health, learning and financial services.
- This would also be consistent with *Vision 2024*, in which the World Bank has identified the custom duties on handsets as one of the factors that do not allow further development in the sector and which could possibly contribute to the creation of an illicit market of handsets.⁸²

3.3.3 Reduction in the regulation tax on the telecommunications and ICT sector

Regulation taxes based on revenue constitute a significant tax burden for mobile operators. In addition to a 2% regulation tax on the telecommunications and ICT sector, mobile operators must pay a further 2% regulation tax as a contribution to development

funds. They pay a further 1% regulation tax on terminal sales. One option for reform would be a reduction in the regulation tax on the telecommunications and ICT sector from 2% to 1% of revenue.

The rationale for change

- A 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.
- A reduction in the regulation tax burden should encourage greater investment in the telecommunications sector. It should boost incentives to expand mobile networks and translate into a greater coverage and better connectivity, especially in rural zones.
- The elimination of the charges should help to improve Madagascar’s business environment, as Madagascar currently ranks 162 out of 190 countries overall in the Doing Business index of the World Bank. For businesses trading with Madagascar, the cost of communication should be reduced, which should improve the attractiveness of Madagascar as a destination for foreign direct investment.
- A reduction in the tax rate would create an improved investment environment for mobile operators, allowing for:
 - Increased 3G and 4G coverage, enhancing digital inclusion;
 - Improved coverage would allow greater mobile penetration, particularly for mobile broadband enabled technologies;
 - Increased economic activity, driving improved tax receipts for the Government in the medium term.
- In *Vision 2024*, the World Bank has noted the importance of the tax system to develop further the sector.⁸³ Lowering the regulatory tax burden on operators should help to make the tax system more conducive to investment.

81. Broadband Commission for Sustainable Development, 2018, *2025 Targets: “Connecting the Other Half”*, <https://broadbandcommission.org/Documents/publications/wef2018.pdf>.

82. *ibid.*

83. World Bank, 2014, *Opportunités et Défis pour une Croissance Inclusive et Résiliente*, <http://documents.worldbank.org/curated/en/130911468086644653/pdf/883230REPLACEMENTBox385221B00PUBLIC0.pdf>.

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 Madagascar 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 enable 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,⁸⁴ the increasing use of digital platforms 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, digital 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.⁸⁵

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.⁸⁶ 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.⁸⁷
- In Rwanda, in the two years since the introduction of electronic cash registers in March 2013, VAT collected on sales increased by 20%.⁸⁸
- In Mexico, an additional 4.2 million micro-businesses were brought into the formal economy after Mexico introduced mandatory electronic invoicing.⁸⁹
- 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.⁹⁰
- The Australian Tax Office has incorporated a tool in its mobile app allowing 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.⁹¹
- 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.⁹²
- Ghana has an existing e-Government portal

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

85. *ibid.*

86. *ibid.*

87. *ibid.*

88. *ibid.*

89. *ibid.*

90. *ibid.*

91. *ibid.*

92. 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



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).⁹³

- In Côte d'Ivoire 99% 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.⁹⁴

Some of the successful experiences identified above could be replicated in Madagascar. A key objective of the fiscal policy, as stated by the Government of Madagascar in the *National Development Plan 2015-2019*, is to increase tax revenue collection by

expanding the tax base and recovering tax payments from the informal sector.⁹⁵ Innovative digital solutions, such as person-to-government (P2G) initiatives, can help to achieve these goals.

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

94. 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.

95. Ministère de l'Economie et de la Planification, 2015, *Plan National de Développement 2015-2019*, https://www.cabri-sbo.org/uploads/bia/madagascar_2015_planning_external_national_plan_author_region_french_.pdf.



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

4.1 Options for further tax reform to increase digital inclusion

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

- **Elimination of excise duty on mobile services.**⁹⁶ This tax reform would result in a significant reduction in the effective price of mobile services, leading to increased demand by households and businesses and driving a wider expansion in the Malagasy economy. A share of the tax saving would be also reinvested by mobile operators into both the expansion and upgrade of mobile networks;
- **Elimination of customs duties on handsets.**⁹⁷ Elimination of the customs duty on imported handsets would lead to a significant improvement of the affordability of mobile ownership by Malagasy people, especially those at the bottom of the income pyramid. This would drive an

increase in mobile penetration and usage of mobile services, with most new subscribers coming from a low-income background; and

- **Reduction in the regulation tax on the telecommunications and ICT sector from 2% to 1%.** This scenario reduces the regulation tax on the telecommunications and ICT sector from 2% to 1% of revenue for the mobile industry.⁹⁸ This tax policy reform would reduce the tax burden on mobile operators and result in tax savings, which would be used to both reduce prices of mobile services for subscribers and to increase investment into mobile networks.

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 further tax reforms have been modelled, alternative scenarios and combinations of these reforms are also possible.⁹⁹

4.2 Approach to assessing the quantitative impacts of further 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 Malagasy mobile sector and the Malagasy economy as a whole. While a combination of these tax reforms

would be likely to lead to beneficial economic impacts for Madagascar, 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).

96. The economic modelling was performed before the enactment of the Finance Act 2019 and is based on a pre-reform 10% rate.

97. The economic modelling was performed before the enactment of the Finance Act 2019 and is based on a pre-reform 10% rate.

98. This scenario applies the tax cut to the mobile sector only and does not consider the wider telecom and ICT industries.

99. 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.

A model of the Malagasy mobile sector has been created to calculate the impact on the sector from each of the tax policy scenarios. This includes the change in subscribers, usage, technology, revenues, profits, reinvestment and increased network capacity in the sector.

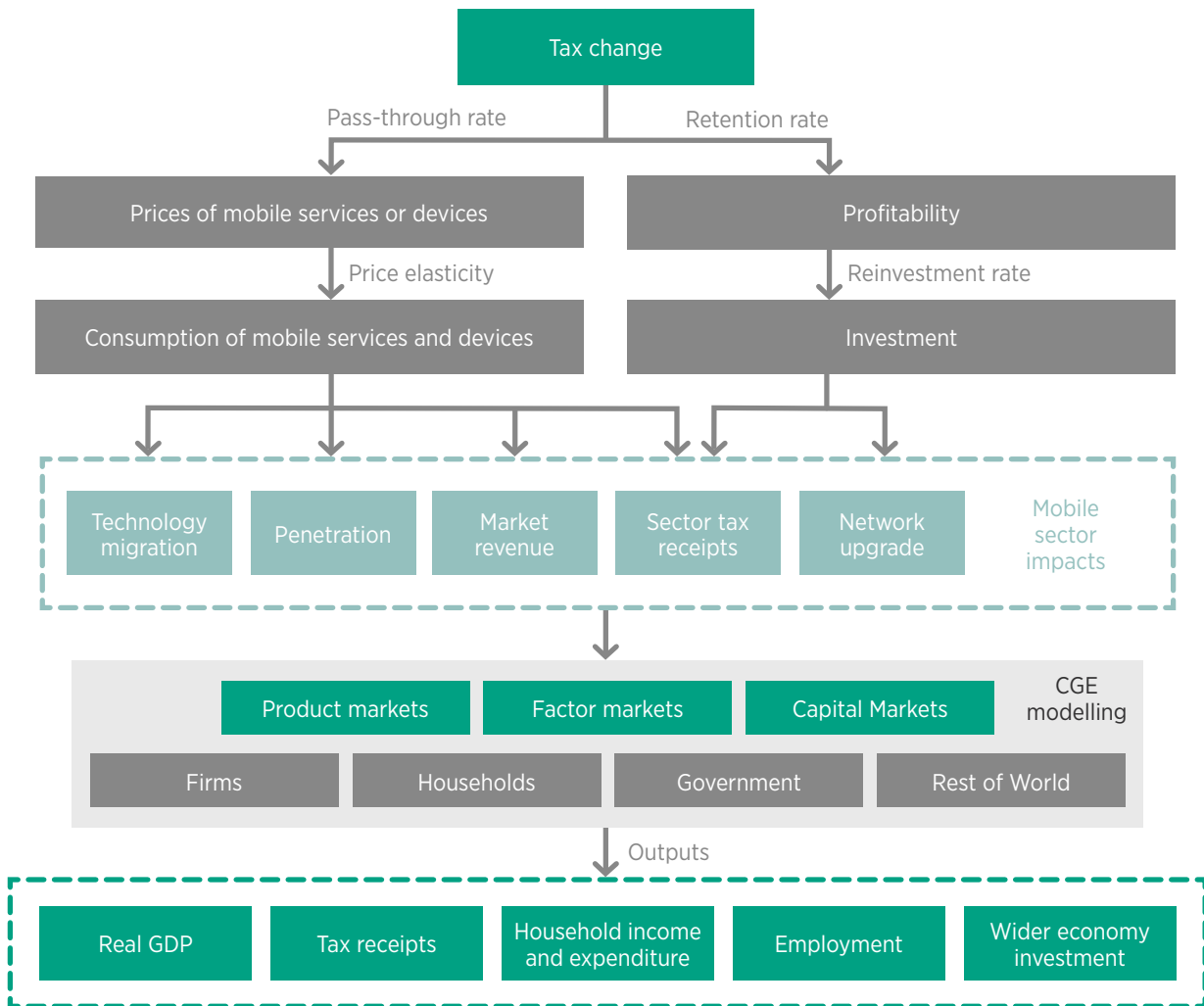
The wider economic impacts of each tax policy scenario are assessed via a ‘Computable General Equilibrium’ (CGE) model, namely the standard version of the Global Trade Analysis Project (GTAP) model and its associated dataset.¹⁰⁰ The GTAP model

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).¹⁰¹

A schematic of the modelling approach used in this study is shown in Figure 17 below.¹⁰²

Figure 17

Overview of the modelling approach



Source: EY analysis

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

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

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

4.3 Elimination of excise duty on mobile services

As shown in Section 1, affordability of mobile ownership in Madagascar needs to be improved in order to progress towards meeting the current 5% UN affordability criteria and the 2025 UN “1 for 2” affordability target,¹⁰³ incentivise the take-up and increase the usage of mobile services.

Mobile subscribers in Madagascar are charged an excise duty on the consumption of mobile services, which adds to cost of mobile ownership and increases the barriers of joining a mobile network for those at the bottom of the income pyramid. Eliminating this sector-specific tax would reduce the cost of mobile services for Malagasy households and businesses and contribute towards increased mobile penetration.

This tax scenario is forecast to have the following impacts compared to the baseline scenario:^{104, 105}

- **Mobile market revenue:** total mobile sector revenue would increase by \$26 million (8.3%) by 2023. This would be driven by additional revenues from an 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, Malagasy mobile operators would increase investment by a total of around \$3 million per annum. This will enable them to further expand their networks and will support the migration to 3G and 4G technologies by upgrading the existing network infrastructure;
- **New connections:** there would be an additional 1.3 million unique subscribers, or 1.6 million mobile connections by 2023. This is equivalent to an increase of around 4.3% in unique subscriber penetration (5.2% in total connections). Of these new connections, 78% would be classified as low income. As a result of network investment and lower effective prices, unique mobile broadband penetration would increase by 2.9% (873,000 unique MBB subscribers);

- **Usage:** the reduction in the effective price of mobile services would lead to a 14.6% increase in total data usage, driven by an increase in the number of connections and a 3.4% increase in average data usage per connection compared to the baseline;
- **Productivity gain:** the increase in unique subscriber penetration of 4.3% would lead to a 1.3% gain in productivity across the economy, leading in turn to further increases in output, incomes and expenditure;
- **GDP increase:** total GDP would increase by \$194 million (1.5%) 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 10,200 jobs;
- **Wider investment in the economy:** as a result of lower prices for mobile services and increased productivity, additional resources are made available for investment across the economy. By 2023, this scenario would lead to an annual gain in investment of \$128 million (4.8%); and
- **Tax revenue impact:** this scenario would have an initial net cost to the Government of \$15 million in 2019. However, the subsequent expansion of the mobile sector, and significant growth in the wider economy, mean that, by 2020, the annual impact becomes positive. The gain in tax revenue is potentially about \$11 million per annum by 2023.

The summary of the sector-specific and economic impacts in 2023 is shown in Figure 18.¹⁰⁶

103. The 2025 UN “1 for 2” affordability target sets out the objective of 1 GB of data costing less than 2% of monthly income by 2025. Source: Broadband Commission for Sustainable Development, 2018, *2025 Targets: “Connecting the Other Half”*, <https://broadbandcommission.org/Documents/publications/wef2018.pdf>; Alliance for Affordable Internet, 2018, “UN Broadband Commission Adopts A4AI “1 for 2” Affordability Target”, <https://a4ai.org/un-broadband-commission-adopts-a4ai-1-for-2-affordability-target/>.

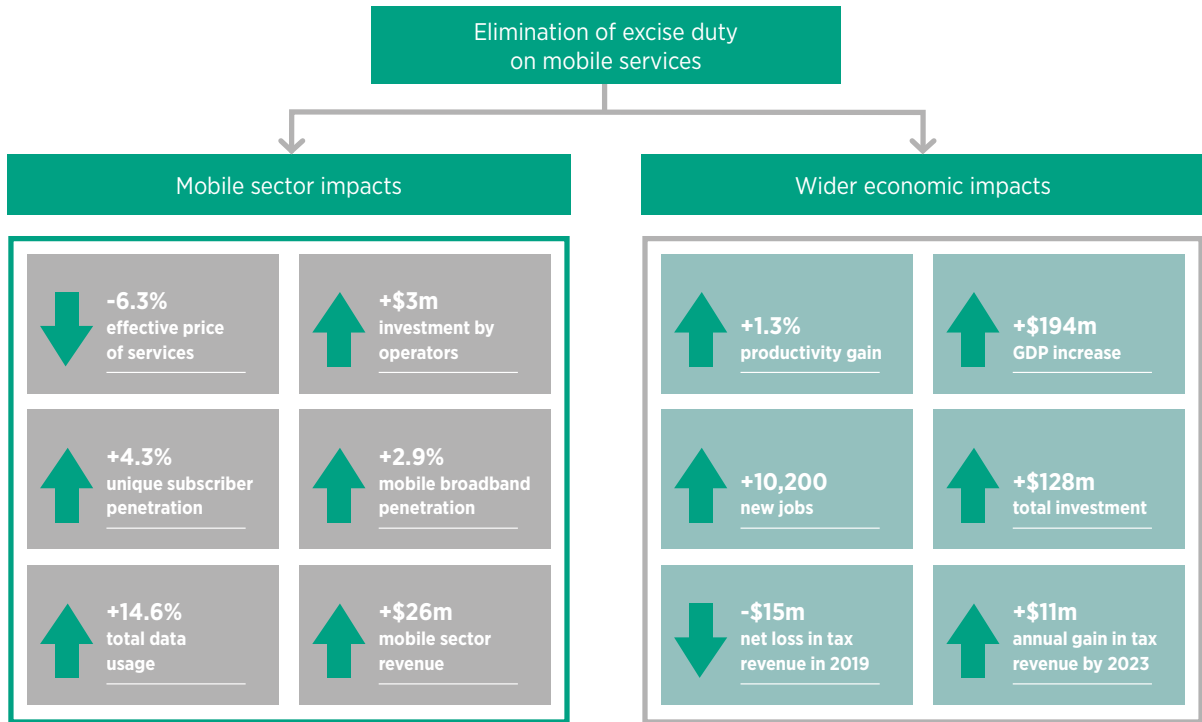
104. Please see Appendix A for more detail on the modelling assumptions used in this study and see Appendix B for detailed estimated impacts.

105. The economic modelling was performed before the enactment of the Finance Act 2019 and is based on a pre-reform 10% rate.

106. 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 the elimination of excise duty on mobile services, 2023¹⁰⁷



Source: EY analysis

107. The economic modelling was performed before the enactment of the Finance Act 2019 and is based on a pre-reform 10% rate.

4.4 Elimination of customs duties on handsets

As shown in Section 1.2.2, taxes represent a significant proportion of the total device cost in Madagascar. Imports of handsets into Madagascar are subject to a customs duty, which increases the cost of acquisition of mobile phones, representing a financial barrier for people joining a mobile network.

The acquisition cost of a handset represents a critical barrier to mobile ownership in developing economies. As shown in the GSMA Intelligence 2016 consumer survey, 64% of non-mobile owner respondents in low- and middle-income countries cited handset costs as the top barrier for mobile ownership.¹⁰⁸ Reducing the cost of handsets in Madagascar could therefore generate significant positive impacts to the mobile market and the wider economy, which are higher than the equivalent reduction in cost of services.

This scenario models the elimination of customs duties on handsets. The modelling demonstrated that 90% of the cut would be passed through to customers in the form of lower handset prices. Reduced handset prices would increase mobile penetration and stimulate migration to 3G and 4G technologies, as mobile broadband enabled phones would become more affordable. This would bring economic benefits via reduced costs and efficiency gains across all the sectors, which would result in the expansion of the Malagasy economy, increased household incomes and investment. It would also reduce prices in the market for used handsets, making handsets across the market more affordable. As shown in Section 1.3, increased penetration would also bring many socio-economic benefits for currently unconnected Malagasy people in the areas of education, health and access to knowledge.

This tax scenario is forecast to have the following impacts compared to a “baseline” scenario of no change in current levels of taxation:¹⁰⁹

- **Mobile market revenue:** total mobile sector revenue would increase by \$11 million (3.6%) by 2023.¹¹⁰ This would be driven by incremental mobile penetration and usage levels generated by reduced handset prices;
- **New connections:** an additional 441,000 unique subscribers, or 539,000 mobile connections by

2023. This is equivalent to an increase of around 1.5% in unique subscriber penetration (1.8% in total connections). Of these new connections, 76% would be classified as low-income users. Lower smartphone prices would stimulate technology migration and lead to an increase in unique mobile broadband penetration by 1.6% (468,000 unique MBB subscribers);

- **Usage:** the reduction in handset prices would lead to a 4.7% increase in total data usage, driven by an increase in the number of connections and a 0.9% increase in average data usage per connection compared to the baseline;
- **Productivity gain:** the increase in unique subscriber penetration of 1.5% would lead to a 0.5% gain in productivity across the economy, leading in turn to further increases in output, incomes and expenditure;
- **GDP increase:** total GDP would increase by \$71 million (0.5%) 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 5,500 jobs by 2023;
- **Wider investment in the economy:** as a result of lower costs and increased productivity, additional resources are made available for investment across the economy. By 2023, this scenario would lead to an annual gain in investment of \$45 million (1.7%); and
- **Tax revenue impact:** the impact of lower handset prices would not be limited to expansion in the electronics sector, but would also lead to a significant growth in the mobile services industry. Therefore the Government would recover the initial loss in customs duties of around \$1.6 million by year 2, with the potential annual gain in tax revenue of about \$9 million by 2023.¹¹¹

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

108. GSMA, 2017, *Accelerating affordable smartphone ownership in emerging markets*, <https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2017/07/accelerating-affordable-smartphone-ownership-emerging-markets-2017.pdf>.

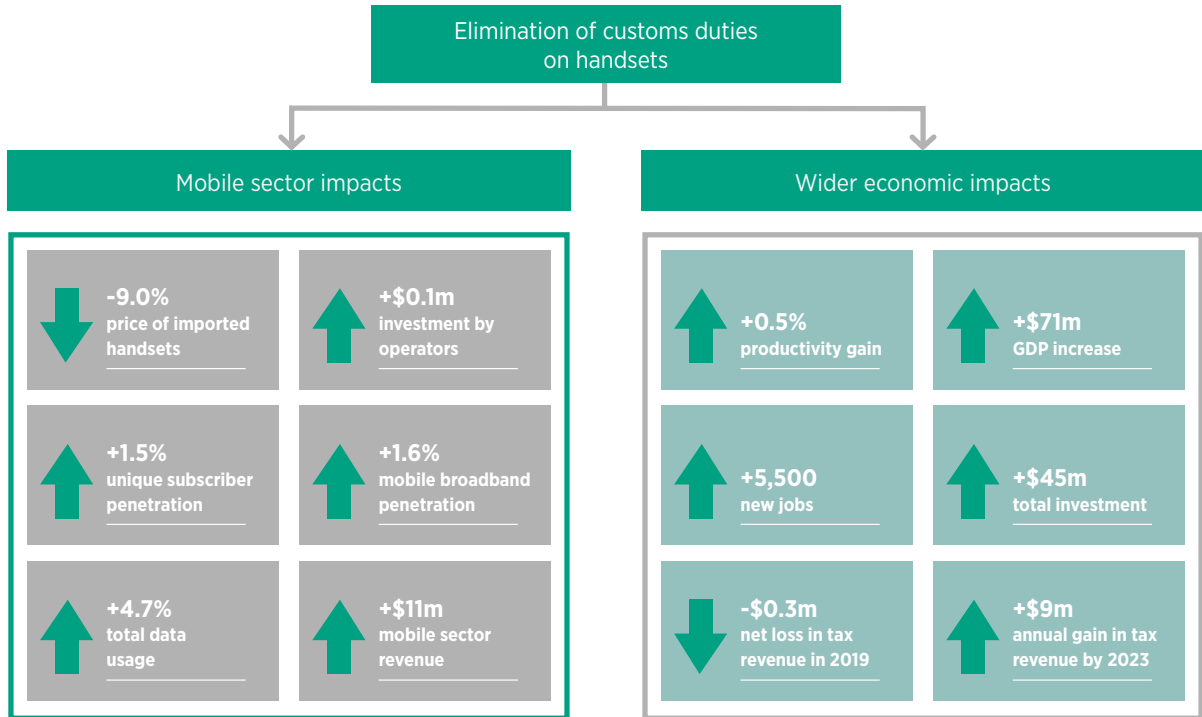
109. The economic modelling was performed before the enactment of the Finance Act 2019 and is based on a pre-reform 10% rate.

110. This refers to the revenue from mobile services only and does not include change in revenue from sales of handsets.

111. In this scenario, a relatively significant increase in tax receipts from the other sectors (except electronics) is driven by the mobile sector, due to a strong connection between the acquisition cost of a handset and mobile penetration.

Figure 19

Annual impacts of the elimination of customs duties on handsets, 2023^{112, 113}



Source: EY analysis

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

113. The economic modelling was performed before the enactment of the Finance Act 2019 and is based on a pre-reform 10% rate.

4.5 Reduction in the regulation tax on the telecommunications and ICT sector

There is currently a regulation tax, levied at a rate of 2%, on the revenue of mobile network operators in Madagascar. As shown in Section 2, it is one of three regulation taxes applicable to the mobile industry of Madagascar, which overall represent a significant tax burden for the sector.

This reform proposes that the regulation tax on the telecommunications and ICT sector is reduced by half for the mobile industry.¹¹⁴ This reduction in the tax burden would allow mobile network operators to reduce the effective price of mobile services, incentivising the take-up and increased usage per connection. This reform would also allow operators to retain a share of the tax saving, which would be directed to investment into network expansion and upgrade and to higher profits.

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

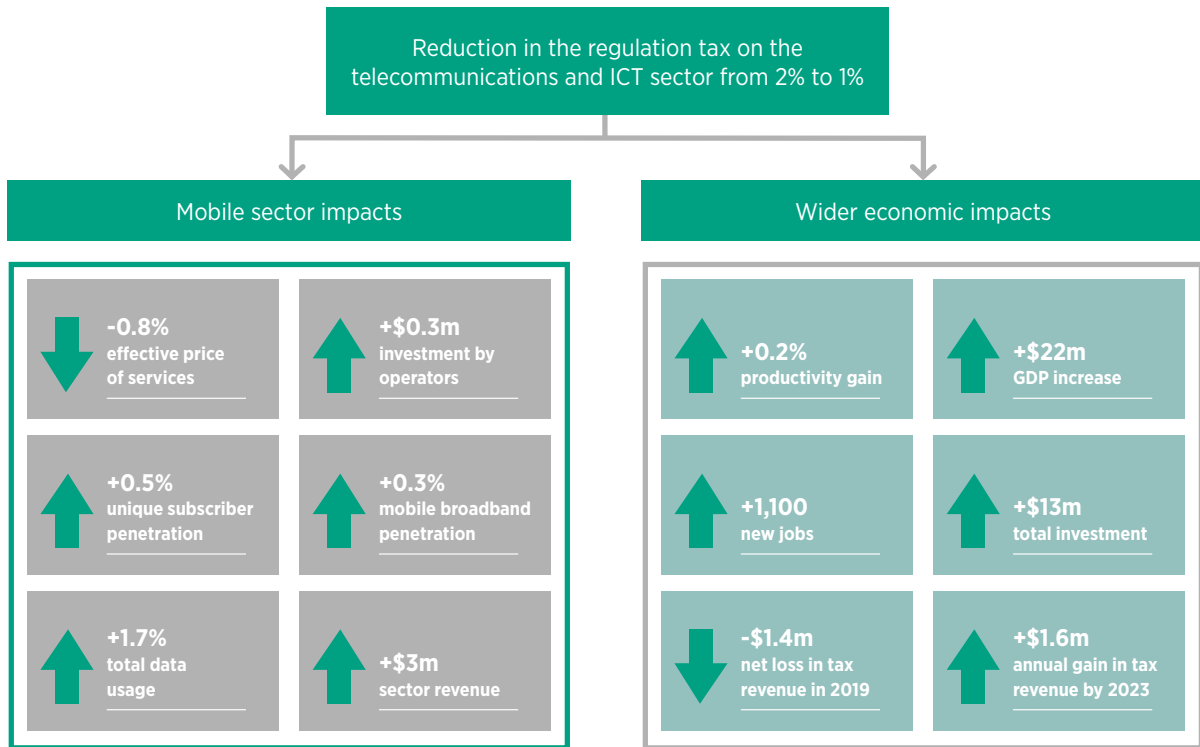
- **Mobile market revenue:** total mobile sector revenue would increase by \$3 million (1.0%) by 2023. This would be driven by additional revenues from new subscribers and higher usage per connection;
- **Investment by operators:** as a result of the tax saving, Malagasy mobile operators would increase investment by a total of around \$0.3 million per annum. This will enable them to further expand their networks and will support the migration to 3G and 4G technologies by upgrading the existing network infrastructure;
- **New connections:** there would be an additional 151,000 unique subscribers, or 184,000 mobile connections by 2023. This is equivalent to an increase of around 0.5% in unique subscriber penetration (0.6% in total connections). Of these new connections, 78% would be classified as low income. As a result of network investment and lower effective prices, unique mobile broadband penetration would increase by 0.3% (103,000 unique MBB subscribers);
- **Usage:** the reduction in the effective price of mobile services would lead to a 1.7% increase in total data usage, driven by an increase in the number of connections and a 0.4% increase in average data usage per connection compared to the baseline;
- **Productivity gain:** the increase in unique subscriber penetration of 0.5% 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 \$22 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 1,100 jobs by 2023;
- **Wider investment in the economy:** as a result of lower prices for mobile services and increased productivity, additional resources are made available for investment across the economy. By 2023, this scenario would lead to an annual gain in investment of \$13 million (0.5%); and
- **Tax revenue impact:** this scenario would have an initial net cost to the Government of \$1.4 million in 2019. However, the subsequent expansion of the mobile sector, and significant growth in the wider economy, mean that, by year 2, the annual impact is positive, while the cumulative impact becomes positive by year 3. The gain in tax revenue is potentially approximately \$1.6 million per annum by 2023.

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

114. This scenario applies the tax cut to the mobile sector only and does not consider the wider telecom and ICT industries.

Figure 20

Annual impacts of a reduction in the regulation tax on the telecommunications and ICT sector, 2023¹¹⁵



Source: EY analysis

115. 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 Madagascar

The mobile industry has the potential to play an increasingly important role in achieving Madagascar's objectives set out in the *National Development Plan 2015-2019*, specifically by modernising network infrastructure, improving access to modern technologies by households and businesses, encouraging investment and driving productivity improvements across the economy. The mobile market in Madagascar has expanded rapidly over the past decade, with the number of unique subscribers increasing by 5.6 million between 2008 and 2018. The sector now generates \$238 million in revenue, equivalent to 1.8% of GDP.

There exist significant opportunities to further develop the sector (as 70.8% of the population remain unconnected to mobile services), specifically

through increased penetration and incentivising customer migration to 3G and 4G technologies. Accelerating progress in these areas requires improvements in the affordability of mobile services for lower income segments of the population, as well as further investment by operators to increase network coverage and network quality.

By promoting investment, reducing the cost of mobile services and incentivising usage, the tax reforms outlined in this report would help to connect individuals to mobile services. A more balanced and efficient taxation structure, which addresses some of the most distortive taxes in the mobile economy in Madagascar would generate considerable socio-economic benefits in the country. A summary of the impacts is provided in Table 5.

Table 5

Summary of socio-economic benefits of the proposed tax reforms, by 2023¹¹⁶

Indicator	Elimination of excise duty on mobile services	Elimination of customs duties on handsets	Reduction in the regulation tax on the telecommunications and ICT sector from 2% to 1%
New unique subscribers	+1,284,000	+441,000	+151,000
Sector revenue	+\$26m	+\$11m	+\$3m
GDP increase	+\$194m	+\$71m	+\$22m
Wider investment	+\$128m	+\$45m	+\$13m
Net loss in tax revenue in 2019	-\$15m	-\$0.3m	-\$1.4m
Annual gain in tax revenue	+\$11m	+\$9m	+\$1.6m

Source: EY analysis

116. As the economic modelling was performed before the enactment of the Finance Act 2019, the economic modelling of the tax reform on excise duty and customs duty is based on a pre-reform 10% rate.

The policy options for reform outlined in this report would contribute to achieving a number of key objectives for the mobile sector and wider Malagasy economy. This includes supporting the *National Development Plan 2015-2019* objectives of achieving sustainable and inclusive economic growth, increasing tax revenue collection and supporting priority investment into infrastructure projects. 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 would 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 Malagasy 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

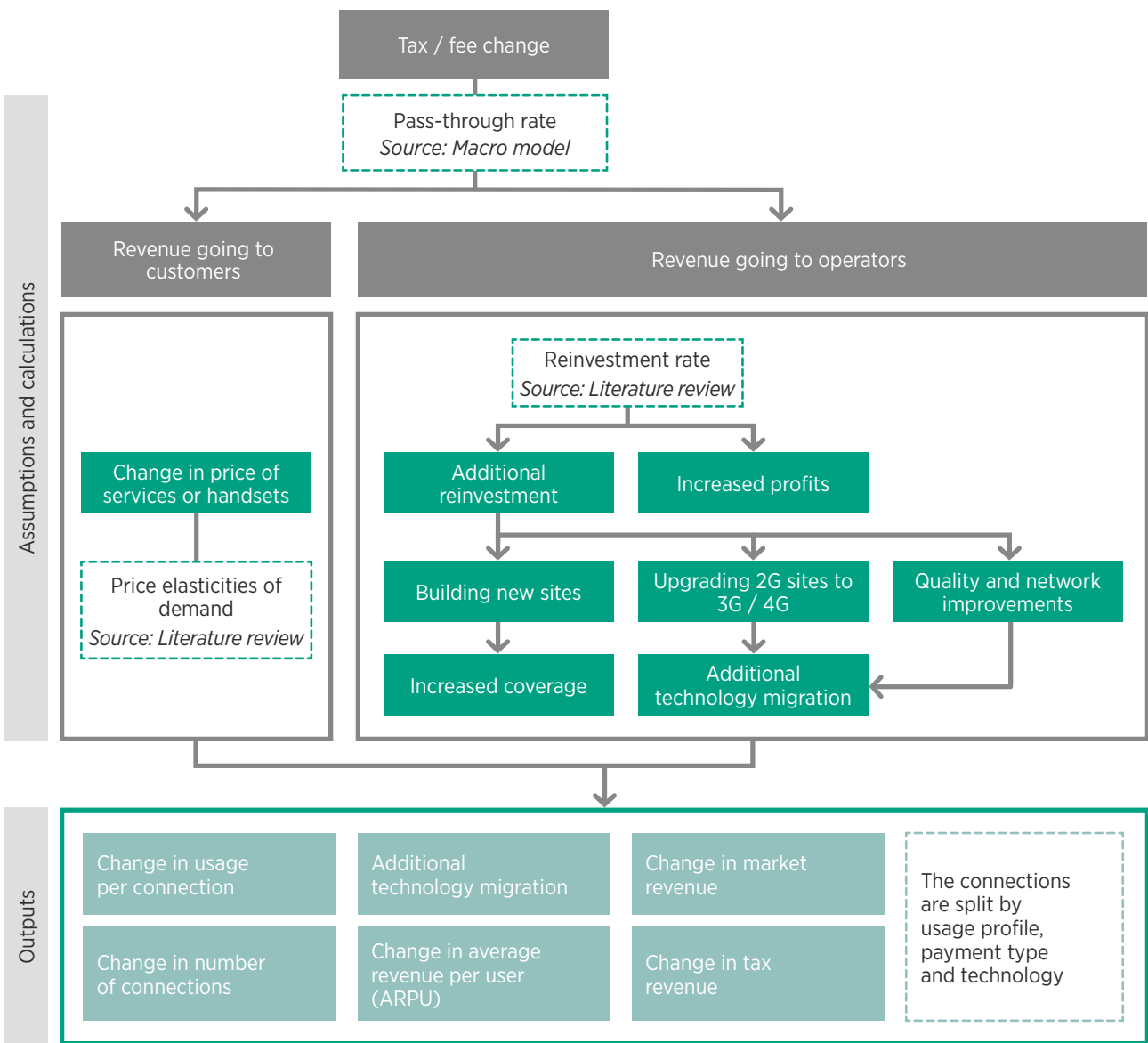
The telecoms market model covers the period 2017–2023, and uses data from local mobile operators and the GSMA Intelligence database. For modelling the scenarios, it has been assumed that the first phase of tax changes becomes

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.¹¹⁷

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

Figure 21

Overview of mobile sector modelling approach



Source: EY analysis

117. The baseline forecast is the counterfactual scenario for which results are compared against. It is based on market forecasts by operators and GSMAi 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".¹¹⁸ 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.¹¹⁹ 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) with regards to:

- 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 dynamic impact on total tax receipts, allowing for all these 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 Malagasy economy. As lower taxes and consequent lower prices are

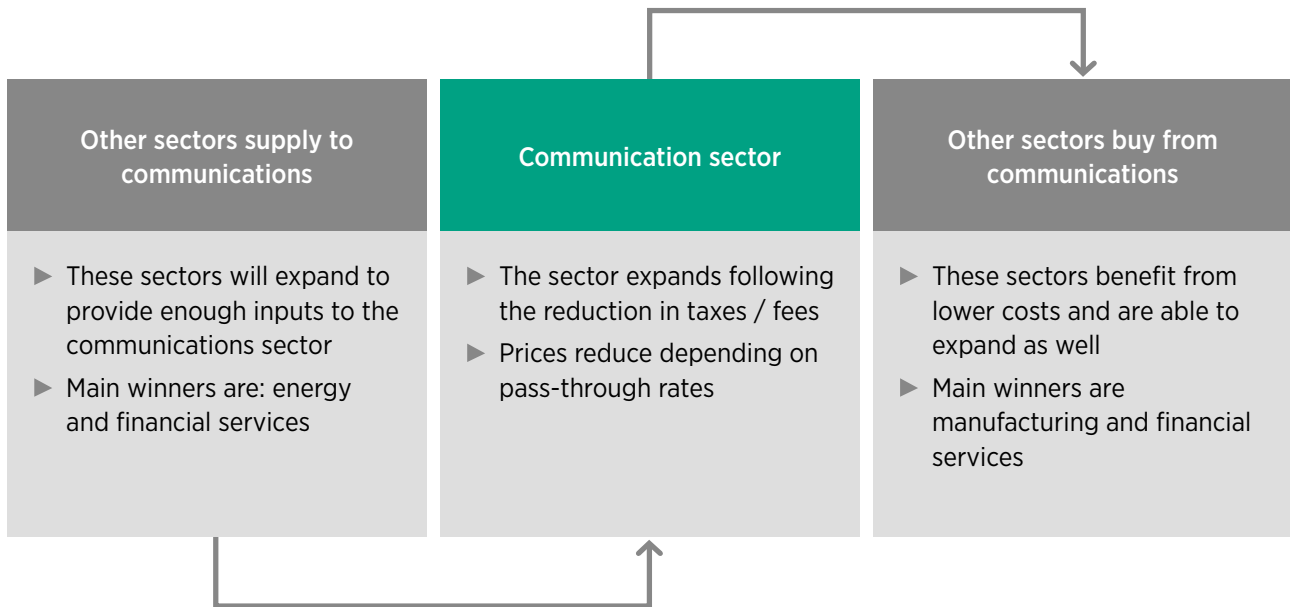
118. The percentage of the tax / fee change which is passed through to subscribers in the form of lower prices. This is calculated based on the relative slope of the supply and demand curves for mobile services.

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

passed on, many businesses will benefit and be able to expand their own outputs. Businesses that supply the mobile sector will also benefit from its expansion (see Figure 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 Malagasy 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.

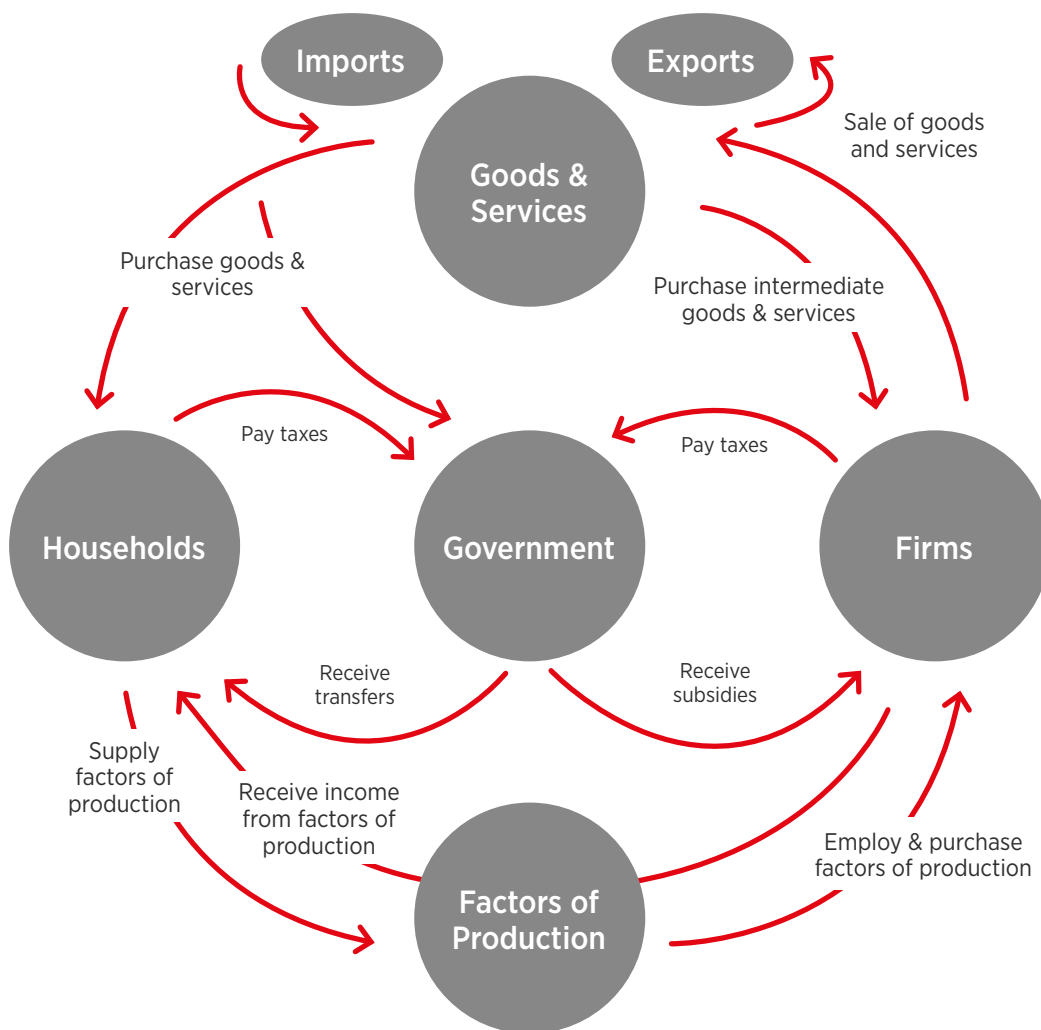
The CGE model

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.¹²⁰ This standard closure is amendable with a wide range of alternative options available depending on modelling assumptions adopted.

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



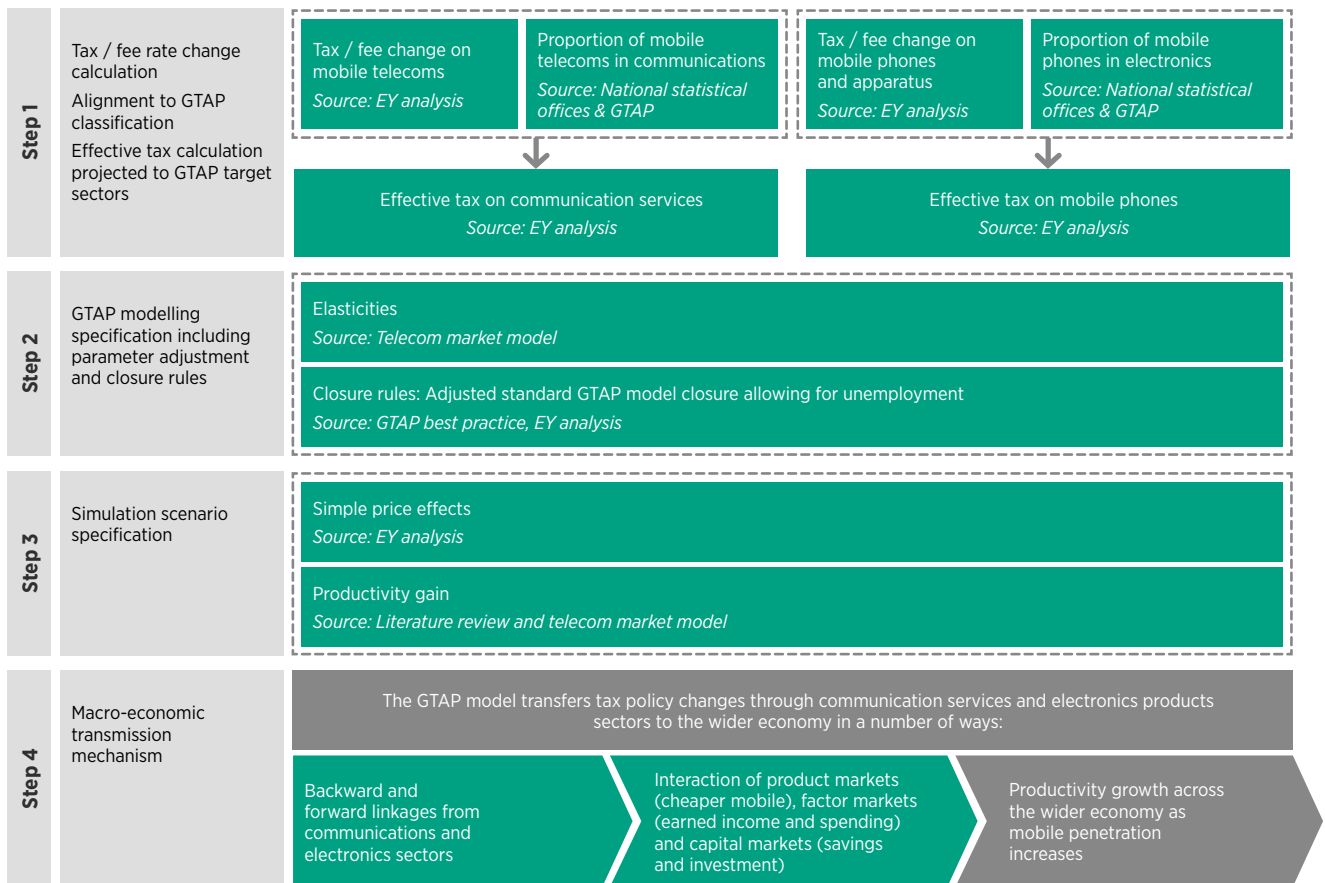
Scenario modelling

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;¹²¹
- Second, GTAP model parameters (e.g. own-price and cross-price elasticities) and closure rules (e.g. related to employment assumptions) are adjusted to ensure better alignment with the mobile telecoms market and broader characteristics of Madagascar;
- 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

121. All taxes affecting the production and consumption of mobile services and mobile phones in Madagascar (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 Madagascar. 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 Madagascar that are incorporated in the GTAP model, and which are based on input-output tables from national statistics and other empirical data on the Malagasy 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. 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 varies depending on the underlying behavioural relationships in the Malagasy economy.

Table 6 provides the pass-through rates derived in the GTAP model for each scenario.

Table 6

Pass-through rates for each scenario

Indicator	Elimination of excise duty on mobile services	Elimination of customs duties on handsets	Reduction in the regulation tax on the telecommunications and ICT sector from 2% to 1%
Pass-through rate	82%	90%	82%

Scenarios 1 and 2 model the elimination of consumption taxes on the mobile sector in Madagascar: excise duty on mobile services and customs duty on handsets. In scenario 1, the derived pass-through rate is 82%, which refers to the proportion of the tax savings passed on to subscribers through reduction in prices of mobile services. In scenario 2, the modelling demonstrates that 90% of the reduction in the rate of customs duty on handsets would be passed on to consumers in the form of a lower average price of an imported mobile phone. These relatively high levels of pass-through rates are driven by the nature of the taxes, in particular, that these are consumption taxes.¹²² Therefore, tax component in the price of imported electronics and

in the price of mobile services is relatively well visible to end-customers. Mobile operators are able to retain a smaller share of the tax saving, which can be channelled into increased investment, or retained as higher profits.

A similar level of pass-through rate has been derived for scenario 3, which models a reduction in the regulation tax on the telecommunications and ICT sector (82%). As this tax is levied on revenue, it effectively works as a turnover tax. Evidence from the literature and previous GSMA taxation studies suggests that, much like consumption taxes, turnover taxes typically exhibit high pass-through rates.¹²³

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

Calculation of the total cost of mobile ownership (TCMO)

The concept of TCMO refers to the total cost of owning and using a mobile phone by a subscriber. The TCMO is calculated by the GSMA on the monthly basis using data from GSMA Intelligence and Tarifica, and includes the following three components:¹²⁴

- Handset cost, the calculation of which is based on the price of the cheapest handset with internet browsing capability offered by local mobile operators. The one-off cost of the handset is spread over its assumed lifetime. For developing countries, the average lifetime of a mobile handset is assumed to be 36 months;
- Connection charges, including the activation charge or any other fee to connect to the mobile network, where applicable. These usually take the form of a fee for the activation of a SIM card or a mobile phone number. They are also spread over 36 months in a similar manner to handsets; and
- Usage costs, including voice, data and messages services. Usage costs are based on the cheapest available mobile plan for each consumption basket across all operators in the market, which is selected to represent regular usage and consumption patterns.

In order to account for different usage profiles, the TCMO is presented in this report for the following consumption baskets:

- Low basket: includes 500MB of data; and
- Medium basket: includes 1,000 MB of data, 250 voice minutes and 100 SMS.

In order to reflect differences in income levels in various countries, the TCMO is expressed as a proportion of monthly income per capita across different income quintiles. Income data is taken from the World Bank databank.

Key assumptions for Madagascar

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

A literature review has been conducted (covering 30 studies), as a basis for establishing a set of assumptions on the PED. To establish relevant price elasticities for Madagascar, we have used a set of studies pertaining to low-income countries (Madagascar is defined as a low-income economy by the World Bank).¹²⁵

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

- Usage elasticities: from -0.65 to -0.83 for voice and from -1.04 to -1.32 for data;
- Ownership elasticities: from -0.78 to -1.00 for mobile services and from -1.11 to -1.41 for handsets; and
- Technology migration elasticities: from -0.25 to -0.32 for data and from -0.36 to -0.45 for handsets.

124. GSMA, 2017, *Taxing mobile connectivity in Sub-Saharan Africa: a review of mobile sector taxation and its impact on digital inclusion*, https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2017/07/Taxing-mobile-connectivity-in-Sub-Saharan-Africa_July-2017.pdf.

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

Reinvestment Rate

The exact reinvestment rate depends on a range of factors, including the cash flow of a specific company. In the modelling, it is assumed that operators reinvest 60% of the portion of the tax reduction that they retain (i.e. the proportion that is not passed onto subscribers). The remaining 40% is retained as increased profit. This assumption is based on a review of previous studies of the economic impacts of mobile taxation reforms.¹²⁶

GSMAi data suggests that 2G and 3G covered 90% and 75% of people respectively at the end of 2017.¹²⁷ Further investment is therefore required to both extend the 2G network to full coverage and improve the coverage of 3G networks. The modelling assumes that reinvestment will be allocated with one third going to build new 2G sites, one third to build new 3G sites, and the remaining third to upgrade 2G sites to 3G.

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).¹²⁸

It has been assumed that a 1% increase in unique subscriber penetration leads to a 0.3% 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.¹²⁹ This relatively significant impact reflects low mobile penetration and limited fixed infrastructure in Madagascar.

In this study, the shock to TFP is modelled as a change in the productivity of all primary factors (of equal proportions) in the Malagasy economy. This productivity change enters as a variable into the constant elasticity of substitution (CES) value-added production function.¹³⁰ The TFP shock works in the 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.¹³¹

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.

126. 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".

127. GSMA Intelligence database.

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

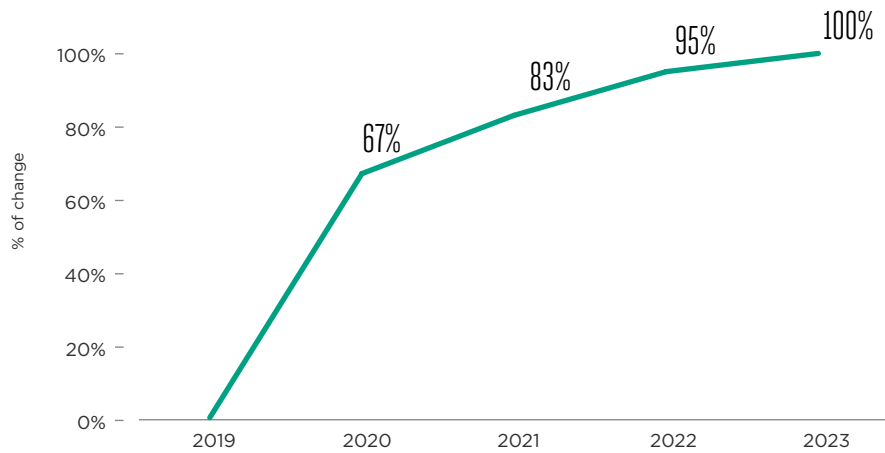
129. This calculation is based on previous GSMA analysis, which outlines the relationship between mobile penetration rates, infrastructure and productivity.

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

131. 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".

Figure 25

Time path for the transition to the new equilibrium



Source: EY analysis

Closure rules in the macro-economic model

In order to account for labour market conditions in Madagascar, a specific closure rule has been applied in GTAP in relation to employment and wages. The standard approach in CGE models is to assume that the supply of labour is fixed, and hence an increase in the demand for labour results in an increase in wages and prices, rather than employment. However, data from the International Labour Organization (ILO)

and the National Institute of Statistics of Madagascar demonstrates that the highest rate of unemployment is among people with a high skill set.¹³² Therefore the modelling allows for unemployment among technicians and associate professionals in GTAP. This means that an expansion of demand leads to both an increase in employment and an increase in wages in the economy.

132. ILOSTAT, <https://www.ilo.org/ilostat>; and National Institute of Statistics of Madagascar, 2015, *Work4Youth: rapport de synthèse*, https://www.ilo.org/wcmsp5/groups/public/%40ed_emp/documents/publication/wcms_429073.pdf.

Appendix B

Scenario estimations



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

Scenario 1: Elimination of excise duty on mobile services

This scenario models the elimination of the excise duty on domestic mobile services.¹³³

Table 7

Annual impact of the elimination of excise duty on mobile services on selected variables

Indicator	2019	2020	2021	2022	2023
MOBILE SECTOR IMPACTS					
Cumulative change in effective price of services ¹³⁴ vs baseline	-6.3%				
Incremental connections (total)	382,000	905,000	1,112,000	1,333,000	1,568,000
Incremental unique subscribers (total)	317,000	747,000	915,000	1,094,000	1,284,000
Incremental connections (3G and 4G)	222,000	560,000	708,000	882,000	1,067,000
<i>of which technology migration</i>	62,000	151,000	190,000	238,000	294,000
Incremental connections by low-income subscribers	286,000	683,000	848,000	1,029,000	1,216,000
ARPU (total) vs baseline	-3.9%	-1.6%	-1.8%	-2.0%	-2.2%
Increase in mobile penetration (connections)	1.4%	3.3%	3.9%	4.6%	5.2%
Increase in mobile penetration (unique subscribers)	1.2%	2.7%	3.2%	3.7%	4.3%
Increase in mobile penetration (unique MBB subscribers)	0.7%	1.7%	2.0%	2.5%	2.9%
Data usage vs baseline	7.0%	14.4%	14.5%	14.5%	14.6%
Data usage per connection vs baseline	3.3%	6.1%	5.2%	4.3%	3.4%
Increase in market revenue (total)	-\$1m	\$17m	\$20m	\$23m	\$26m
Increase in market revenue (total) vs baseline	-0.4%	6.2%	6.9%	7.6%	8.3%
Additional investment	\$2m	\$2m	\$2m	\$3m	\$3m
Static tax impact ¹³⁵	-\$20m	-\$22m	-\$23m	-\$24m	-\$24m
Impact on mobile sector taxation	-\$20m	-\$19m	-\$19m	-\$20m	-\$20m
WIDER ECONOMIC IMPACTS¹³⁶					
Full impact on communications sector taxation ¹³⁷	-\$16m	-\$15m	-\$15m	-\$15m	-\$15m
Receipts from all other sectors	\$1m	\$18m	\$22m	\$25m	\$26m
Total tax receipts	-\$15m	\$3m	\$7m	\$10m	\$11m
<i>Cumulative total receipts</i>	-\$15m	-\$12m	-\$6m	\$4m	\$15m
Real GDP	\$7m	\$130m	\$161m	\$184m	\$194m (1.47%)
Employment		Impact estimated for 2023 only			10,239 (0.17%)
Household income		Impact estimated for 2023 only			\$143m (1.72%)
Household expenditure		Impact estimated for 2023 only			\$136m (1.67%)
Investment		Impact estimated for 2023 only			\$128m (4.80%)

Source: EY analysis

133. The economic modelling was performed before the enactment of the Finance Act 2019 and is based on a pre-reform 10% rate.

134. 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.

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

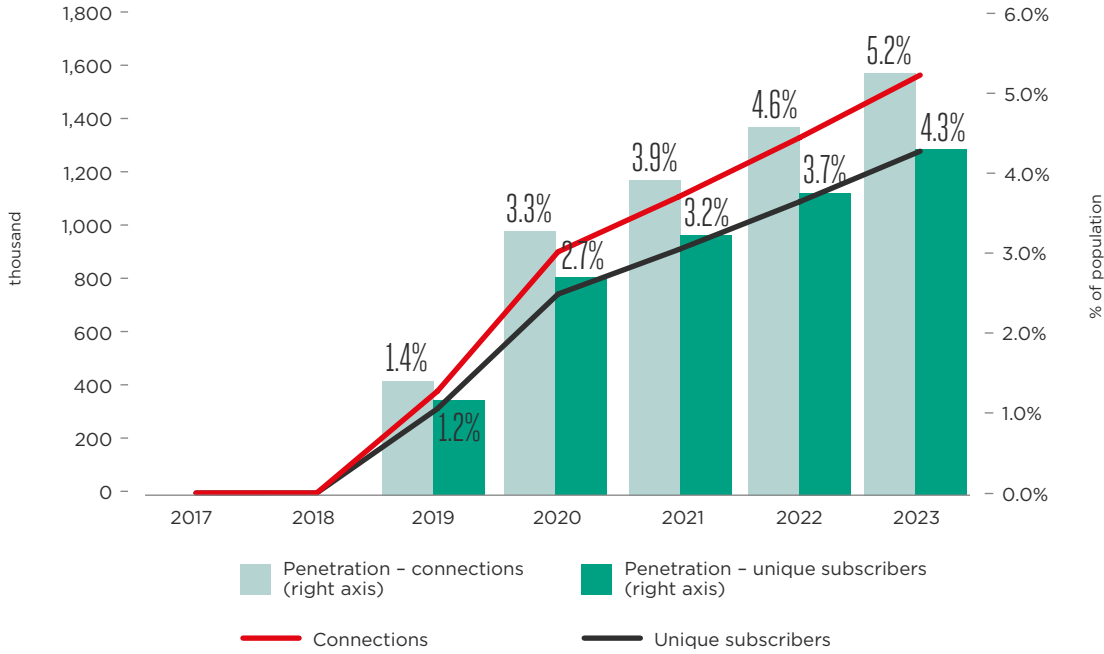
136. For some of the variables included below, the impact has been calculated as at 2023.

137. The productivity impact of the tax reform is assumed to take place starting from year 2, resulting in an increase in government tax receipts.



Figure 26

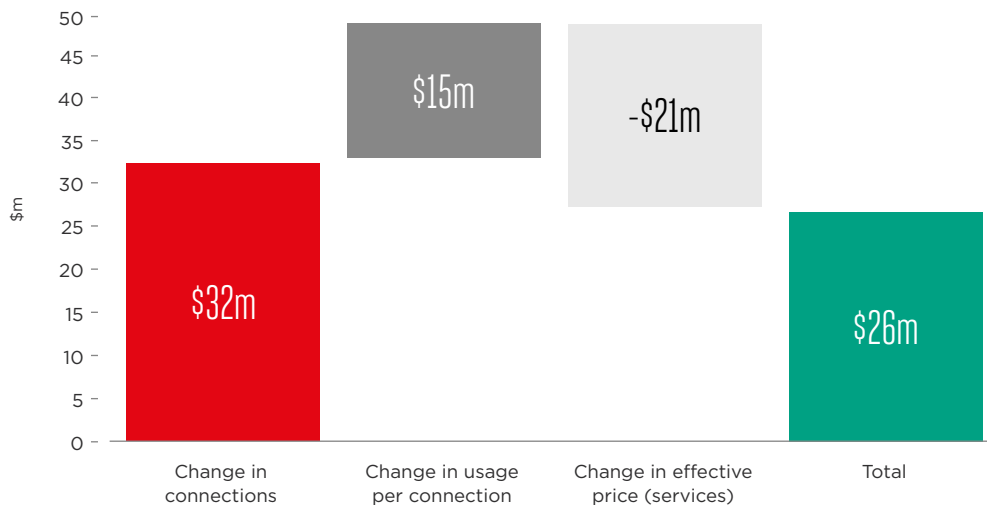
Connections and penetration impacts of the elimination of excise duty on mobile services



Source: EY analysis

Figure 27¹³⁸

Main drivers of the market revenue change following the elimination of excise duty on mobile services, \$m

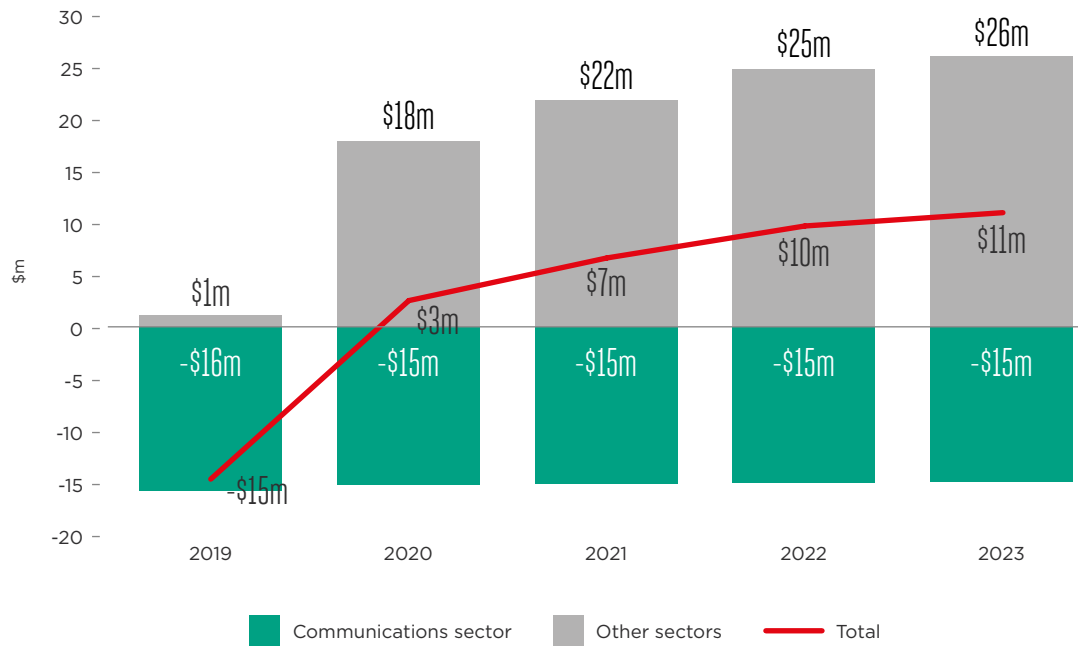


Source: EY analysis

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

Figure 28

Elimination of excise duty on mobile services – annual impacts on tax receipts, \$m



Source: EY analysis

Scenario 2: Elimination of customs duties on handsets

This scenario would eliminate the customs duty on handsets.¹³⁹

Table 8

Annual impact of the elimination of customs duties on handsets on selected variables

Indicator	2019	2020	2021	2022	2023
MOBILE SECTOR IMPACTS					
Change in price of imported handsets	-9.0%				
Incremental connections (total)	184,000	409,000	452,000	495,000	539,000
Incremental unique subscribers (total)	152,000	338,000	372,000	406,000	441,000
Incremental connections (3G and 4G)	181,000	425,000	471,000	522,000	572,000
<i>of which technology migration</i>	97,000	216,000	218,000	221,000	223,000
Incremental connections by low-income users	136,000	304,000	338,000	374,000	409,000
ARPU (total) vs baseline	0.1%	0.2%	0.1%	0.0%	-0.1%
Increase in mobile penetration (connections)	0.7%	1.5%	1.6%	1.7%	1.8%
Increase in mobile penetration (unique subscribers)	0.6%	1.2%	1.3%	1.4%	1.5%
Increase in mobile penetration (unique MBB subscribers)	0.6%	1.3%	1.4%	1.5%	1.6%
Data usage vs baseline	3.0%	5.8%	5.2%	4.9%	4.7%
Data usage per connection vs baseline	1.3%	2.2%	1.6%	1.2%	0.9%
Increase in market revenue (total) ¹⁴⁰	\$5m	\$10m	\$11m	\$11m	\$11m
Increase in market revenue (total) vs baseline	1.9%	3.7%	3.7%	3.6%	3.6%
Additional investment	\$0.1m	\$0.1m	\$0.1m	\$0.1m	\$0.1m
Static tax impact	-\$1.8m	-\$1.9m	-\$2.0m	-\$2.1m	-\$2.2m
WIDER ECONOMIC IMPACTS¹⁴¹					
Full impact on electronics sector taxation	-\$1.6m	-\$1.6m	-\$1.6m	-\$1.5m	-\$1.5m
Receipts from all other sectors	\$1.3m	\$7.3m	\$8.7m	\$9.8m	\$10.3m
Total tax receipts	-\$0.3m	\$5.8m	\$7.2m	\$8.3m	\$8.7m
<i>Cumulative total receipts</i>	<i>-\$0.3m</i>	<i>\$5.5m</i>	<i>\$12.7m</i>	<i>\$20.9m</i>	<i>\$29.7m</i>
Real GDP	\$7m	\$48m	\$59m	\$68m	\$71m (0.54%)
Employment		Impact estimated for 2023 only			5,510 (0.09%)
Household income		Impact estimated for 2023 only			\$53m (0.63%)
Household expenditure		Impact estimated for 2023 only			\$50m (0.62%)
Investment		Impact estimated for 2023 only			\$45m (1.69%)

Source: EY analysis

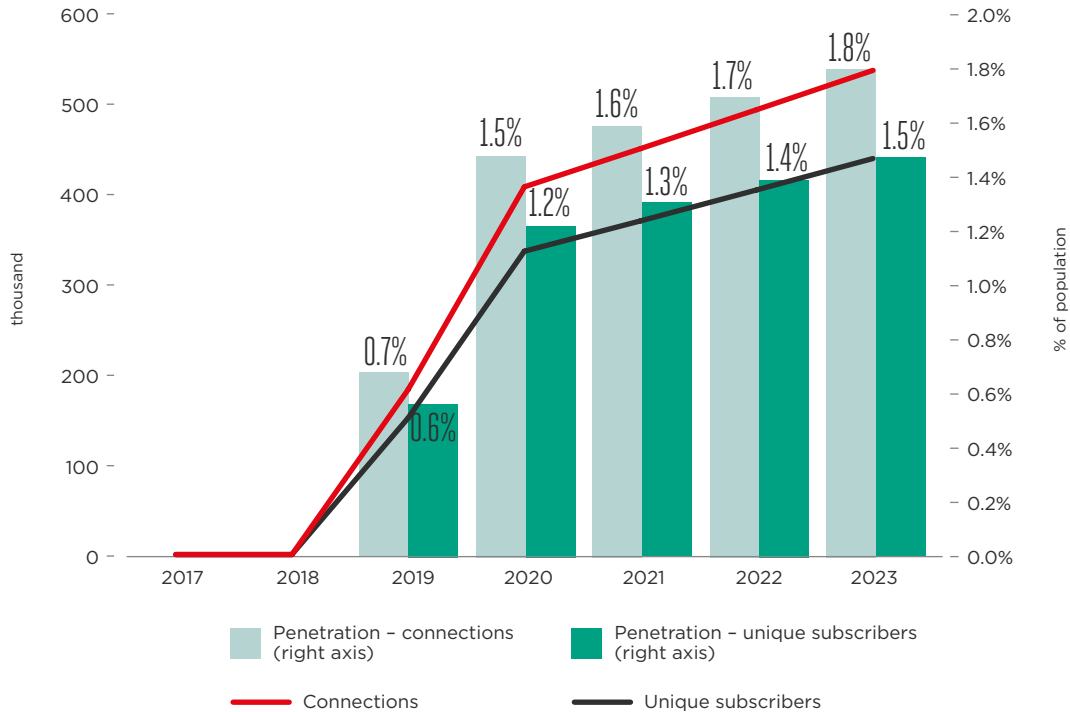
139. The economic modelling was performed before the enactment of the Finance Act 2019 and is based on a pre-reform 10% rate.

140. This refers to the revenue from mobile services only and does not include change in revenue from sales of handsets.

141. In macro-economic modelling, a shock to the customs duty in the electronics sector was complemented with a shock to the output of the communications sector, to match mobile sector impacts in two models.

Figure 29

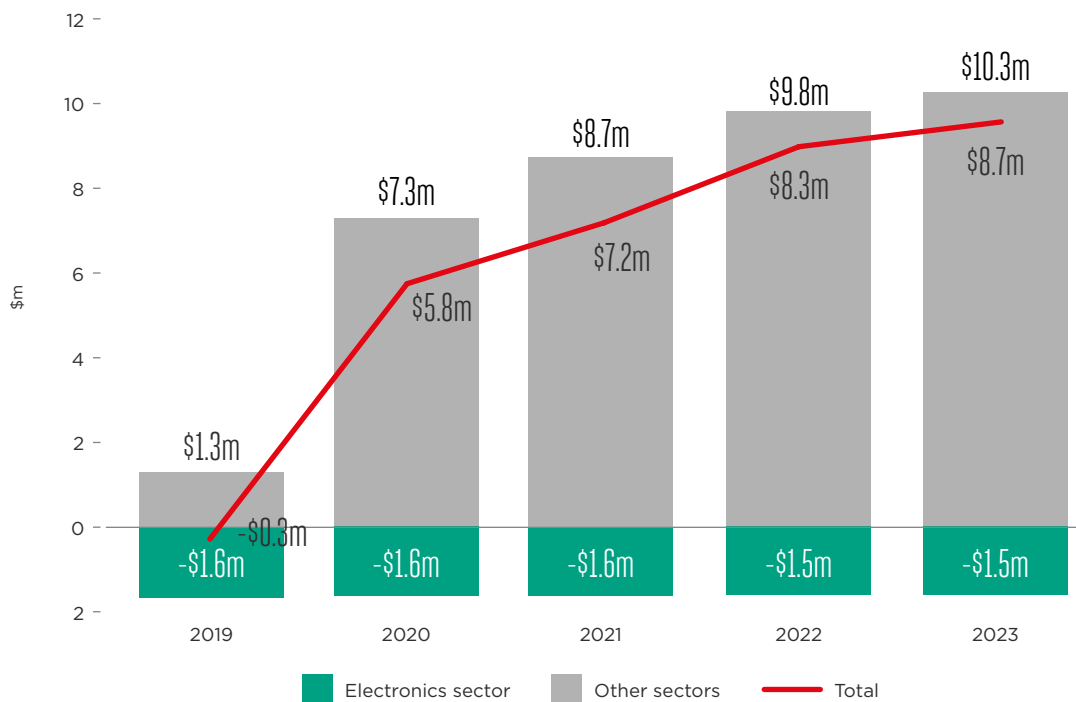
Connections and penetration impacts of the elimination of customs duties on handsets



Source: EY analysis

Figure 30

Elimination of customs duties on handsets - annual impacts on tax receipts, \$m



Source: EY analysis

Scenario 3: Reduction in the regulation tax on the telecommunications and ICT sector

This scenario would reduce the level of the regulation tax on the telecommunications and ICT sector from 2% to 1% of revenue.

Table 9

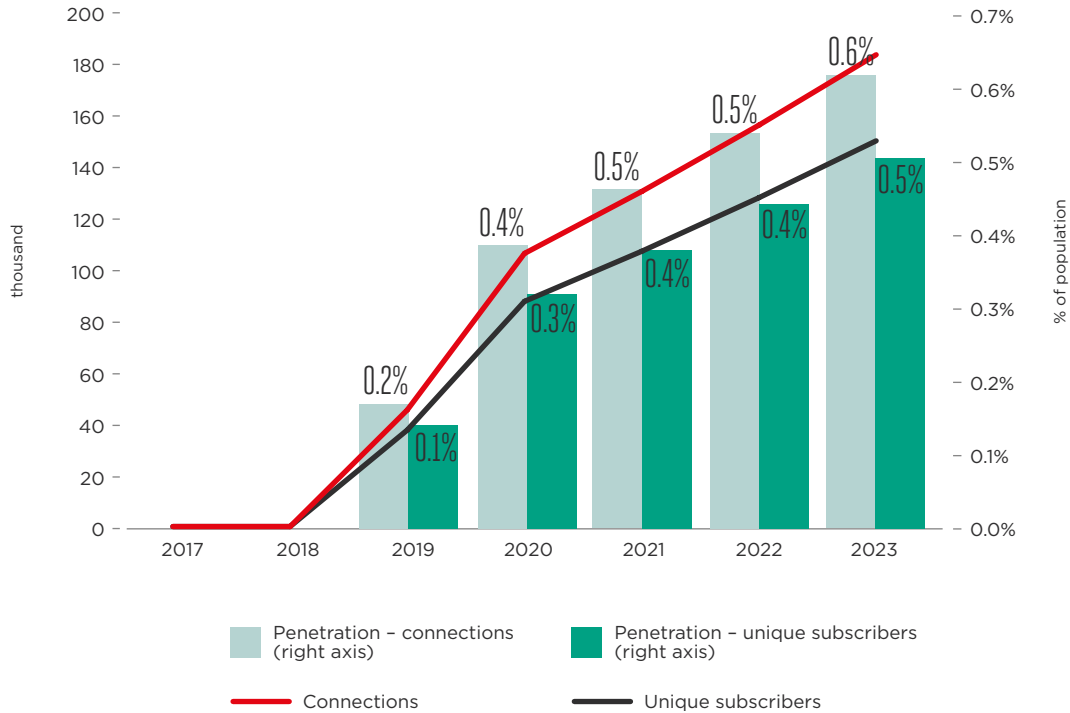
Annual impact of a reduction in the regulation tax on the telecommunications and ICT sector on selected variables

Indicator	2019	2020	2021	2022	2023
MOBILE SECTOR IMPACTS					
Change in effective price of services vs baseline	-0.8%				
Incremental connections (total)	46,000	107,000	131,000	157,000	184,000
Incremental unique subscribers (total)	38,000	88,000	108,000	129,000	151,000
Incremental connections (3G and 4G)	27,000	66,000	84,000	104,000	126,000
<i>of which technology migration</i>	7,000	18,000	23,000	28,000	35,000
Incremental connections by low-income users	34,000	80,000	100,000	121,000	143,000
ARPU (total) vs baseline	-0.5%	-0.2%	-0.2%	-0.2%	-0.2%
Increase in mobile penetration (connections)	0.2%	0.4%	0.5%	0.5%	0.6%
Increase in mobile penetration (unique subscribers)	0.1%	0.3%	0.4%	0.4%	0.5%
Increase in mobile penetration (unique MBB subscribers)	0.1%	0.2%	0.2%	0.3%	0.3%
Data usage vs baseline	0.8%	1.7%	1.7%	1.7%	1.7%
Data usage per connection vs baseline	0.4%	0.7%	0.6%	0.5%	0.4%
Increase in market revenue (total)	-\$0.1m	\$2m	\$2m	\$3m	\$3m
Increase in market revenue (total) vs baseline	-0.02%	0.8%	0.8%	0.9%	1.0%
Additional investment	\$0.3m	\$0.3m	\$0.3m	\$0.3m	\$0.3m
Static tax impact	-\$2m	-\$3m	-\$3m	-\$3m	-\$3m
Impact on mobile sector taxation	-\$2m	-\$2m	-\$2m	-\$2m	-\$2m
WIDER ECONOMIC IMPACTS					
Full impact on communications sector taxation	-\$1.4m	-\$1.3m	-\$1.3m	-\$1.3m	-\$1.3m
Receipts from all other sectors	\$0.0m	\$1.9m	\$2.4m	\$2.7m	\$2.9m
Total tax receipts	-\$1.4m	\$0.6m	\$1.1m	\$1.4m	\$1.6m
<i>Cumulative total receipts</i>	<i>-\$1.4m</i>	<i>-\$0.8m</i>	<i>\$0.2m</i>	<i>\$1.7m</i>	<i>\$3.2m</i>
Real GDP	\$1m	\$15m	\$18m	\$21m	\$22m (0.17%)
Employment		Impact estimated for 2023 only			1,125 (0.02%)
Household income		Impact estimated for 2023 only			\$16m (0.20%)
Household expenditure		Impact estimated for 2023 only			\$16m (0.19%)
Investment		Impact estimated for 2023 only			\$13m (0.49%)

Source: EY analysis

Figure 31

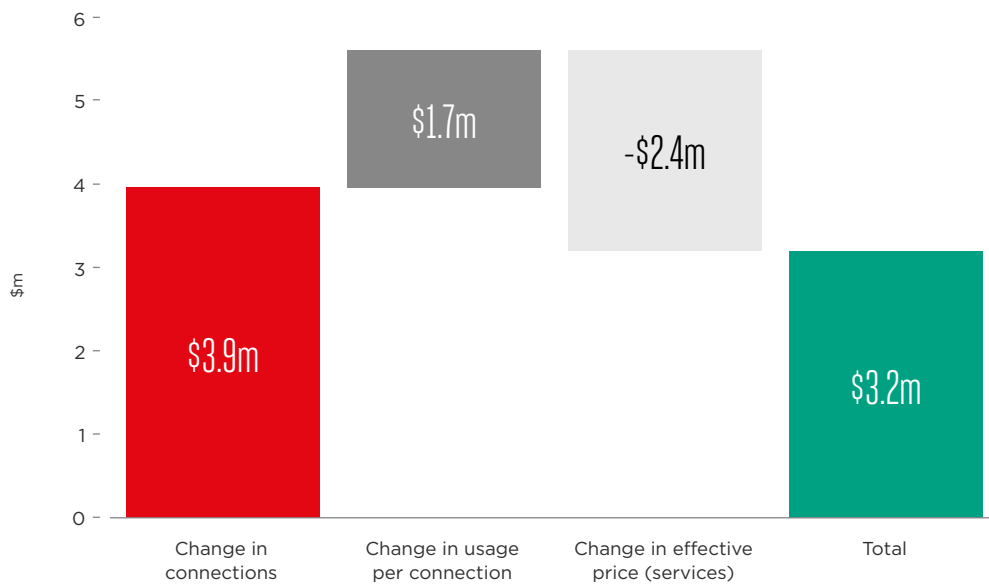
Connections and penetration impacts of a reduction in the regulation tax on the telecommunications and ICT sector



Source: EY analysis

Figure 32

Main drivers of the market revenue change following a reduction in the regulation tax on the telecommunications and ICT sector, \$m

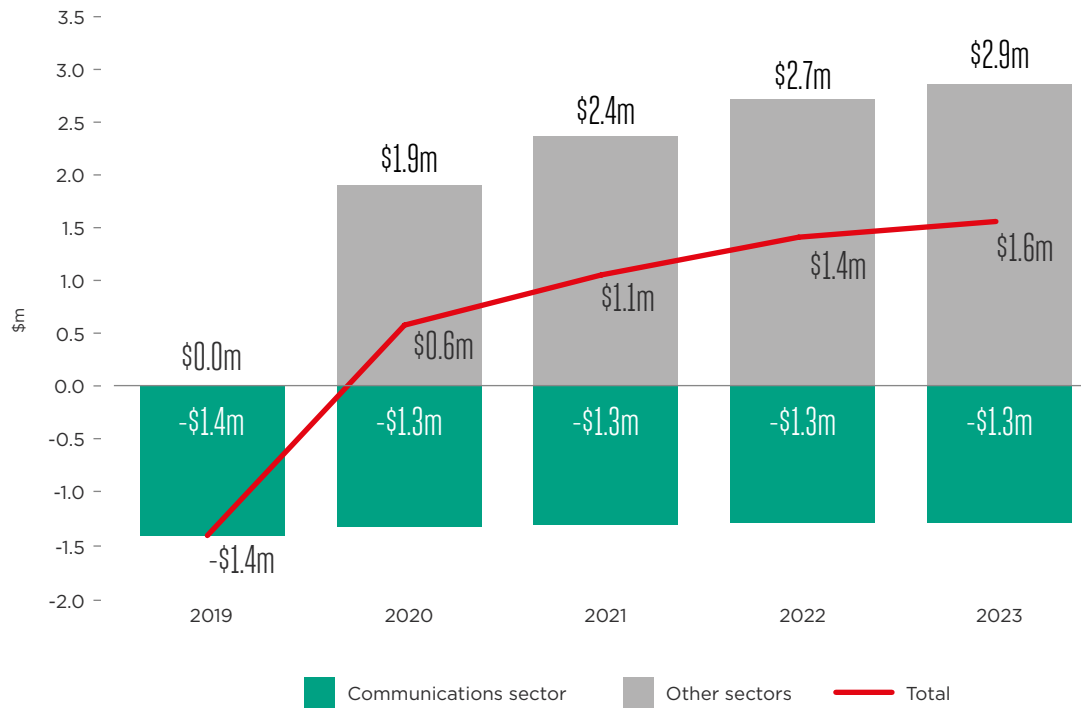


Source: EY analysis



Figure 33

Reduction in the regulation tax on the telecommunications and ICT sector – annual impacts on tax receipts, \$m



Source: EY analysis



For full report please visit the GSMA website at
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