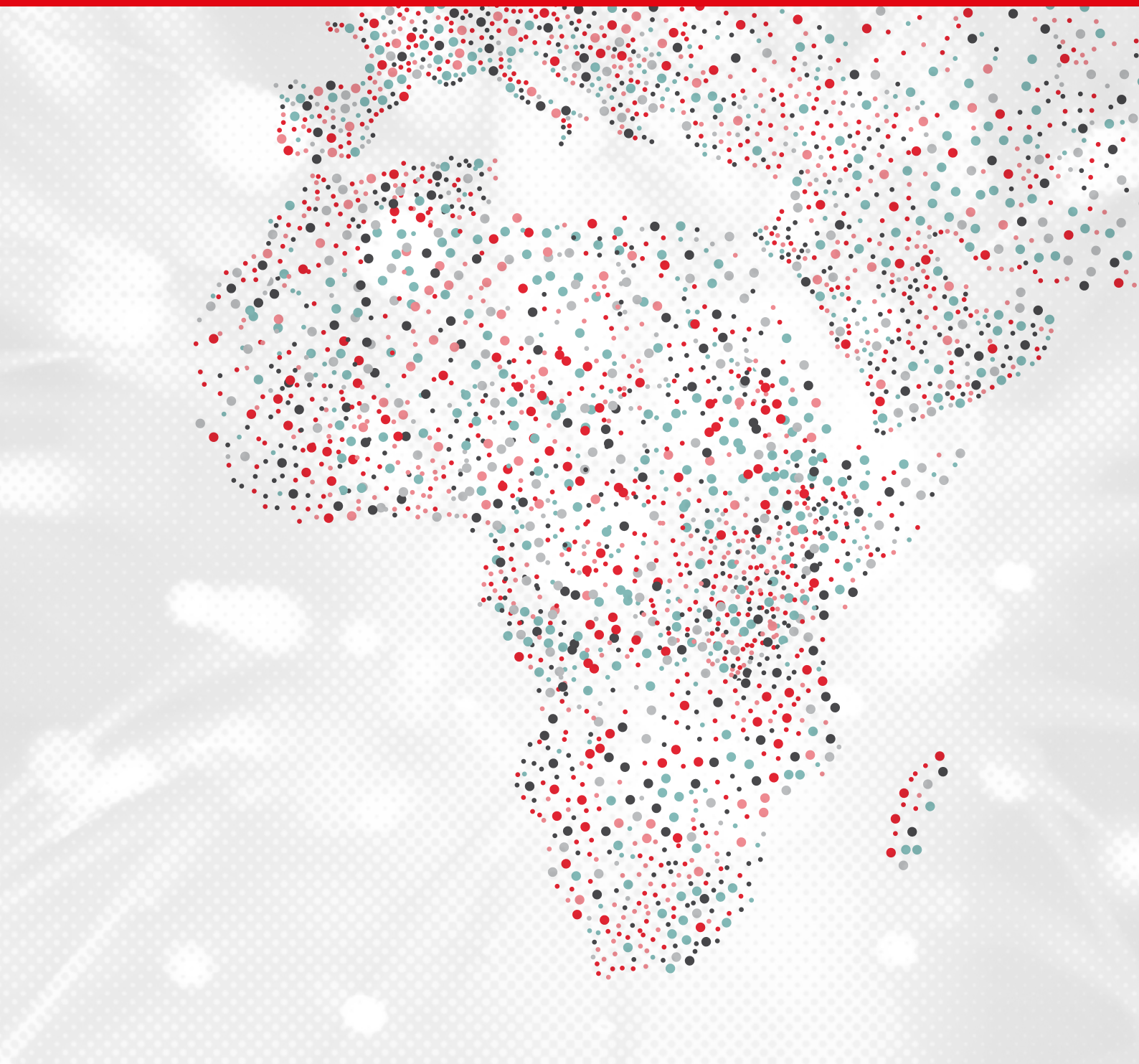
Taxing mobile connectivity in Sub-Saharan Africa

A review of mobile sector taxation and its impact on digital inclusion



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Executive summary

In Sub-Saharan Africa, more than 420 million people (43% of the population) subscribed to a mobile service at the end of 2016. The mobile ecosystem also contributed an estimated 7.7% to the region's GDP and supported 3.5 million jobs in 2016. By helping to promote digital inclusion and support the delivery of essential services and key development objectives, mobile connectivity is a critical enabler of economic and social development. However, most countries in Sub-Saharan Africa face a significant digital divide: more than 700 million people in the region did not subscribe to mobile internet services in 2016, and affordability and coverage remain significant barriers to access in the region.

Taxation levied on mobile, especially over and above standard rates, exacerbates affordability and coverage barriers for the underserved

The positive contribution of the mobile sector to the economy is well recognised. However, the tax treatment of the sector is not always aligned with best-practice principles of taxation; this may have a distortive impact on the industry's development. In 2015 the mobile sector paid on average 35% of its revenues in the form of taxes, regulatory fees and other charges in the 12 Sub-Saharan African countries for which data is available. Sector-specific taxes and fees are often the driver for the high tax burden: around 26% of the taxes and fees paid by the mobile industry related to sector-specific taxation rather than broad-based taxation.

This results in mobile operators' contribution to government tax revenues outweighing their size in the economy. For example, in the DRC, sector revenues accounted for 3% of GDP in 2015 while mobile tax payments represented more than 17% of total government tax revenues. Countries that have a higher level of taxes and fees as a proportion of sector revenues tend to have relatively low levels of readiness for mobile internet connectivity, as measured by the GSMA Mobile Connectivity Index.

Many cannot afford to access mobile services, especially those at the bottom of the income pyramid

For the 27 countries in the region where data is available, the total cost of mobile ownership (TCMO) for purchasing a handset and 500 MB of data per month represents on average 10% of monthly income, well above the 5% threshold recommended by the UN Broadband Commission. Moreover, high prices have the most adverse impact on those on lower incomes, who are to benefit the most from access to mobile technologies. The cost of an equivalent basket as a share of income is 25% for those in the bottom 40% income group, reaching as high as 68% in the DRC. Taxation represents 22% of the TCMO, while sector-specific taxes represent 5% of the TCMO on average. In certain countries the level of taxation on mobile ownership represents more than 5% of monthly income, making the service unaffordable – without even considering the price of the device and service.

Tax deteriorates the business environment and reduces operators' ability to invest in network and coverage

The mobile industry is characterised by significant upfront investment in spectrum licences, equipment purchases, network rollout and points of sale. In Sub-Saharan Africa, which has a predominantly rural population, the costs involved in extending and upgrading mobile networks are substantial. Mobile operators in the region have invested $37 billion in their networks over the past five years. However, a combination of frequent tax changes and the high number of taxes levied on mobile operators increases the complexity and operational burden in the taxes and fees system. This risks harming mobile sector development and undermining the necessary investment needed to sustain infrastructure rollout in the region. For example, in Senegal, mobile subscriber penetration growth slowed in 2011 when the RUTEL tax on telecoms services was increased from 2% to 5%, and growth fell later in 2011 when CODETE, a tax on operator turnover, increased from 3% to 5%.

Rebalancing sector-specific taxes and regulatory fees can promote connectivity, economic growth, investment and fiscal stability

Governments across the world have recognised the importance of policies that support the ICT sector, resulting in digital agendas that set ambitious connectivity objectives, often relying on mobile networks to fulfil them. A number of principles for reforming sector-specific taxation and fees should be considered by governments in Sub-Saharan Africa, in order to align mobile taxation with that applied to other sectors and with the best practices recommended by international organisations such as the World Bank and the IMF.

Reduce sector-specific taxes and fees

Phased reductions of sector-specific taxes and fees can be an effective way for governments to signal their support for the connectivity agenda. By expanding the user base and use of services, reductions in taxes and fees could be achieved while maintaining tax neutrality and potentially having a positive impact on government revenues in the medium to long term.

Reduce complexity and uncertainty of taxes and fees on the mobile sector

Uncertainty over future taxation reduces investment; the risk of future tax rises is priced into investment decisions and can reduce investment in the medium term. Numerous sector-specific fees raise compliance costs for mobile operators.

Remove consumer taxes that target access to mobile services

Luxury taxes on handsets, SIM cards and other activation/connection charges create a direct barrier for consumers to connect and access mobile broadband, especially in developing markets. Removing such taxes can increase the taxable base for the government by reducing affordability barriers and enabling more users to gain access to the mobile market.

Support effective pricing of spectrum to facilitate better quality and more affordable services

By adopting a long-term perspective, setting modest reserve prices and prioritising spectrum allocation, governments and regulators can support operators in offering high-quality and affordable mobile services to consumers. The spectrum award approach should balance the relationship between ex-ante and ex-post fees in a transparent and equitable way.

Reduce or remove import duties

By applying targeted or temporary tax reductions or eliminating import duties for mobile network equipment or other local taxes levied directly on mobile sites, an immediate cost relief can be delivered to operators and can increase network investment. Removing or temporarily exempting import excises and duties on mobile handsets and smartphones reduces the affordability barrier for the poorest consumers and extends connectivity.

Implement supportive taxation for emerging services such as mobile money

The growth of new services such as mobile data, mobile money and Internet of Things (IoT) applications can help accelerate productivity and financial inclusion throughout the economy. Disproportionate taxation of services such as mobile money puts a wide range of positive externalities at risk.

Remove taxes on international incoming calls

Surtaxes on international incoming calls are particularly detrimental to businesses and consumers in Sub-Saharan Africa. Removing these taxes can ease barriers to regional and international trade by lowering the cost of receiving international calls and can improve affordability, enabling more consumers to realise the benefits of mobile services.

Avoid excessive regulatory fees and taxes on revenues

Regulatory fees that exceed the true cost of spectrum and licence management should be reconsidered. In particular, fees on revenues rather than profits can discourage investment and innovation, as these fees require the same payment from an operator regardless of whether it retains its profit or uses it to invest in new infrastructure and services.

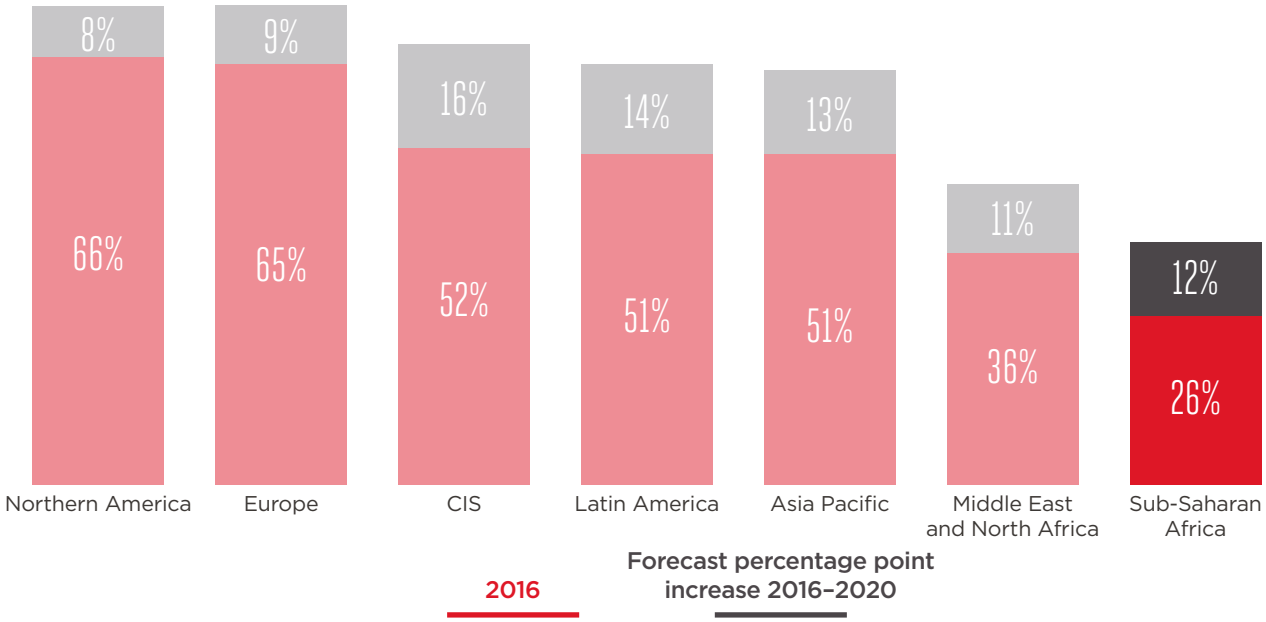
1 The mobile industry in Sub-Saharan Africa

1.1 Access to mobile is a key enabler of digital inclusion

Mobile access is having a profound impact on our society, redefining the way individuals, societies and businesses function and interact. With 5 billion unique subscribers worldwide,[1] mobile is the most widespread form of personal technology and in many developing markets has become the dominant platform for access to the internet. This is particularly true in Sub-Saharan Africa where fixed line penetration is low. By 2020, 60% of the world's population, or 4.7 billion people, will be mobile internet users.[2] Sub-Saharan Africa will reach almost 40% mobile internet penetration, an uplift from 26% penetration as of the end of 2016, with mobile internet unique subscribers forecast to grow at a 13% CAGR to 411 million.

Figure 1

Mobile internet unique subscriber penetration



Source: GSMA Intelligence

1 Source for unique subscriber metrics: GSMA Intelligence
2 Total unique users who have used internet services on their mobile device(s) at the end of the period. Mobile internet services are defined as any activity that consumes mobile data (i.e. excluding SMS, MMS and cellular voice calls).

Mobile connectivity brings a wide range of social and economic benefits by helping to promote digital inclusion and supporting the delivery of essential services and key development objectives such as poverty eradication, healthcare, education, financial services and gender equality. For these reasons, the mobile sector has become central to the international development agenda and will prove a key enabler to achieve the UN's Sustainable Development Goals (SDGs), an ambitious 17-point plan introduced in September 2015 to end poverty, combat climate change and fight injustice and inequality by 2030.

1.2 The mobile industry makes a significant economic contribution

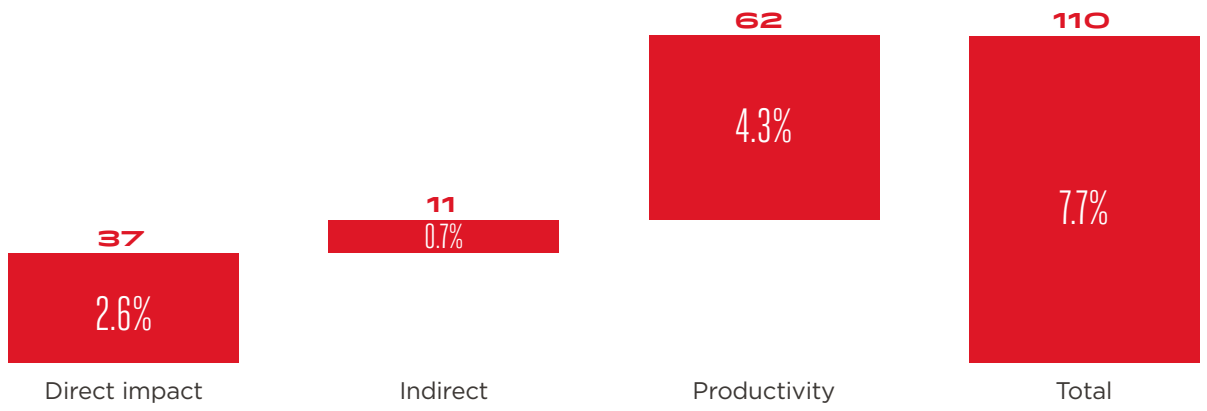
It is well recognised by academic literature and policymakers alike that internet connectivity and mobile access contribute to long-term economic growth. For example, the World Bank (2009)[3] and Czernich et al (2011)[4] found that a 10% increase in broadband penetration increases GDP per capita growth between 1 and 1.5 percentage points in low-/middle-income countries. One key channel through which mobile connectivity delivers growth is enhanced productivity; the GSMA et al (2012)[5] found that a 10% increase in mobile penetration increased productivity by 4 percentage points in developing markets.

The mobile ecosystem makes a significant economic contribution in Sub-Saharan Africa, with an economic value of $110 billion equivalent to 7.7% of GDP. This overall impact includes the direct impact of the mobile ecosystem ($37 billion), the indirect impact ($10.5 billion) and the increase in productivity brought about by the use of mobile technologies ($62 billion).[6]

The mobile ecosystem also supported approximately 3.5 million jobs in 2016. This includes workers directly employed in the ecosystem and jobs that are indirectly supported by the economic activity generated by the mobile sector. In addition to the mobile sector's impact on the economy and labour market, it makes a substantial contribution to the funding of the public sector, with $13 billion raised in 2016 in the form of taxation.[7]

Figure 2

Total (direct, indirect and productivity) contribution to GDP (2016 $ billion, % GDP)



Source: GSMA Intelligence

3 "Economic impacts of Broadband" in Information and Communications for Development: Extending reach and increasing Impact, World Bank Publications, 2009
4 "Broadband Infrastructure and Economic Growth" in The Economic Journal, Royal Economic Society, 2011
5 What is the impact of mobile telephony on economic growth? GSMA, Deloitte and Cisco, 2012
6 The direct economic contribution represents the value added to the economy, including employee compensation, business operating surplus and taxes. The indirect impact of the ecosystem is the economic activity generated via the purchase inputs from providers in the supply chain. Lastly, the productivity impact is the efficiency gains generated by mobile technologies, which spill over throughout the economy.
7 This includes general taxation (VAT, corporation tax, income tax and social security contributions) and sector-specific consumer taxes, but it excludes sector-specific taxes on operators (e.g. regulatory fees)

1.3 How Sub-Saharan Africa can reach its full mobile potential

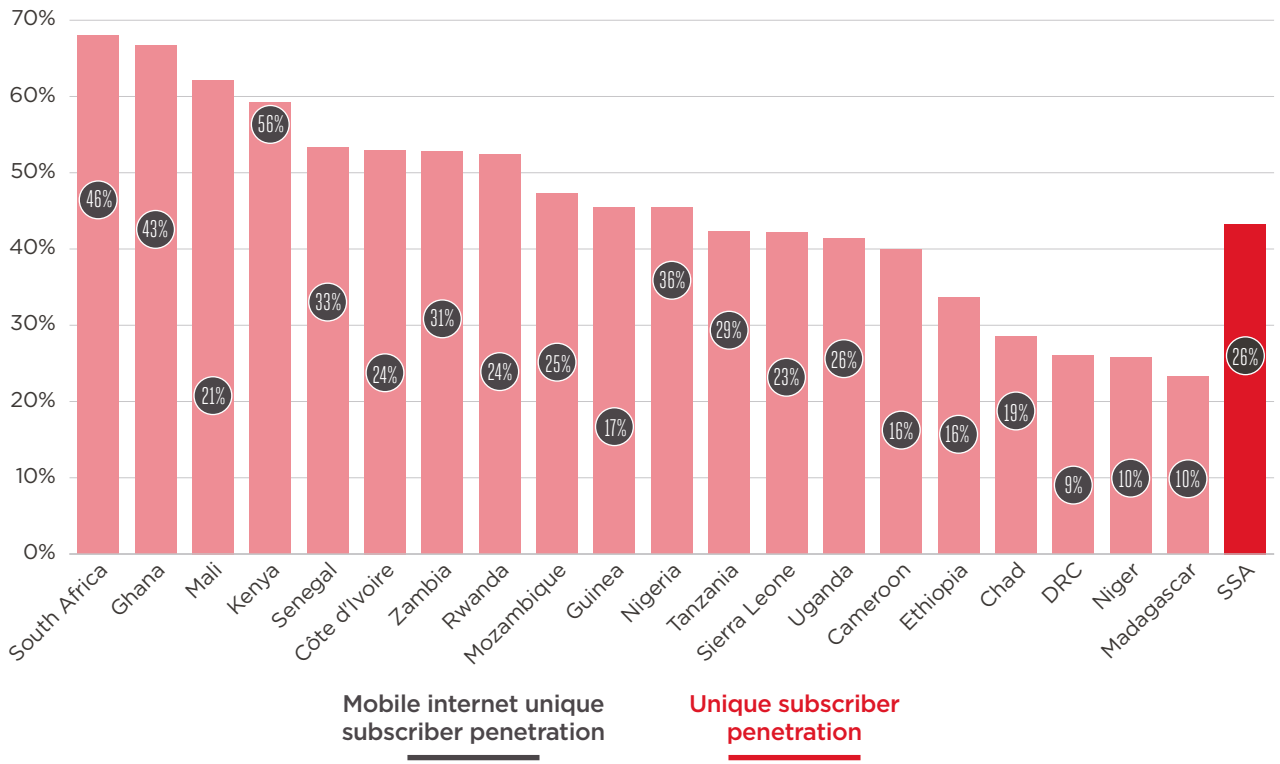
Despite the considerable increase in the uptake of mobile services in the last decade, most countries in Sub-Saharan Africa face a significant digital divide, especially in the adoption of mobile telephony and mobile internet services across low-income populations in rural and remote areas. At the end of 2016, 420 million people subscribed to mobile services in Sub-Saharan Africa, representing 43% of the population, with penetration rates ranging from less than 10% in Eritrea to 69% in Botswana.

The mobile internet gap remains significant: approximately 714 million people in Sub-Saharan Africa did not subscribe to mobile internet services in 2016. Although an additional 155 million people are forecast to subscribe to mobile internet services by 2020, some 665 million people in the region will remain without access to the mobile internet, factoring in population growth.

Two thirds of the population of Sub-Saharan Africa live in rural areas and coverage remains a significant barrier to access. As of the fourth quarter of 2016, 3G and 4G networks covered 51% and 29% of the population across the region[8] respectively, around 32–38 percentage points below the global average for both technologies.

Figure 3

Unique subscriber and mobile internet unique subscriber penetration in select countries in Sub-Saharan Africa



Source: GSMA Intelligence

8 Source: GSMA Intelligence

Network coverage alone does not guarantee access: with 3G and 4G penetration at 23% and 2% respectively,[9] approximately 271 million people are within the footprint of a 3G network but remain unconnected and, similarly, 260 million people for 4G.

Affordability represents a significant barrier to the uptake of mobile services in the region, with the total cost of mobile ownership (TCMO) determined by the cost of service usage (voice, data, SMS), activation and mobile handset. Countries in Sub-Saharan Africa have among the highest TCMO as a proportion of income worldwide, and this is particularly pronounced for those at the bottom of the income pyramid.

To harness the full potential of mobile and embrace the benefits of the digital economy, it is crucial that policymakers, the mobile industry and the development community in Sub-Saharan Africa work together to address the barriers to greater digital inclusion. While recognising there are other significant barriers such as digital literacy and availability of locally relevant content, this report focuses on affordability of mobile services and on investment in network rollout to the extent that they are affected by taxation, and in particular by those taxes that are sector-specific (applied only to the mobile sector or at higher rates for the mobile sector).

Taxation and fees on mobile services affect affordability by directly raising the retail price that consumers face, while also affecting operators' incentives to invest in new technologies, better network quality of service and coverage and greater rollout into rural areas.

As this report shows, in Sub-Saharan Africa the mobile industry is often subject to taxation above and beyond that which is applied to other sectors. This can further distort consumption and investment decisions in mobile services and technologies. A more balanced and equitable tax structure could unlock greater digital inclusion and growth of the mobile sector. Through the positive social and economic impacts of mobile, including on productivity, it could also result in wider economic benefits throughout the economy and ultimately, by increasing the tax base, also result in greater tax revenues for governments.

9 Source: GSMA Intelligence

2 Taxation on the mobile industry in Sub-Saharan Africa

2.1 Overview of mobile taxes in the region

Mobile consumers and operators in Sub-Saharan Africa are subject to general taxes, such as value added tax (VAT) and corporation tax, but also face a number of sector-specific taxes and regulatory fees that either apply exclusively to the mobile industry or are applied at higher rates than other sectors. In Sub-Saharan Africa and other developing markets, despite being widely accepted as essential and basic tools to improve social and economic standards, mobile services and devices have often been treated as luxury goods and therefore attracted a higher rate of tax than other standard goods and services.

Examples of the taxes and fees the mobile industry are subject to are summarised in Table 1.

Table 1

Mobile consumer and operator taxes and fees

TAXES ON CONSUMERS			OPERATOR TAXES AND FEES		
Tax base		Tax type	Tax base		Tax type
Handsets and other devices		Sales tax	General taxes	Profits	Corporation tax
		Sector-specific taxes		Revenues	Turnover tax
		Customs duty			Other revenue taxes
Services	Activation	Sales tax		Network equipment	Customs duty
		Sector-specific taxes	Regulatory fees and other payments	Fixed amounts	* One-off licence fee
	Usage	Sales tax			* One-off spectrum fee
		Sector-specific taxes		Revenues	* Universal service obligation
					* Variable licence fee
					* Variable spectrum fee

* Sector-specific

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

Consumer taxes such as sales taxes, custom duties and activation taxes directly raise retail prices for consumers. Meanwhile, the extent to which mobile operator taxes and fees ultimately fall on the operator or consumer depends on the type of tax and market conditions. Some taxes and fees may be absorbed by operators in the form of lower profits (thus negatively impacting investment), while others may be passed through in terms of higher prices for consumers, which impacts affordability. Or there may be a combination of the two.

2.2 Sector-specific taxes are not aligned with best-practice principles of taxation

A number of established principles are recognised by international organisations such as the IMF, World Bank and OECD as contributing to an effective tax system. These principles aim to minimise the potential inefficiencies and distortive impacts caused by taxation and take into account important practical challenges such as the level of informal activity and limited institutional capabilities.

Taxation over and above that which is applied to other standard goods and services is not fully aligned with the best-practice principles of taxation. As such, there is a risk with sector-specific taxation of causing negative distortionary impacts on economic and social development.

Table 2

Best-practice principles of taxation

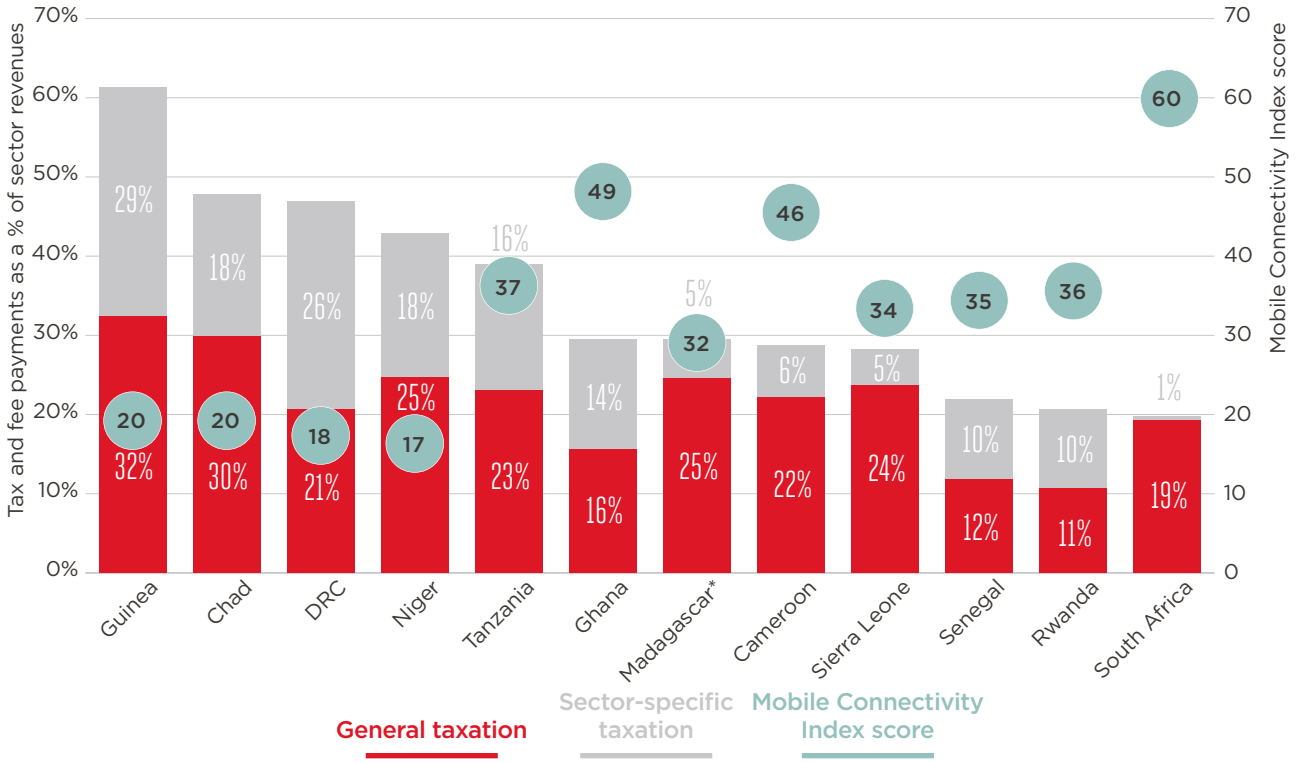
Principle	Description
Taxation should be broad-based	Taxation alters incentives for production and consumption, so economic distortions will generally be minimised where taxation is spread evenly across the economy. In practice, this equates to adopting broadly defined bases for taxation, rate variations that are limited and effective enforcement of tax compliance.
Taxes should account for sector and product externalities	The case for taxation to address negative externalities such as those arising from tobacco consumption is well recognised. However, the same logic also applies in the case of sectors and products with positive externalities. Taxation policy should encourage sectors, such as mobile, that create positive externalities in the wider economy.
Taxation should not disproportionately fall on those with lower income	Taxes and fees can be regressive – that is, have disproportionately greater impact on the poorest households raising the price of mobile services across the population without regard for capacity to pay. Certain sector-specific taxes and fees, such as activation and connection fees, are often imposed as a flat fee. These can have a particularly regressive impact on the poorest households.
The tax and regulatory system should be simple, easily understandable and enforceable	A lack of transparency over taxation systems and liabilities may deter investors and is also likely to increase enforcement costs for government.
Different taxes have different economic properties	There is a general consensus that, for most products, a broad-based consumption tax will be less distorting than taxation on income or profits.

Source: Mobile Taxes and Fees – A Toolkit of Principles and Evidence, Deloitte/GSMA 2014; Digital Inclusion and Mobile Sector Taxation 2016, Deloitte/GSMA, 2016

In 12 Sub-Saharan African countries[10] for which data is available, the mobile sector paid an estimated $4.4 billion in taxes and fees in 2015, representing on average 35% of mobile sector revenues. Sector-specific taxes and fees are often the driver for the high tax burden: approximately 26% of the taxes and fees paid by the mobile industry related to sector-specific taxation and not from broad-based taxation, equating to $1.15 billion.

Figure 4

Total tax and fee payments as a proportion of mobile sector revenues in 2015 with Mobile Connectivity Index Scores in select countries in Sub-Saharan Africa



*=2014

Source: GSMA Intelligence

Countries that have a higher level of tax and fee payments as a proportion of sector revenues tend to have relatively low levels of readiness for mobile internet connectivity. This is illustrated through comparison with the GSMA Mobile Connectivity Index, which benchmarks 134 countries against four key enablers that are critical to creating the right conditions for mobile internet connectivity to flourish:

- **infrastructure:** the availability of high-performance mobile internet network coverage
- **affordability:** the availability of mobile services and devices at price points that reflect the level of income across a national population
- **consumer readiness:** citizens with the awareness and skills needed to value and use the internet and a cultural environment that promotes gender equality
- **content:** the availability of online content and services that are accessible and relevant to the local population.

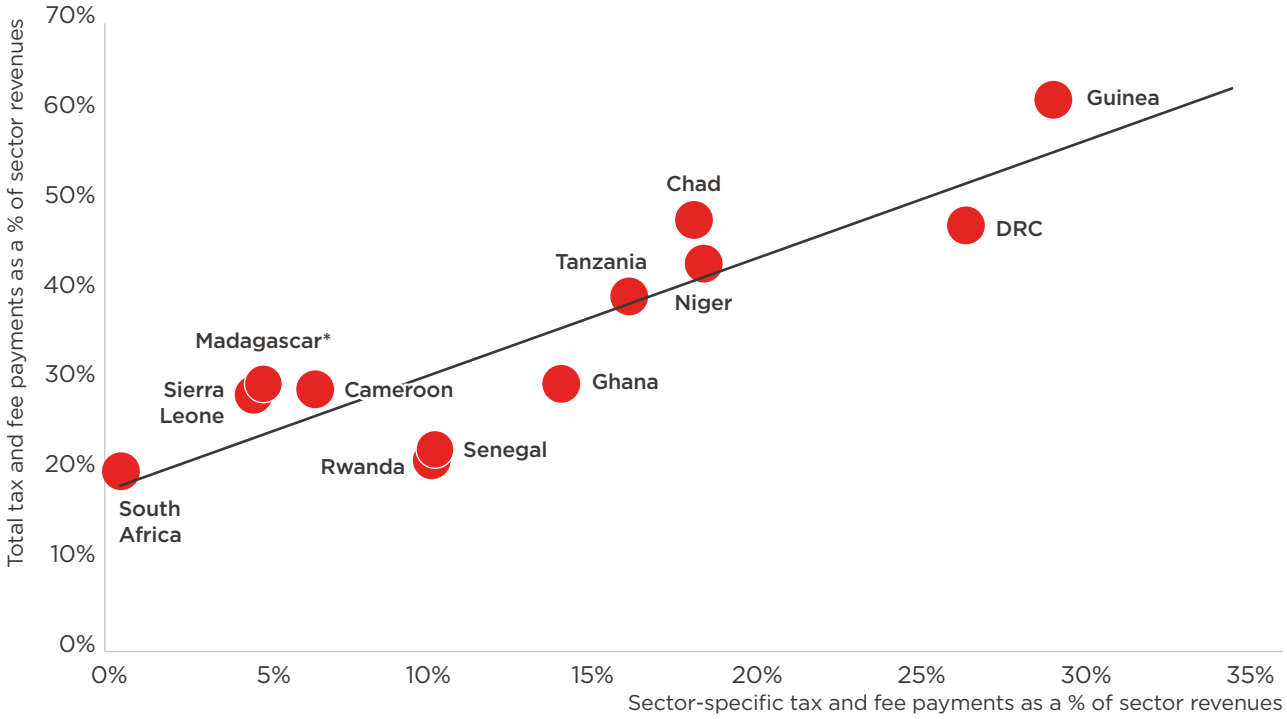
10 Cameroon, Chad, DRC, Ghana, Guinea, Madagascar, Niger, Rwanda, Senegal, Sierra Leone, South Africa and Tanzania. Note that payments data for Madagascar is from 2014 rather than 2015 and that the 2014 data does not include tax payments related to spectrum fees. See Appendix for details of data sources and methodology.

Several countries in Sub-Saharan Africa lag behind other developing markets when it comes to infrastructure and affordability enablers for connectivity; however, those with a lower taxation burden seem to perform better in supporting mobile connectivity and development.

Countries in Sub-Saharan Africa that have higher levels of sector-specific taxes and fees tend to have a higher total tax burden (Figure 5). Sector-specific taxation can be so high that the contribution required of the mobile sector for sector-specific taxes and fees is greater than that of general taxation. For example, in the DRC, the mobile industry contributed $352 million in sector-specific tax and fees against $277 million in general taxation in 2015.

Figure 5

Revenue share of sector-specific versus total tax and fees in 2015



*=2014

Source: GSMA Intelligence

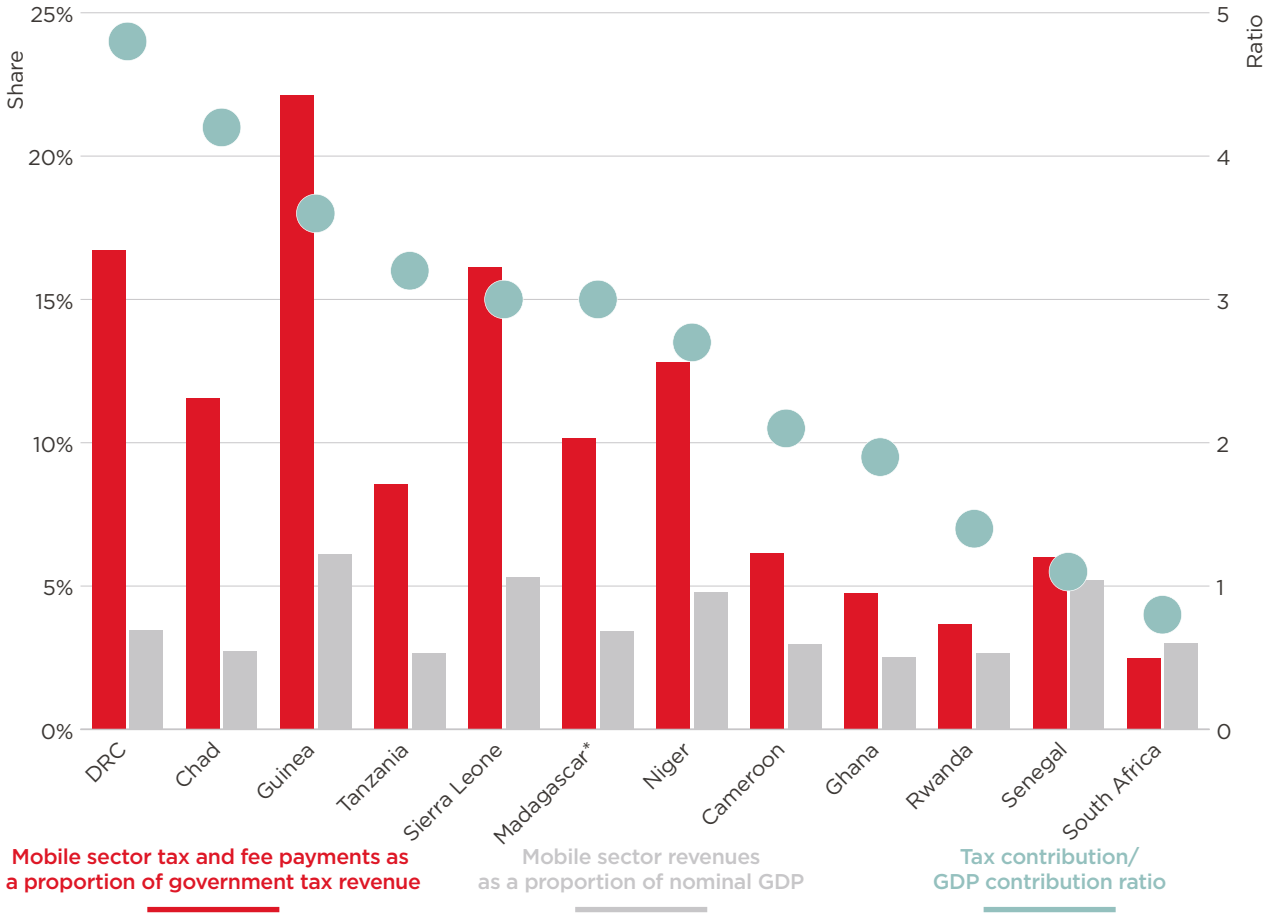
In part as a result of sector-specific taxation, the mobile industry in Sub-Saharan Africa often makes a larger contribution to government tax revenues relative to its size in the economy. Within the sample of countries for which data is available, the contribution of the mobile sector to government tax revenue is estimated to be 2.7× the industry's revenue share of GDP on average (Figure 6). This compares to a ratio of 1.8× based on available tax payment data for 15 (mainly developing) countries outside Sub-Saharan Africa;[11] we would expect this ratio to be closer to parity in developed countries. In the region, this multiple was highest in the DRC, at 4.8×, where the total taxes and fees paid by the mobile sector amounted to almost $630 million in 2015. Furthermore, in eight of the countries, mobile sector tax and fee payments as a share of government tax revenues were at least double the sector's revenue share of GDP.

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11 Argentina, Bangladesh, Brazil, Colombia, Ecuador, El Salvador, Hungary, Italy, Jamaica, Jordan, Mexico, Nepal, Pakistan, Sri Lanka and Thailand

Figure 6

Mobile sector tax and fee payments in government tax revenue versus the share of mobile sector revenues in nominal GDP in 2015



*=2014

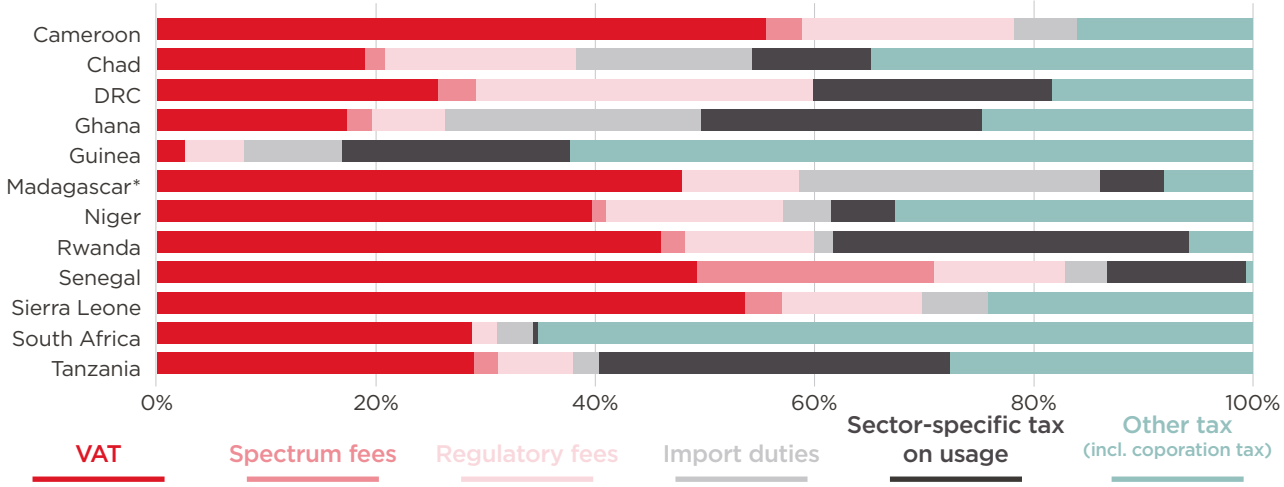
Source: GSMA Intelligence

Countries across the region have different approaches to the type of taxation applied. There is significant variability among the sector-specific taxes and fees that are levied:

- In more developed mobile markets such as South Africa, the majority of the tax base is derived from general taxes such as VAT and corporation tax.
- Cameroon and Sierra Leone generate more than half of tax payments through VAT at 56% and 54% respectively, followed by Senegal (49%) and Madagascar (48%).
- Sector-specific taxes and fees on voice, SMS and data usage accounted for 11% of the total payments of the countries included in this analysis, and at 42% represent the largest share of sector-specific tax and fee payments (which also include regulatory and spectrum fees).
- At 32% both Tanzania and Rwanda generate the highest sector-specific taxes and fees on voice, SMS and data usage as a proportion of total payments. In Guinea, taxes and fees paid by mobile operators represented more than three quarters (77%) of total payments. Operators in Chad face a similarly high tax burden, contributing 67% of total payments.

Figure 7

Tax and fee payments breakdown in 2015 in select countries in Sub-Saharan Africa



*=2014 **Source: GSMA Intelligence**

2.3 Consumer taxes and fees

Mobile subscribers in Sub-Saharan Africa are subject to general taxes such as VAT but also incur sector-specific taxes and charges.[12] These include taxes and fees on usage (voice, SMS and data), SIM activation and connection charges, while handsets and other mobile devices also often incur import or customs duties at higher rates. In addition, general taxes levied on mobile services such as VAT may be charged at higher rates relative to other sectors. Collectively, these taxes directly impact the prices paid by consumers and can be particularly regressive in that the tax burden disproportionately falls on those with lower incomes.

TAXES ON HANDSETS AND OTHER DEVICES

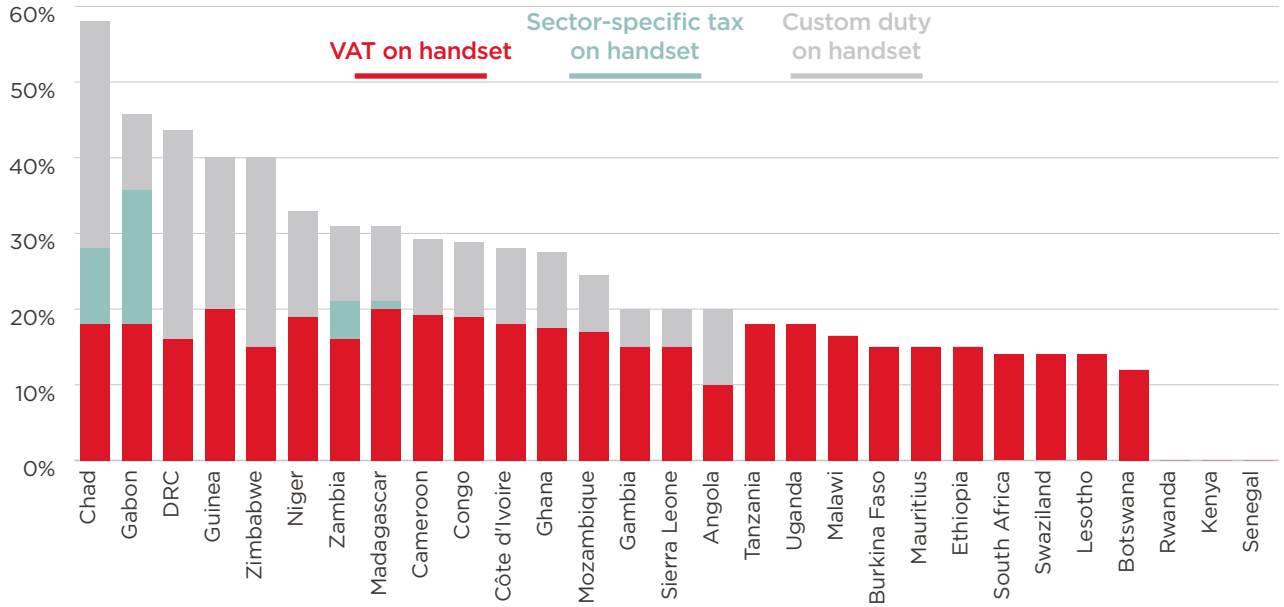
First, consumers need to purchase a device that is generally subject to VAT and customs duties but often also sector-specific taxes on handsets – all of which serve to increase the device acquisition cost and the cost of accessing mobile services. While an increasing number of countries have introduced tax exemptions on importing handsets over the last decade, as of 2016 handset taxes on average still accounted for 23% of the final cost of handsets.

- Chad has the highest combined handset tax rate in the region. A standard VAT rate of 18% is applied to all devices sold domestically, including imports, and any device that is imported from outside the Central African Economic and Monetary Community (CEMAC) region is subject to customs duty at a rate of 30%, which is the highest bracket for customs duties.
- In the DRC, the sale of goods and services is subject to the standard VAT rate of 16% that was introduced in 2012 to replace local turnover taxes. In addition, any imported handsets are subject to a customs duty of 27.6%, calculated on the cost, insurance and freight value of the handsets.
- In contrast, in 2009 the Kenyan government decided to implement a series of tax exemptions on handsets, removing the 16% VAT rate on mobile handsets. Rwanda and Senegal also exempt mobile handsets from all forms of taxation, and an increasing number of countries in the region have introduced custom duty exemptions on handsets, including Lesotho, Malawi and Togo.

12 See Appendix for details on sources of consumer tax rates.

Figure 8

Combined handset tax rates in 2016



Source: GSMA Intelligence

ACTIVATION AND CONNECTION CHARGES

Consumers may incur activation charges and/or SIM taxes that are levied in addition to the handset taxes described above. While these types of charges are relatively rare internationally, our research suggests there are five countries in the region that levy such activation charges. In most cases, these are fixed amounts so disproportionately affect those on lower incomes.

Table 3

Countries in Sub-Saharan Africa that levy activation taxes on mobile service

Country	Activation taxes and fees
Chad	**SIM tax:** XAF1,000 ($1.7) and 1% additional VAT which is sector-specific and is also applied to top-up cards **Numbering fee:** XAF165 ($0.3)
Gabon	**SIM tax:** 18% excise charge
Ghana	**Numbering fee:** up to $0.50*
Niger	**SIM tax:** XOF250 ($0.4)
Nigeria	**Numbering fee:** NGN10–20* ($0.05–0.10)

*Annual charges

Source: GSMA Intelligence

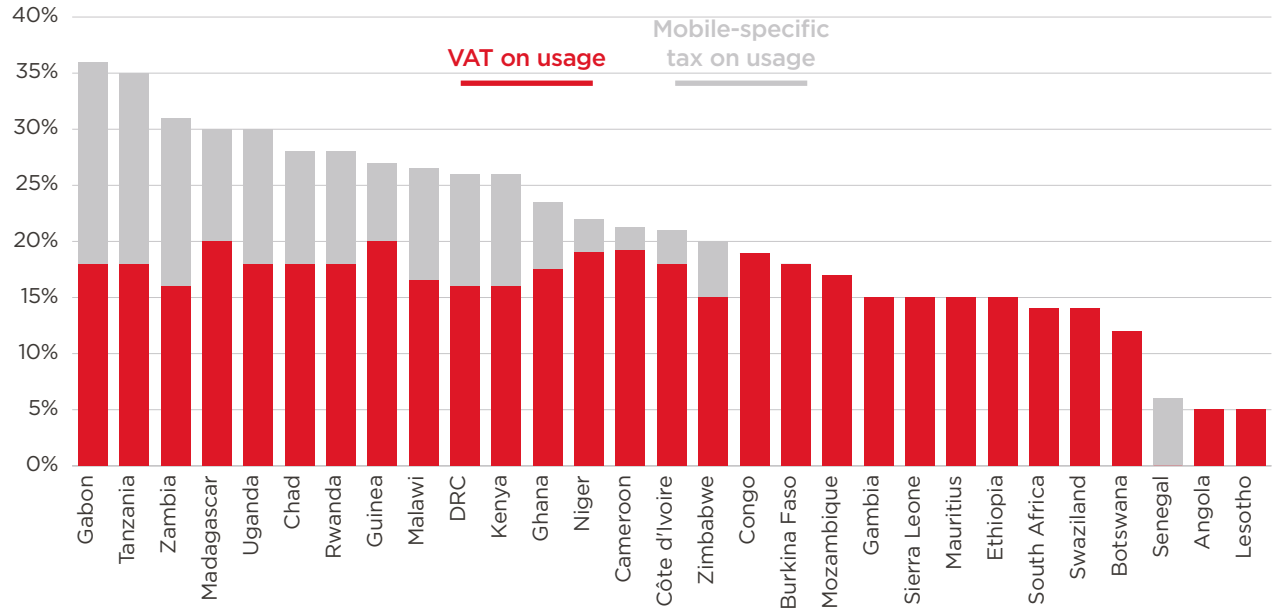
TAXES ON MOBILE USAGE

Once the consumer has invested in a handset and incurred any activation charges to access mobile services, they are then subject to the costs of using the mobile phone or device. The cost includes spend on calls, SMS and data, which are affected by both general sales taxes and sector-specific taxes. The cost of usage accounts for the largest component of the TCMO for consumers in Sub-Saharan Africa. As such, taxes levied on mobile usage have a significant effect on affordability and thus negatively impact development of the mobile sector.

The combined usage tax rates average 21% across the region for countries where data is available. Furthermore, 17 of the 30 countries in Sub-Saharan Africa where we have data levy a sector-specific tax on usage (voice, SMS and data), with Gabon, Tanzania and Zambia charging the highest rates at 18%, 17% and 15% respectively.

Figure 9

Combined usage tax rates in 2016



Source: GSMA Intelligence

SURTAX ON INTERNATIONAL INCOMING TRAFFIC

Consumers in a number of countries in the region are also affected by the surtax on incoming international traffic (SIIT). This tax fixes termination charges on incoming international calls, with the government collecting a certain portion. In a study by the GSMA (September 2014)[13] it was found that in the countries where SIIT is applied, the tax has caused the price of terminating international incoming calls to increase by an average of 97%. SIIT impacts businesses by creating barriers to regional and international trade through the increased cost of received international calls. Table 4 summarises some of the SIIT charges levied across the region.

13 Surtaxes on International Incoming Traffic in Africa, GSMA and Deloitte, September 2014

Table 4

Examples of SIIT charges in select Sub-Saharan African countries

Country	SIIT
Chad	XAF50 ($0.08) per minute
DRC	$0.08 per minute
Ghana	GHS0.13 ($0.03) per minute
Guinea	GNF571 ($0.07) per minute
Niger	XOF88 ($0.15) per minute
Rwanda	RWF85 ($0.12) per minute

Source: GSMA Intelligence

2.4 Mobile operator taxes and fees

Mobile operators also face a wide range of taxes and fees including corporation tax, revenue charges such as universal service fund (USF) contributions, regulatory fees and import duties on network equipment. Some of these charges are either specific to the sector or create a disproportionate burden on the mobile sector compared to other areas of the economy. Furthermore, sector-specific taxes and fees are not always transparent and add to the complexity of the tax system, thus increasing the compliance requirements faced by mobile operators relative to firms in other sectors of the economy.

Mobile operators also make one-off and recurring payments to secure licences and radio spectrum. While the fees are meant to reflect the value that mobile operators generate from using scarce resources as well as the cost of spectrum management, the fees are often set over and above these values and are frequently used as a revenue-raising instrument by governments.

TAXES ON REVENUES AND PROFITS

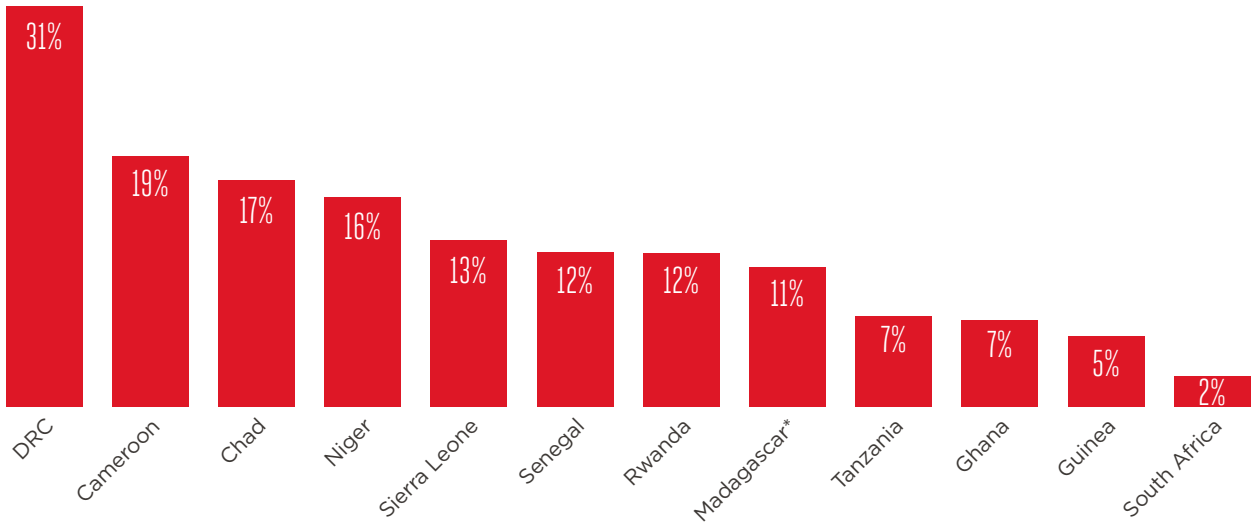
Further to general taxes such as corporation tax and other taxes on profits that usually apply to all sectors, mobile operators in certain countries are subject to additional taxes on profits or revenues, or face higher rates of corporation tax. For example, in Côte d'Ivoire, mobile operators are subject to a sector-specific 30% corporation tax rate, which is higher than the standard corporation tax rate of 25% applied on other sectors in the country.

REGULATORY TAXES AND FEES

Mobile operators are also subject to various regulatory fees and contributions each year such as annual numbering and licence fees, USF contributions and one-off fees that are paid by operators to acquire and provide for the administration of spectrum frequencies. Many of these fees apply to revenues and, in 2015, for the 12 countries for which we have data on regulatory fees, they represented 13% of revenues on average, reaching as high as 31% in the DRC. Regulatory fees in the DRC include a number of payments, including an annual regulatory payment as part of the licence arrangement of 2% charged on revenues from the provision of GSM and internet services. This is in addition to the one-off fees incurred for obtaining the licences.

Figure 10

Regulatory fees as a share of total tax payments in 2015



*=2014

Source: GSMA Intelligence

Regulatory taxes and fees are often subject to change. This lack of transparency can negatively impact future investment decisions due to lower returns on investment and capital employed and due to uncertainty over future tax liabilities. Moreover, taxes and fees levied on revenues are particularly distortive to investment as they affect operators in the same way regardless of their level of investment spend.

IMPORT DUTIES ON NETWORK EQUIPMENT

Some countries in Sub-Saharan Africa impose duties and surcharges on the importation of network equipment (such as antennas and base stations) at higher rates than other goods and services.

- In Chad, customs duty rates vary depending on the nature of the imported good, with rates ranging from 2% for radio equipment such as antennas or software to 30% for battery equipment. Mobile towers are subject to an additional charge (taxe sur les pylônes) which is based on 10% of the annualised capital value during the asset's life.[14]
- In Ghana, whereas imported telecommunications network equipment is subject to customs duty (base stations, for example, are subject to import duties of 10%), the government of Ghana has granted customs and VAT exemptions for machinery and apparatus used in other sectors such as agriculture, mining and transport.
- In Niger, any device imported from outside the West African Economic and Monetary Union (UEMOA) region is subject to the External Tariff. The External Tariff comprises a custom duty between 5% and 20%, depending on the type of equipment, and additional charges of 4%.[15] The total charges therefore range between 9% and 24%. The standard VAT rate of 19% is levied on the value of the equipment and on the payments of the UEMOA External Tariff.

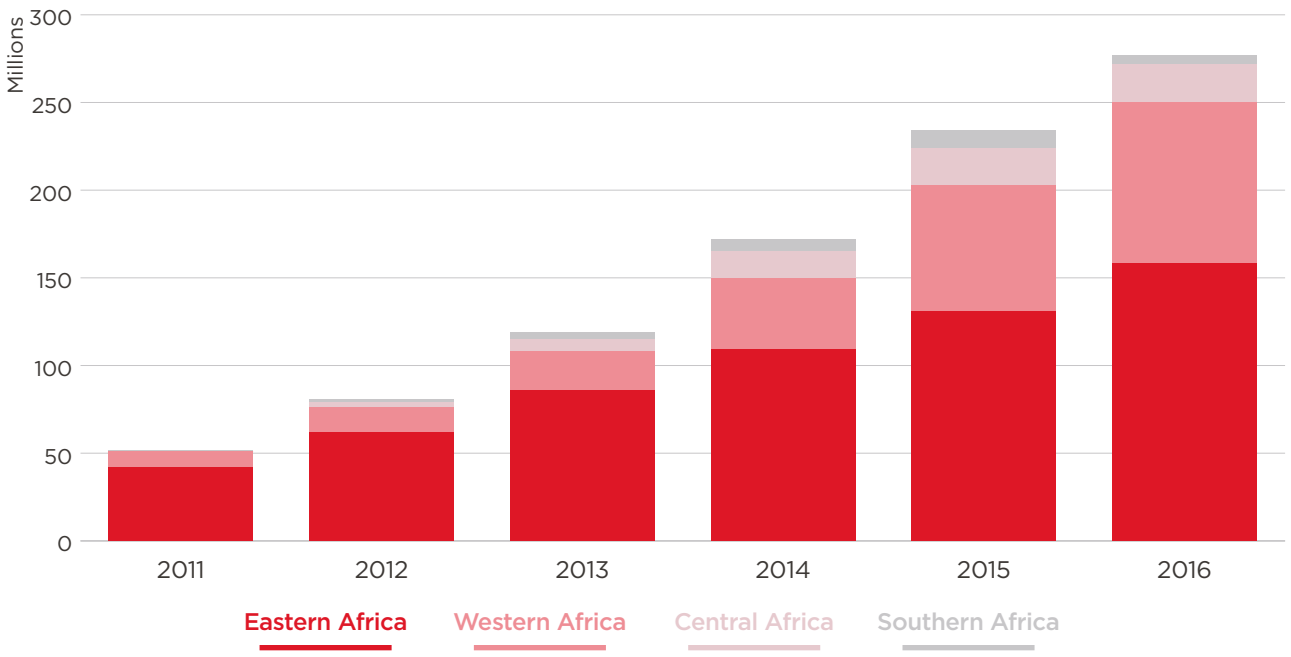
14 Digital inclusion and mobile sector taxation in Chad, GSMA and Deloitte, November 2016
15 Digital inclusion and mobile sector taxation in Niger, GSMA and Deloitte, January 2017

CASE STUDY
Taxation on mobile money

Mobile money continues to enable financial inclusion in developing countries, giving people access to transparent digital transactions and expanding access to unbanked households. There were 139 live services in 39 countries across Sub-Saharan Africa as of March 2017, accounting for nearly 280 million registered accounts and around 1.5 million registered agents. The spread of these services has driven greater financial inclusion in many developing countries, enabling those people without access to traditional banking and financial services to pay, transfer and save money through their mobile phones. More than 40% of the adult population now use mobile money regularly (90-day activity basis) in seven Sub-Saharan African countries – Gabon, Ghana, Kenya, Namibia, Tanzania, Uganda and Zimbabwe.

Figure 11

Registered mobile money accounts in Sub-Saharan Africa



Source: GSMA Intelligence

During this impressive growth period, the service has also attracted a number of sector-specific taxes. Some of these apply to mobile operators and any other institutions that provide similar banking services, while in other cases they apply to mobile operators only. With taxes on mobile money transactions on the rise in Sub-Saharan Africa, there is concern that mobile money development could be compromised as this tax is regressive, negatively impacting users who would not otherwise be in the financial system. Safaricom's m-Pesa in Kenya is widely recognised as a pioneer of mobile money payments. However, in 2012 the Kenyan government announced a 10% tax on mobile payments and other financial transactions; in the three months following the introduction of the tax, mobile payment transactions fell by almost 5%.[16]

16 "Charging the mobile", The Economist, June 2013

Table 5

Examples of countries that have introduced taxes and fees on mobile money services

Country	Mobile money tax or fee
Kenya	10% of mobile money transaction fees
Uganda	10% of mobile money transaction fees
Tanzania	10% of P2P transfer charges
Zimbabwe	$0.05 per transaction
DRC	3% of mobile money turnover
Tanzania	10% extended to all transfers, for both receivers and senders

Source: GSMA Intelligence

The success of mobile money in Tanzania has led to a misconception around the potential revenues that can be generated from the industry in the form of taxation. This is fuelled by the claim that more than 50% of Tanzania's GDP flows through mobile money. This claim is grossly exaggerated as it takes into account the total throughput value transacted on mobile money rather than the contribution of mobile money to GDP (output). The potential contribution of mobile money taxes to national tax remains very minimal. Even if tax were doubled, operator fees as a proportion of total government expenditure would only amount to circa 1.8%.

Disproportionate taxation of mobile money puts a wide range of positive externalities at risk. These positive externalities include the following:

Individuals

- Increased employment and investment
- Wider access to savings, credit and insurance
- Deepening financial inclusion

Government

- Higher tax base and receipts due to sector revenues and employment
- Lower risk of fraud and theft of public funds remitted to vulnerable groups through social subsidies
- Greater access to government services for underserved areas

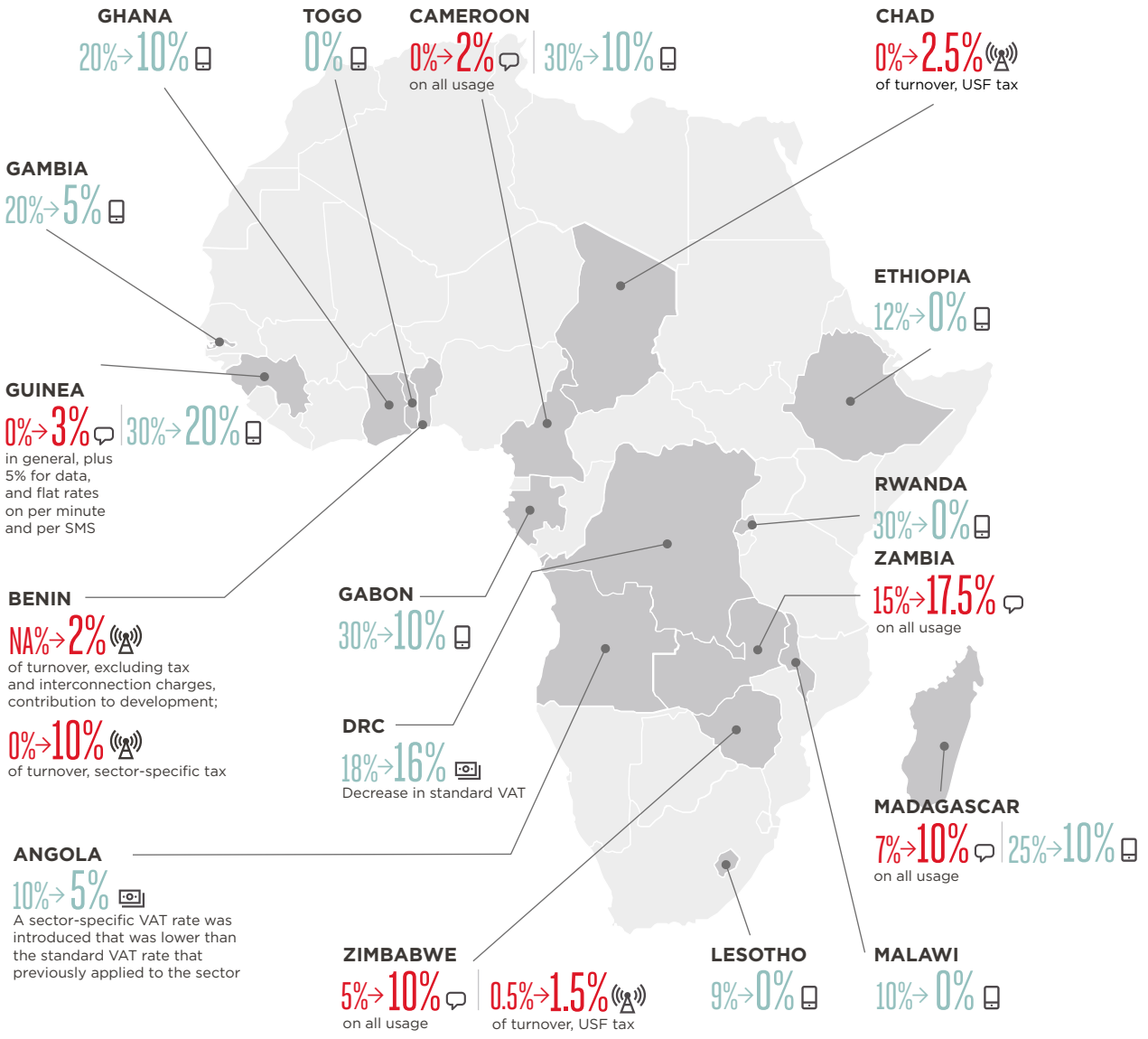
Economy

- Higher per capita income due to rising productivity and employment rates
- Cost and time savings for financial institutions and businesses as they digitise payments
- Investment in education and healthcare leading to higher capital development

Supportive taxation can play a key role in the development of emerging services such as mobile money. A number of principles for reforming sector-specific taxation and fees should be considered by governments in Sub-Saharan Africa, in order to align mobile taxation with that applied to other sectors and with best-practice taxation principles.

CASE STUDY

Recent tax reform for mobile services in Sub-Saharan Africa (2011–2016)



INCREASE IN RATES

- Sector-specific taxes and fees on voice, SMS and data
- Examples of changes in operator taxes and fees

DECREASE IN RATES

- VAT
- Customs duty on handsets

3 Mobile sector taxation and its impact on affordability and investment

3.1 Sector-specific taxation raises affordability barrier and risks undermining digital inclusion efforts

Affordability of mobile services is the ability of consumers to pay for the total cost of using mobile services. This consists of the cost of purchasing a handset, the cost of activation or connection and the cost of usage (voice, data and SMS).[17] The sum of these components is referred to as the total cost of mobile ownership (TCMO). Taking account of the different usage profiles and the numerous products available on the market, this report reviews the prices of four baskets that are used to estimate the TCMO (Table 6). These baskets represent the monthly cost of the cheapest device (which has internet browsing capabilities), the monthly costs associated with activation and connection, and the cheapest tariff price (either bundled or unbundled).[18] Further details on the methodology and data for this analysis can be found in the Appendix.

The analysis presented in this section specifically focuses on the Basic (100 MB of data) and Low (500 MB) baskets to assess the impacts of taxation on affordability for low- to middle-income consumers. This approach provides a more realistic picture of the costs faced by the typical mobile user in the region, taking into account factors such as disposable income, mobile internet penetration and typical data usage across the region and in comparable developing markets.

17 For the purposes of this analysis, we do not account for the energy cost of charging due to a lack of data.
18 The baskets have been defined and created by the GSMA based on data provided by Tarifica.

Table 6

Summary of monthly usage baskets used for calculation of TCMO

	Baskets			
	Basic	**Low**	**Medium**	**High**
Usage allowance	100 MB data	500 MB data	250 voice minutes 100 SMS 1000 MB data	5000 MB data
Tariff	Prepaid	Prepaid or postpaid	Prepaid or postpaid	Prepaid or postpaid
Technology	2G, 3G or 4G	3G or 4G	3G or 4G	3G or 4G

Source: GSMA Intelligence

AFFORDABILITY CREATES BARRIERS FOR THE UNCONNECTED, PARTICULARLY THOSE AT THE BOTTOM OF THE INCOME PYRAMID

A higher cost of mobile access will have a greater impact on the lowest earners, as it constitutes a higher share of their monthly income. Therefore, addressing affordability issues is key to achieving greater digital inclusion including increased subscriber penetration and the extension of mobile services to the unconnected across the region.

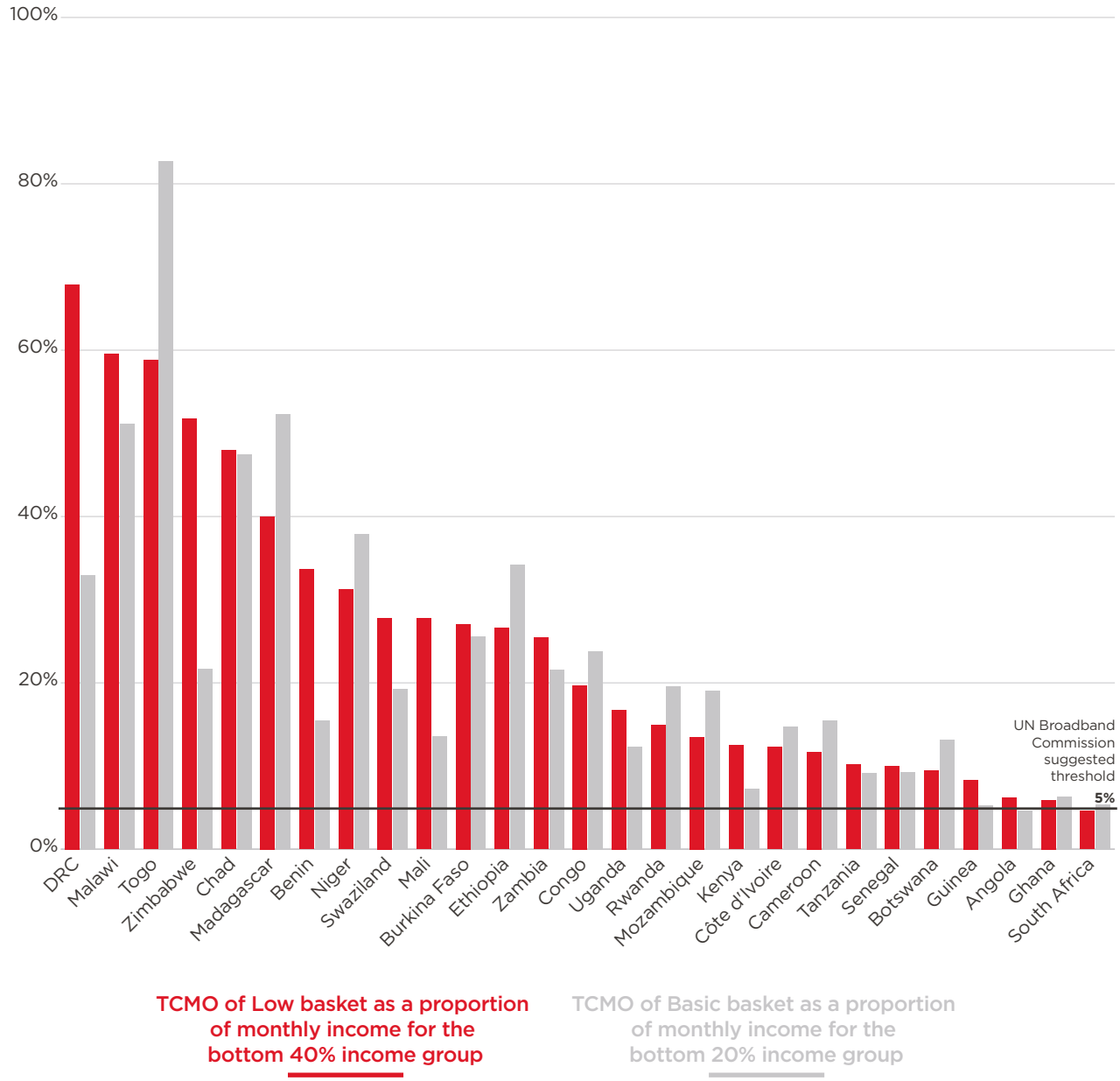
Analysis of the Low basket (500 MB) for 27 countries in the region shows that in 2016 the TCMO represented on average 10% of monthly income in Sub-Saharan African countries where data is available. However, for those in the bottom 40% income group, the average share of income is 25% and reaches as high as 68% in the DRC. To put this in context with more mature mobile markets, the equivalent share of TCMO in income for a selection of Western European countries[19] is 0.7% for the bottom 40% income groups and 0.4% for the entire population.

The UN Broadband Commission for Sustainable Development suggests a 5% threshold of income for the cost of a 500 MB per month mobile broadband bundle. This implies that the average TCMO for the Low basket in the Sub-Saharan African countries included in this analysis is approximately five times the suggested threshold and is thus unaffordable for consumers in the bottom 40% income group in 26 of the 27 countries.

19 The selected Western European markets include Austria, Belgium, France, Germany, Luxembourg, Netherlands and Switzerland

Figure 12

TCMO of Basic and Low baskets for different low-income groups in select countries in Sub-Saharan Africa in 2016



Source: GSMA Intelligence, Tarifica

In the majority of African countries, average mobile data usage is however much lower than in other regions, in the 60–120 MB range and in some cases less than 60 MB per person per month.[20] It is therefore important to assess more specifically the affordability and cost of that lower usage. As such, the Basic basket captures the cost of accessing 100 MB of data in each country and therefore provides an important benchmark when assessing affordability in the region. The TCMO of the Basic basket on average represents almost a quarter of monthly income for the bottom 20% income group. At just over 80%, TCMO as a share of monthly income is highest in Togo, followed by Madagascar, Malawi and Chad at 52%, 51% and 47% respectively. Even with low levels of mobile data usage, significant affordability challenges remain among a large share of people in the region.

20 State of the Mobile Web Africa 2016, Opera, November 2016

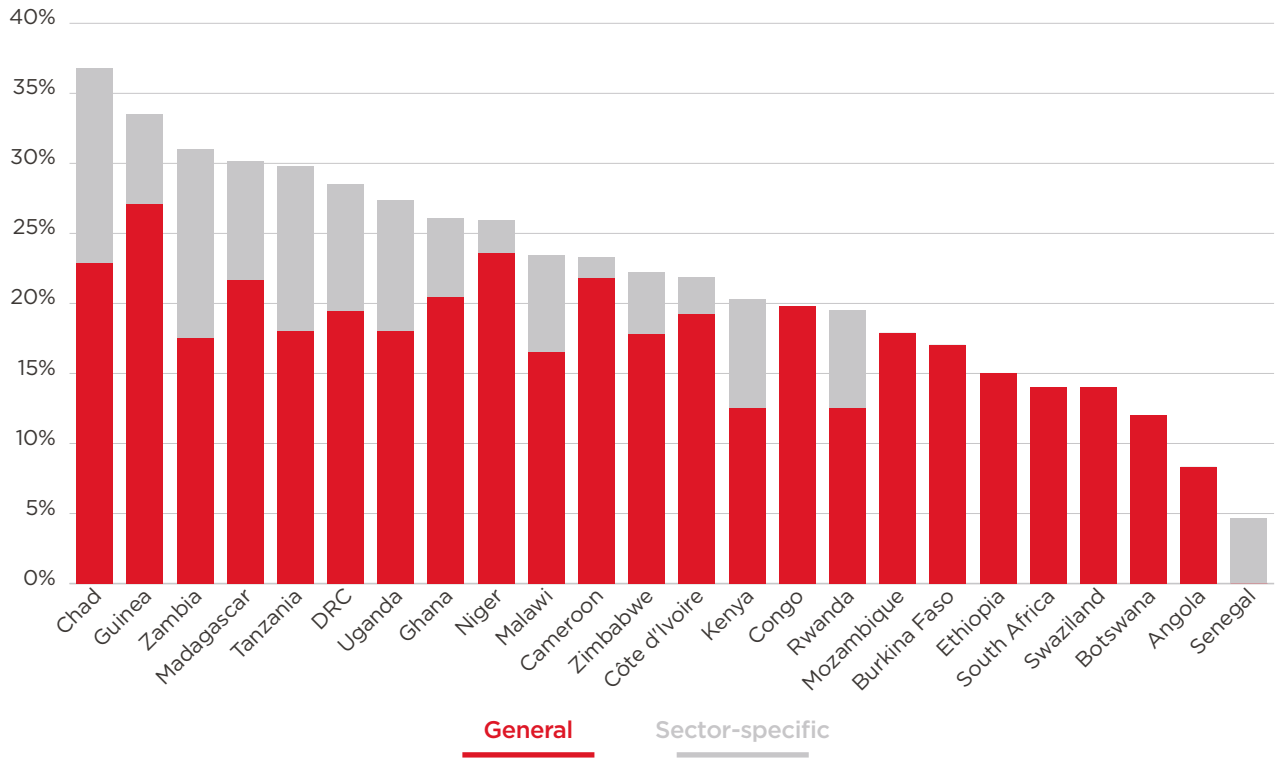
HIGH SECTOR-SPECIFIC TAXATION IS A MAJOR BARRIER TO MOBILE AFFORDABILITY

Taxation applied to the mobile sector contributes to the TCMO and acts as a barrier to the affordability of mobile services. Based on the tax payments data provided by mobile operators for the sample of 27 developing countries, consumer taxes as a proportion of the TCMO have been estimated. These estimates do not take into account the portion of taxation on operators that may be passed through to consumers, meaning that it is likely that the proportion of tax in the TCMO is higher in practice.

In Sub-Saharan Africa, taxation represents 22% of the TCMO on average for all baskets, while sector-specific taxes represent 5% of the TCMO on average. Based on the Low basket, taxation represents more than a third of the TCMO in Chad, Guinea, Zambia and Madagascar. Chad has the highest proportion of sector-specific tax to TCMO at 14%, followed by Zambia at 13%.

Figure 13

Tax as a proportion of TCMO (Low basket) in 2016



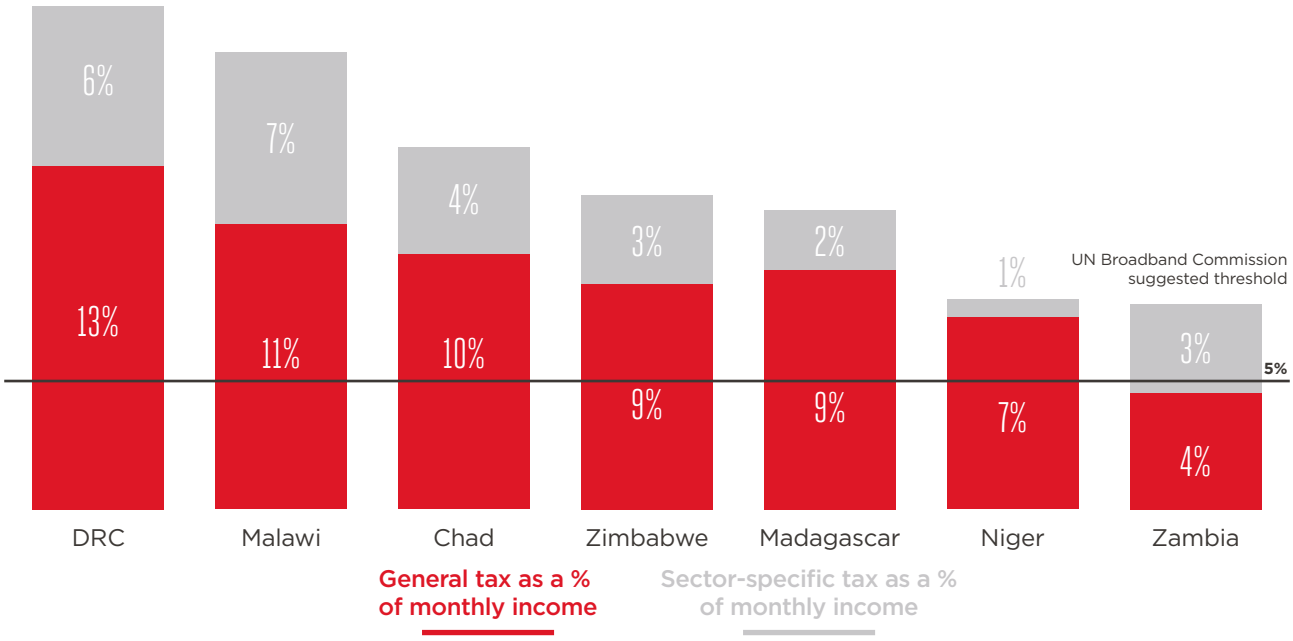
Source: GSMA Intelligence, Tarifica

LEVEL OF TAXATION ON MOBILE OWNERSHIP CAN BY ITSELF MAKE THE SERVICE UNAFFORDABLE

High levels of taxation on consumers can be regressive as the tax burden falls disproportionately on those with lower incomes. In seven countries included in the analysis, the level of taxation in the TCMO (Low basket) represents more than 5% of monthly income for the bottom 40% income group. In this case, taxation by itself is making the service unaffordable for a large share of society, even without considering the actual price of the device and the service. This ratio of tax in the TCMO is highest in the DRC, at around 20% for the bottom 40% income group.

Figure 14

Tax in TCMO (Low basket) as a proportion of monthly income for the bottom 40% income group in select Sub-Saharan Africa countries in 2016

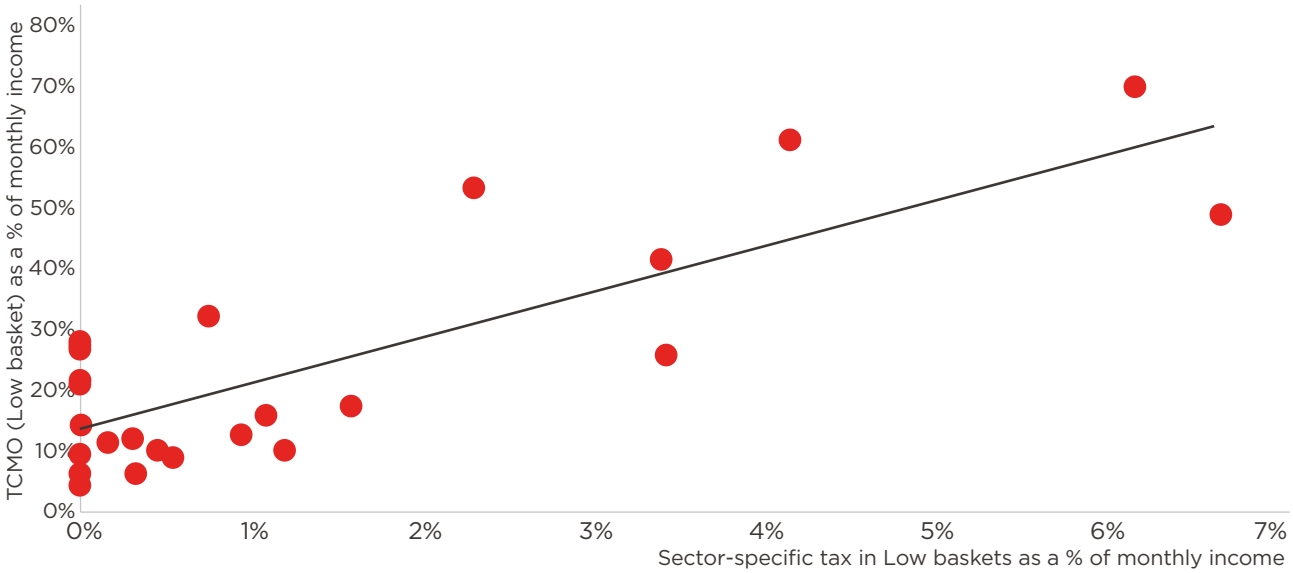


Source: GSMA Intelligence, Tarifica

A higher share of the TCMO in monthly income is in a number of cases partly driven by the higher levels of sector-specific taxation as a percentage of monthly income. In the DRC and Chad, at 6% and 7% respectively, the proportion of sector-specific taxation represents much more than 5% of monthly income.

Figure 15

TCMO's share of monthly income versus sector-specific tax in TCMO as a percentage of monthly income for bottom 40% income group in 2016



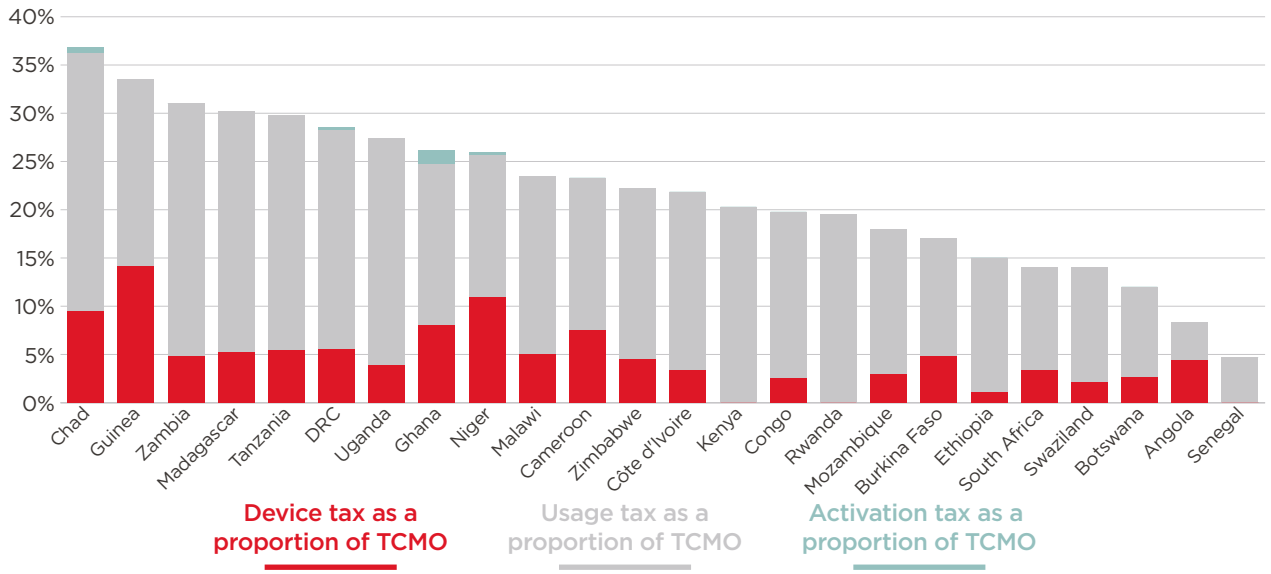
Circles show select countries in Sub-Saharan Africa used in this analysis

Source: GSMA Intelligence, Tarifica

The cost of handsets and other mobile devices is also a barrier to connectivity. This often needs to be paid upfront and can represent a large proportion of monthly income for those in the lowest income brackets. Although device costs in the region have fallen in recent years, the cost of purchasing a basic internet-enabled phone is still estimated to be 7% of monthly income for the bottom 20% income group in the Sub-Saharan African countries for which we have data. This share of income is highest in Malawi, where the cost of the handset accounts for 24% of monthly income. However, mobile usage costs account for the largest share of TCMO, at 79% on average across the region for the Low bundle. As a result, taxation and fees levied on usage account for the majority of taxes in the TCMO.

Figure 16

Taxes by type as a percentage of TCMO (Low basket), 2016



Source: GSMA Intelligence, Tarifica

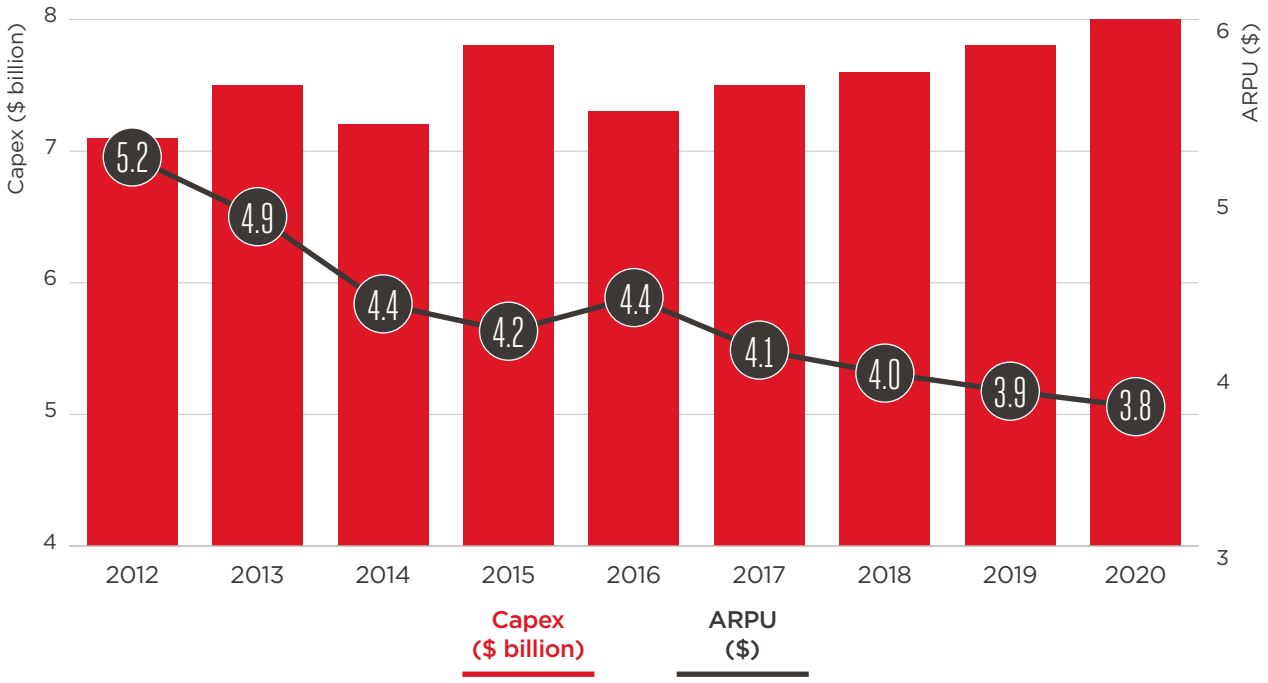
3.2 Uncertain and complex taxation regimes affect operators' ability to invest in infrastructure rollout

The mobile industry is characterised by significant upfront investment in spectrum licences, equipment purchases, network rollout and points of sale. In Sub-Saharan Africa, which has a predominantly rural population, the costs involved in extending and upgrading mobile networks are substantial. Approximately half the population or almost 500 million people live outside the coverage of a 3G mobile network. This coverage gap reflects the fact that deploying infrastructure in remote areas can be twice as expensive, but with revenue opportunities as much as ten times lower than in urban areas.[21]

Mobile operators in the region invested $37 billion in their networks over the past five years,[22] mainly in deploying high-speed mobile broadband networks: 88 3G and 91 4G networks were launched across the region over this period. However, the depreciation of local currencies means this strong capex is only reflected partially when looking at figures across the region in dollar values. MTN Group reported an increase in capex for the year in local currency, but this was affected by double-digit average depreciation of local currencies in several key markets, including South Africa (16%) and Nigeria (19%) during 2016. Capex is expected to pick up again in 2017, and out to 2020 mobile operators are forecast to invest a cumulative $31 billion.[23] This period of sustained and needed investment comes despite slowing revenue growth in the region, which stood at 3.9% in 2016, driven by macroeconomic weakness and the growing uptake of IP-based services. This has had a negative impact on blended ARPU levels, which have declined 15% over the last five years.

Figure 17

Capex and ARPU in Sub-Saharan Africa



Source: GSMA Intelligence

21 Unlocking Rural Coverage: Enablers for commercially sustainable mobile network expansion, GSMA, July 2016
22 Source: GSMA Intelligence
23 Source: GSMA Intelligence

Mobile operators in Sub-Saharan Africa are often part of multinational companies that operate in a large number of countries. The capital expenditure undertaken by these firms therefore represents an important source of foreign direct investment (FDI) in the region. Given that finite budgets are often set by headquarters, it is more likely for funds to be diverted from less attractive markets to markets with higher expected returns. As such, promoting investment in the telecoms sector could help drive FDI higher in the region. Well-developed mobile infrastructure can be particularly important as it can benefit other sectors, may enhance the ease of doing business and attract foreign investors.

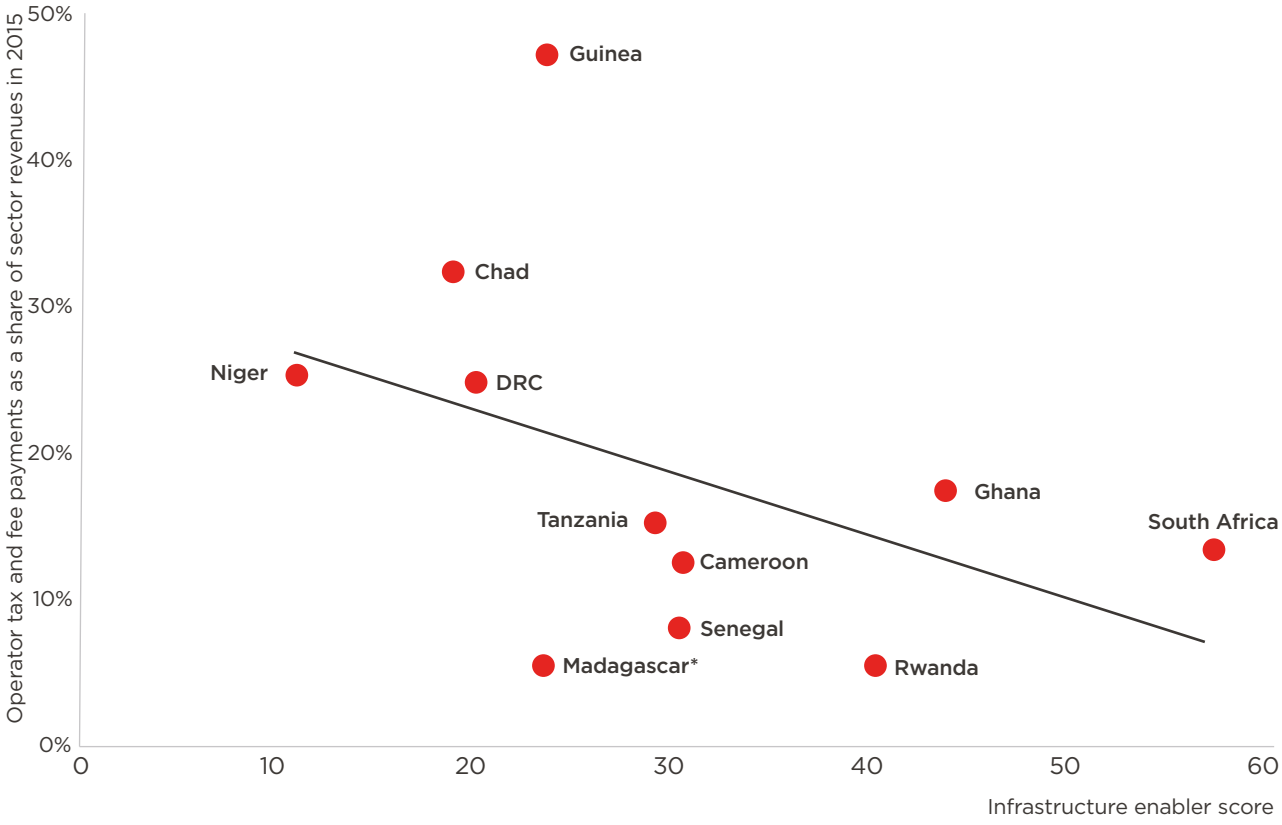
The importance of FDI in supporting economic and social progress in developing countries has been recognised in numerous studies. Academic research has broadly found a positive relationship between FDI and growth in developing countries. For example, one study finds that good infrastructure promotes FDI in Africa,[24] while another finds a positive relationship between mobile penetration and FDI in developing countries.[25]

THE IMPACT OF SECTOR-SPECIFIC TAXATION ON INVESTMENT AND INFRASTRUCTURE DEVELOPMENT

Although the mobile sector has made considerable investments over the last decade, the majority of countries in Sub-Saharan Africa lag significantly behind the developing market average in terms of infrastructure, as measured by the Mobile Connectivity Index infrastructure enabler indicator. There is a negative correlation between the infrastructure enabler score and higher levels of taxation on mobile operators as a proportion of revenues.

Figure 18

Operator tax and fee payments as a share of sector revenues (2015) versus Mobile Connectivity Index infrastructure enabler indicator (2016)



*=2014

Source: GSMA Intelligence

24 Foreign direct investment in Africa: The role of natural resources, market size, government policy, institutions and political instability, The World Economy, 2006
25 Communications networks and foreign direct investment in developing countries. Communications & Strategies, 2005

The level of taxation directly affects mobile operators' financial ability to invest, while tax complexity and uncertainty may also affect future investment incentives and ease of doing business in the region:

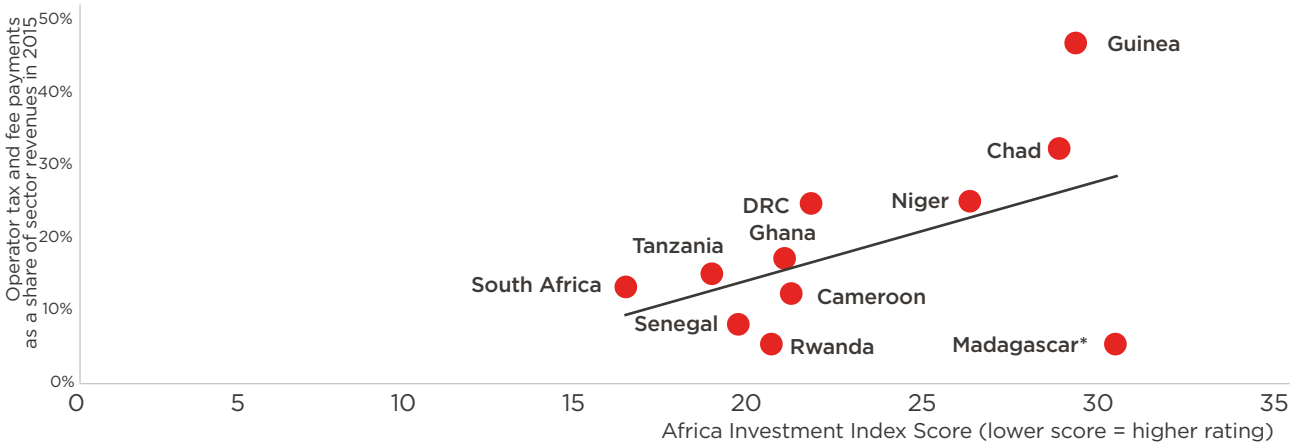
- With frequent tax changes, returns on investment are less certain and investment may be deterred, especially where significant upfront investments may need to be recovered over a long time period, as in the mobile sector.
- Fees on revenues rather than profits may discourage investment and innovation, as these fees require the same payment from an operator regardless of whether it retains its profit or uses it to invest in new infrastructure and services.
- Spectrum auction and fees are recurring transactions that when priced too high can negatively affect consumers, mobile sector investment and the wider economy. The hold-up problem[26] could force operators to moderate their investment behaviour if they perceive that their expected returns will be extracted in future spectrum auctions. Operators may also face internal financing constraints due to high auction prices: this could increase the likelihood of market exit. Furthermore, firms with high sunk costs may be more reluctant to engage in price competition; instead, the high upfront fees could act as a signal for firms to set higher prices.[27]
- Taxation on infrastructure and duties on importing network equipment can act as a significant barrier to investment in networks by directly increasing the cost of equipment. This can reduce the business case for upgrading and extending coverage through new infrastructure investment, which can be particularly detrimental for unconnected areas.

Governments around the world have recognised the importance of policies that support the ICT sector, resulting in digital agendas that set ambitious connectivity objectives that often rely on mobile networks to fulfil them. Expanding coverage is an important part of the mobile industry's agenda, and operators have been able to optimise infrastructure investments through initiatives such as infrastructure sharing. However, it is vital that the public sector enables a favourable regulatory environment, including supportive taxation policies, which can unlock private sector investment.

Sub-Saharan African countries where operator taxes as a proportion of sector revenue are lower are also more attractive for investment, as measured by the Africa Investment Index (AII) developed by Quantum Global Research Lab.[28] The AII measures countries and markets which are most attractive for investment in the short to medium term across growth, liquidity, risk, business environment, demographic and social capital factors.

Figure 19

Operator tax and fee payments as a share of sector revenues (2015) versus the Africa Investment Index Score (2016)



*=2014 **Source: GSMA Intelligence, Quantum Global Research Lab**

26 Hold-up arises when the return on one party's sunk investments can ex post be expropriated by another party. In the case of spectrum licences, the government can expropriate the returns on other sunk investments (such as in network infrastructure) made by a mobile operator by overcharging for access to spectrum. The hold-up problem has played an important role as a foundation of modern contract and organisation theory. The associated inefficiencies have justified many prominent organisational and contractual practices. Source: Effective Spectrum Pricing: Supporting better quality and more affordable mobile services (GSMA/NERA Consulting 2017)

27 For more information on effective spectrum pricing, see the report by 2017 GSMA/NERA Consulting: gsma.com/spectrum/wp-content/uploads/2017/02/Effective-Spectrum-Pricing-Full-Web.pdf

28 quantumglobalgroup.com/wp-content/uploads/2017/04/Africa_Investment_Index_April_2017_18.04.2017Final_Curves.pdf

CASE STUDY
Nigeria

Nigeria is the largest mobile market in the region in terms of subscribers. Since the introduction of mobile services in 2001, the market has grown to over 86 million unique subscribers. However, the investment climate in Nigeria faces challenges due to the geographic features of the country and security concerns which increase investment risk. In addition, investing in mobile sites depends on the existence of a functioning road network, and while gaps in electricity grids can be overcome by employing diesel generators, this proves costly to mobile operators.

These challenges have contributed to a situation today where many Nigerians are not covered by mobile networks; 3G coverage is available for 70% of the population, and 4G coverage is available for only 51% of the population.[29] This particularly impacts Nigerians who live in rural areas. Even where coverage exists, services are sometimes reportedly unreliable. While network infrastructure is being upgraded in many areas, service penetration and usage have increased at a very fast pace and mobile networks have suffered from congestion.[30]

Extending service availability to uncovered regions and improving the quality of service require significant network investment by mobile operators. To ensure a high quality of service and extend coverage, it is necessary to have more low frequency spectrum available and a clear long-term strategy for spectrum allocation and licence renewal.

Challenges remain that are limiting operators' incentives to invest. Mobile operators have identified several policy and environmental issues that add to the cost of network investment in Nigeria, including: high costs of rights of way,[31] delays in obtaining permits, an inadequate electricity supply that severely disrupts network services and forces mobile operators to use diesel generators to power base stations,[32] underdeveloped road infrastructure, and frequent and costly damage to networks caused by road construction accidents, sabotage and terrorism.[33]

Mobile operators are also exposed to multiple regulations and taxation at various levels of government that make investment more costly, limiting mobile operators' ability to undertake upgrades and roll out network infrastructure.[34] Regulatory taxes and fees can particularly constrain investment in Nigeria, especially in a competitive market where mobile operators have been experiencing declining ARPU levels. This can make it more difficult for mobile operators to make a business case for investment, particularly in poorer, rural areas where average revenues may be expected to be lower. Furthermore, despite the declining ARPU levels, affordability is still an issue in the country. The TCMO of the Low basket (500 MB) as a proportion of monthly income is 6% for the bottom 40% income group – above the suggested 5% threshold. Thus higher taxation on mobile services could act as a major barrier to affordability of services in Nigeria and should be discouraged.

29 GSMA Intelligence estimate
30 Buddecomm, Nigeria – Mobile Market – Insights, Statistics and Forecasts, 2015
31 Rights of way refer to the allowance of undertakings, such as installing network equipment, on public or private properties
32 Operators use 1.4m litres of diesel per day to power base stations. Source: Nigeria Communications Week, February 2, 2015, "Operators use 1.4m litres of diesel daily to power BTS"
33 GSMA Country Overview: Nigeria, 2014, Nigeria's National Broadband Plan 2013-2018, Buddecomm, Nigeria – Key statistics, telecom market and regulatory insights, 2015
34 Nigeria's National Broadband Plan 2013–2018

CASE STUDY
Senegal

As well as general taxes, such as VAT, mobile consumers in Senegal have to pay an additional tax charged on telecoms services at 5% of revenue (RUTEL). Operators also have to pay additional sector-specific taxes such as:

CODETE: 5% of operator turnover. Of this tax payment, only 2.5% goes to the Telecom Universal Service Development Fund, with the rest being allocated to the Energy Sector Support Fund.

Special Levy in Telecommunications (PST): 1% on turnover before tax.

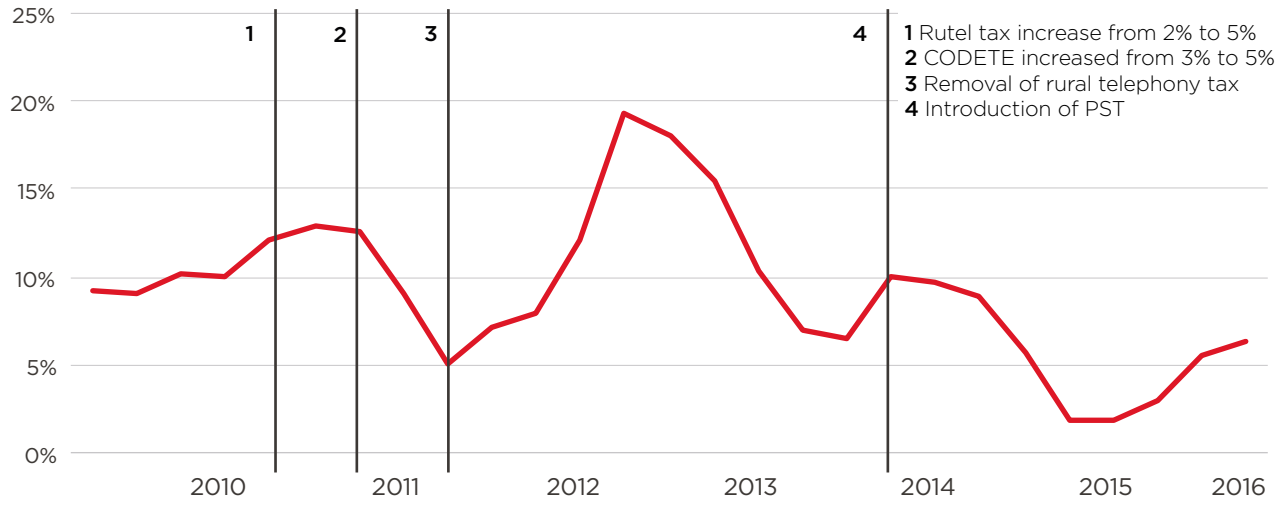
The combined revenue from RUTEL, CODETE and PST accounts for 20% of tax revenue from mobile in 2015,[35] and the total tax and fee payments for Senegal are 22% of the revenue of the mobile sector.

Whilst other developments in the country may have affected the mobile sector, evidence from GSMA Intelligence shows that tax changes on mobile in Senegal were associated with changes in the growth rate of unique subscriber penetration:

- The market penetration of the mobile sector measured by total subscribers showed slower growth in 2011 when the RUTEL tax was increased from 2% to 5% and growth fell later in 2011 when the CODETE was increased.
- After the removal of the rural telephony fee, 3% of net revenues, in 2012 unique subscriber penetration growth increased from 5% at the beginning of 2012 to 19% at the beginning of 2013.
- The growth subsequently slowed down again after the imposition of PST in 2014.

Figure 20

Annual change in unique subscriber penetration



Source: GSMA Intelligence

35 Analysis based on data provided by mobile operators

4 Reforming taxation to enable connectivity and deliver growth

4.1 Significant economic benefits can be delivered by reducing sector-specific taxation and fees

The development of ICT technologies and access to mobile broadband are central objectives of many governments worldwide. Promoting and extending connectivity has the potential to deliver substantial economic and fiscal benefits and is recognised as a crucial enabler in achieving the UN's Sustainable Development Goals.

While recognising the need for governments to raise revenue to finance public expenditure, sector-specific taxation and fees on the mobile industry are often levied in ways that do not account for key investment and economic features of the industry. This potentially creates a number of distortions that in the medium term can act to discourage investment, harm consumers and constrain the extension of mobile connectivity to those that remain unconnected.

Over the last 10 years, countries that have supported the connectivity agenda through a balanced and equitable tax system and through reductions in sector-specific taxes and fees have seen positive developments with regards to mobile access, penetration and usage.

CASE STUDY ENABLING TAX PAYMENTS THROUGH MOBILE MONEY IN TANZANIA

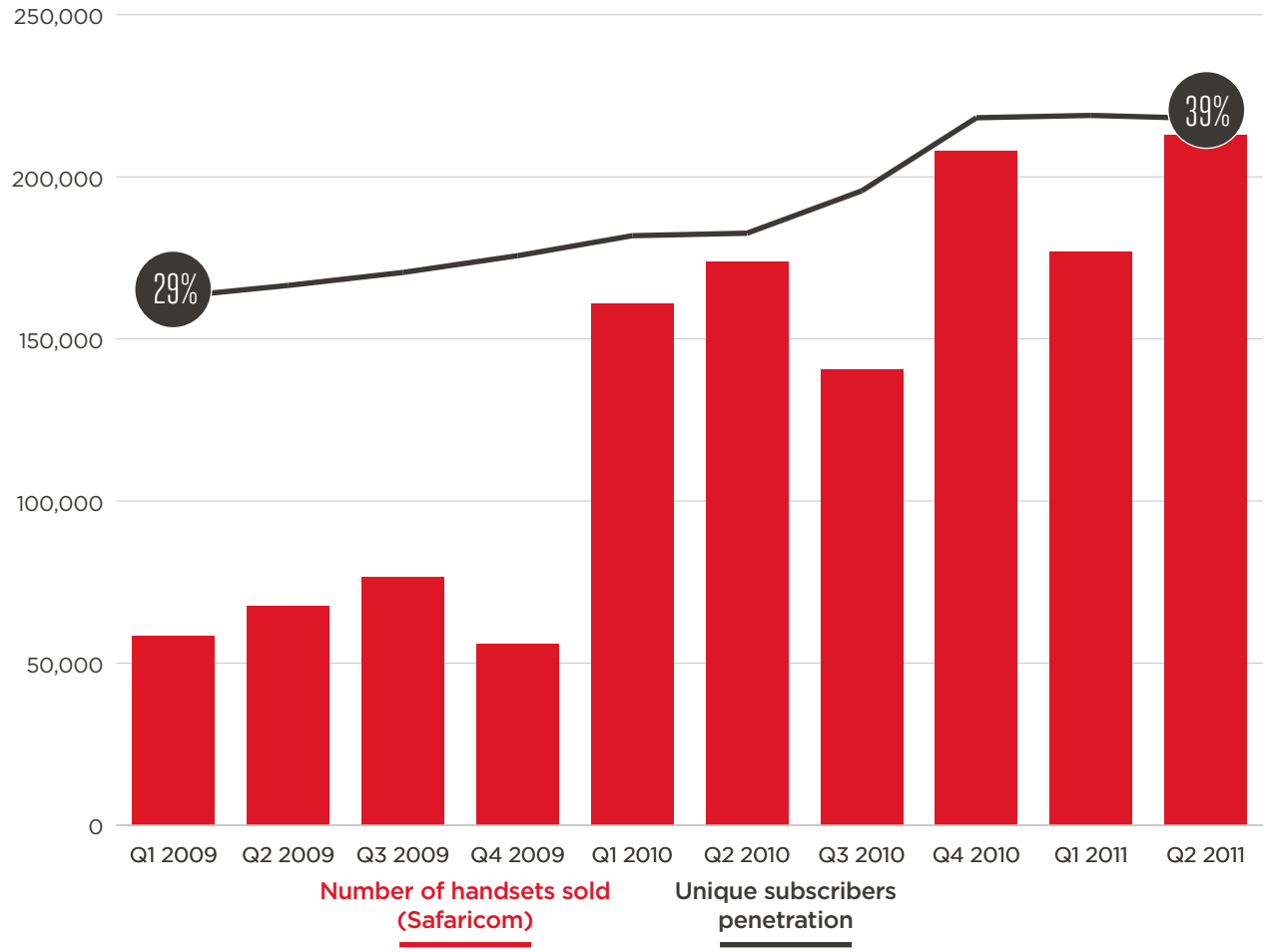
By supporting innovative services such as mobile money, government can not only broaden the tax base but also support a reduction in tax complexity and increase in tax compliance. A number of African countries are already enabling citizens to use mobile money to pay their taxes, which can serve to reduce the cost of tax compliance. For example, in August 2013, the Tanzania Revenue Authority enabled tax payments over mobile money for personal income and property taxes. Within one year of the introduction of this service, 15% of the tax base were making payments via mobile money, including people with no history of paying taxes.

CASE STUDY VAT EXEMPTIONS ON HANDSETS IN KENYA CONTRIBUTE TO GROWTH

Countries such as Kenya, Rwanda and Senegal have exempted mobile handsets from VAT. In 2009, the Kenyan government removed the 16% VAT rate on mobile handsets. Over the following three years, the VAT reduction contributed to a 200% increase in handset sales and an increase in unique mobile subscriber penetration from 29% to 39%.[36] Over the same period, the contribution of mobile to the Kenyan economy grew by nearly 250%, while mobile-related employment increased by 67%.[37]

Figure 21

Unique subscriber penetration and handset sales following removal of VAT in Kenya



Source: GSMA Intelligence, Safaricom

36 Source: GSMA Intelligence
37 Deloitte/GSMA, "Mobile telephony and taxation in Kenya", 2011

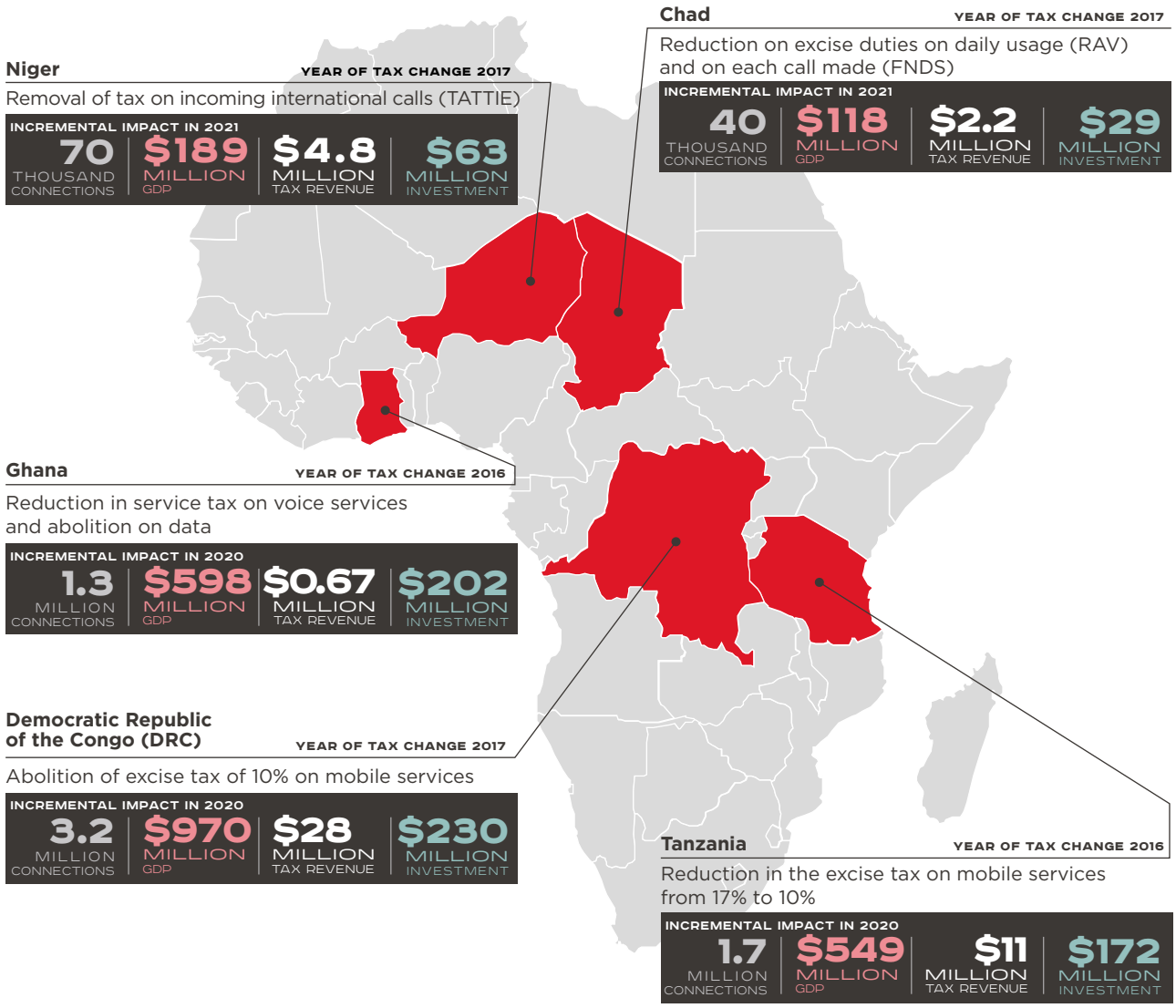
REMOVING SECTOR-SPECIFIC TAXES AND FEES CAN SUPPORT DIGITAL INCLUSION

Over the last few years, the GSMA has extensively studied the effects of reforming sector-specific taxes and fees in a number of countries. Through macro-economic models that measure both industry and economy-wide impacts, these studies have estimated the benefits of reducing sector-specific taxation.

The research suggests that by expanding the user base and use of services, tax reductions can result in an increase of the tax base and allow maintenance of tax neutrality in the medium term. A reduction in sector-specific taxes and fees on the mobile industry can improve digital inclusion, mobile sector development and economic growth. Governments can also achieve higher tax and fee revenues through more efficient, equitable and broad-based taxation in the long run.

Figure 22

Estimated additional impact of mobile tax reforms across selected countries, compared to base case over four to five years



Source: GSMA/Deloitte reports: Digital inclusion and mobile sector taxation in the Democratic Republic of the Congo, Ghana, Tanzania, Chad and Niger

4.2 Areas for reform to support mobile sector and region's economic growth

By reforming sector-specific taxes and fees, governments can play a key role in supporting connectivity and its associated benefits. A number of principles for reforming sector-specific taxation and fees could be considered by governments in Sub-Saharan Africa, in order to align mobile taxation with that applied to other sectors and with the best practices recommended by international organisations such as the World Bank and the IMF for implementing effective taxation while minimising distortions. In addition, in order to reflect local conditions and market dynamics, it is important that when considering fiscal reform on the sector, governments, policymakers and regulators conduct a detailed assessment of the potential implications of tax policy changes.

REDUCE SECTOR-SPECIFIC TAXES AND FEES

Those taxes and fees that are charged exclusively to the sector over and above general taxation may create economic distortions, potentially affecting service prices and investment levels. Reducing these sector-specific taxes can lead to increases in penetration and usage. By extending the user and tax base, reductions in taxation could have a neutral or positive impact on government revenues in the medium to long term. In the DRC for example it is estimated that eliminating the 10% tax on mobile services can lead to an additional 3.2 million mobile connections, $970 million in GDP and $28 million in tax revenues in 2020 relative to a base case with no changes.[38] Phased reductions of sector-specific taxes and fees can represent an effective way for governments to signal their support to the connectivity agenda, to benefit from economic growth resulting from the reductions, and to limit short-term fiscal costs.

REMOVE CONSUMER TAXES THAT TARGET ACCESS TO MOBILE SERVICES

Luxury taxes on handsets, SIM cards and other activation/connection charges create a direct barrier for consumers to connect and access mobile broadband, especially in developing markets and for the poorest sectors of the population by reducing the ability of the unconnected to access mobile services. To enable more users to gain access to the mobile market, governments should choose to address the affordability barrier represented by taxes on devices and connections. Removing these taxes has the potential to increase the taxable base for the government.

REDUCE COMPLEXITY AND UNCERTAINTY OF TAXES AND FEES ON THE MOBILE SECTOR

Uncertainty over future taxation reduces investment as the risk of future tax rises is priced into investment decisions. In addition, numerous sector-specific fees, often levied on different tax bases, raise compliance costs for mobile operators. Governments should seek to limit unpredictable tax and fee changes and streamline how tax and fees are levied.

SUPPORT EFFECTIVE PRICING OF SPECTRUM TO FACILITATE BETTER QUALITY AND MORE AFFORDABLE SERVICES

The spectrum award approach needs to balance the relationship between ex-ante and ex-post fees in a transparent way to ensure operators do not pay twice for access to the same resource, as this may disincentivise investment. By adopting a long-term perspective, setting modest reserve prices and prioritising spectrum allocation, governments and regulators can support operators to deliver high-quality and affordable mobile services to consumers.

REDUCE OR REMOVE IMPORT DUTIES

Applying targeted or temporary tax reductions or eliminating import duties for mobile network equipment and other local taxes levied directly on mobile sites would deliver an immediate cost relief to operators and has the potential to increase network investment. Removing or temporarily exempting import excises and duties on mobile handsets and smartphones would reduce the affordability barrier for the poorest consumers and extend connectivity.

38 Digital inclusion and mobile sector taxation in the Democratic Republic of the Congo, Deloitte/GSMA, 2015

IMPLEMENT SUPPORTIVE TAXATION FOR EMERGING SERVICES SUCH AS MOBILE MONEY

Emerging services such as mobile data, mobile money and Internet of Things (IoT) applications can help accelerate productivity and financial inclusion throughout the economy. Disproportionate taxation of services such as mobile money puts a wide range of positive externalities at risk. Implementing supportive taxation can play a key role in the development of these services.

REMOVE TAXES ON INTERNATIONAL INCOMING CALLS

Surtaxes on international incoming calls are particularly detrimental to businesses and consumers in Sub-Saharan Africa. Removing these taxes can ease barriers to regional and international trade by lowering the cost of receiving international calls, and can improve affordability, enabling more consumers to realise the benefits of mobile services.

AVOID EXCESSIVE REGULATORY FEES AND TAXES ON REVENUES

Regulatory fees that exceed the true cost of spectrum and licence management could be reconsidered. In particular, fees on revenues rather than profits may discourage investment and innovation, as these fees require the same payment from an operator regardless of whether it retains its profit or uses it to invest in new infrastructure and services. USF contributions represent a direct cost for mobile operators, while the benefits of these funds remain less clear-cut as some funds do not disburse significant amounts of the contributions paid by operators.[39]

39 Universal Service Fund Study, GSMA, 2013

Methodology
Appendix 1 Data sources

For the purposes of the study we collected data on handset and mobile service bundle prices, tax rates, tax payments, macroeconomic data and mobile market indicators. Table 7 summarises the specific variables used.

Table 7

Summary of variables and sources

Area	Variable	Time	Source
Prices	Tariff price for Basic basket	2017 Q1	Tarifica
	Tariff price for Low basket	2017 Q1	Tarifica
	Tariff price for Medium basket	2017 Q1	Tarifica
	Tariff price for High basket	2017 Q1	Tarifica
	Device price	2017 Q1	Tarifica
Tax rates	General tax rates	2016	Mobile operators and public sources
	Sector-specific tax rates	2016	Mobile operators and public sources
Tax payments	Tax payments (general, sector-specific)	2014–2015	Deloitte and GSMA analysis of mobile operator data
Macroeconomic	Nominal GDP	2016	IMF World Economic Outlook[40]
	Population	2016	World Bank
	Income distribution	2003–2013	World Bank[41]
	Exchange rates	2014–2016	Oanda[42]
	Tax revenue as a proportion of GDP	2014	IMF Government Finance Statistics[43]
Mobile market	Mobile operator revenue	2014–2016	GSMA Intelligence
	Market share by operator	2014–2015	GSMA Intelligence

40 See IMF WEO Database imf.org/external/pubs/ft/weo/2017/01/weodata/index.aspx
41 See World Bank data.worldbank.org/indicator/SI.DST.FRST.20
42 See Oanda oanda.com
43 See IMF Government Finance Statistics data.imf.org/GFS

A1.1 Prices

Pricing data for devices and tariffs was provided by Tarifica. Retail prices were captured as of the first quarter of 2017, including all relevant taxes.

Based on GSMA Intelligence analysis, four baskets were defined with different levels of usage allowance, type of contract and technology. The following aspects were taken into account:

- Historic average trends in data consumption across countries, sourced from GSMA Intelligence, Ofcom,[44] Tefficient[45] and Opera.[46] Data requirements going forward (which are likely to increase) were also taken into account. The analysis of average values was carried out taking into account the skewness introduced by intensive users of mobile services.
- A selection of allowances currently offered by operators in developed and emerging markets, provided by Tarifica.
- Baskets used in existing benchmarking studies from OECD,[47] Ofcom,[48] EC[49] and Tarifica.[50] These represent basket designs often used in the economics literature analysing pricing in the mobile industry.[51]

The baskets resulting from this analysis are described in Table 8 below:

Table 8

Usage basket profiles

	Basic	Low	Medium	High
Usage allowance	100 MB data	500 MB data	250 voice minutes 100 SMS 1000 MB data	5000 MB data
Tariff	Prepaid	Prepaid or postpaid	Prepaid or postpaid	Prepaid or postpaid
Technology	2G, 3G or 4G	3G or 4G	3G or 4G	3G or 4G

Source: GSMA Intelligence and Tarifica

44 The Communications Market Report, Ofcom, 2016 ofcom.org.uk/__data/assets/pdf_file/0026/95642/ICMR-Full.pdf
45 Unlimited pushes data usage to new heights, Tefficient, 2016 media.tefficient.com/2016/12/tefficient-industry-analysis-5-2016-mobile-data-usage-and-pricing-1H-2016-ver-2.pdf
46 State of the Mobile Web Africa 2016, Opera, 2016 blogs.opera.com/news/wp-content/uploads/sites/2/2016/11/SMWAfrica-Opera-report-2016-01-WEB-1.pdf
47 Digital Economy Outlook 2015, OECD, 2015 oecd.org/sti/oecd-digital-economy-outlook-2015-9789264232440-en.htm
48 The Communications Market Report, Ofcom, 2016 ofcom.org.uk/__data/assets/pdf_file/0026/95642/ICMR-Full.pdf
49 Mobile Broadband Prices in Europe 2016, European Commission, 2016 ec.europa.eu/digital-single-market/en/news/mobile-broadband-prices-europe-2016
50 See Tarifica tarifica.com
51 For instance, OECD and Tarifica's benchmarking has been extensively used in studies such as: Evaluating market consolidation in mobile communications, CERRE, 2015; Ex-post analysis of two mergers: T-Mobile/tele.ring in Austria and T-Mobile/Orange in the Netherlands, DG Comp 2015; The impact of competition on the price of wireless communications services, Hogunbonon, G.V, 2015; Supersonic: European telecoms mergers will boost capex, driving prices lower and speeds higher, HSBC Global Research, 2015

To capture all costs that consumers face when consuming mobile services (i.e., handset price, activation and connection fees and usage price), Tarifica collected two variables for each country: the retail price of a device and the tariff price, which included activation and connection fees as well as the price of the service.

Device prices were obtained from mobile operators' websites for the cheapest handset available in the market with internet-browsing capability – a smartphone[52] or a feature phone.[53] Given that the performance for basic internet mobile applications (such as basic video or social networking) is only functional with 3G and 4G, this analysis excluded devices with 2G and WAP connectivity. Device prices from retailers other than mobile operators were analysed for the countries where mobile operators did not offer handsets, which means that in some markets there may be cheaper devices available.

Mobile tariffs for each country were measured by the cheapest available plan for each basket across all mobile operators in the market. The plans and prices available for each market were obtained from the websites of mobile operators. Tariffs from mobile virtual network operators were not taken into account.[54] A number of restrictions were applied to ensure prices are representative of regular usage and consumption patterns:

- Postpaid plans that required a commitment of more than 24 months were excluded.
- Prepaid plans lasting less than one month were included; where this applied, usage allowance and prices were scaled up to one month.
- When there are promotional offers, only those that appear to be permanent were taken into account.
- Plans targeted or restricted to certain profiles (e.g., youth, student, senior) were not included.

A1.2 Tax rates

Tax rates were sourced from mobile operators and the following public sources:

- VAT rates were obtained from PwC Tax Summaries,[55] KPMG[56] and OECD's Tax Database.[57]
- Sector-specific consumer tax rates and fees were sourced from PwC Tax Summaries, IBFD[58] and from desktop research (e.g. government budget laws, mainstream media).
- Custom duties on handsets were collected from the World Trade Organisation (WTO) website. These refer to the Harmonised System HS code 851712: 'Telephones for cellular networks mobile telephones or for other wireless networks'.
- Previous Deloitte and GSMA global[59] and country reports.[60]

A1.3 Tax payments

Tax payments are based on Deloitte and GSMA's analysis of data sourced from mobile operators for 2014 and 2015.[61] Total tax and fee payments applicable to the mobile sector are defined as total recurring tax and regulatory fee payments. Spectrum taxes and fees include recurring spectrum and licence fees but exclude one-off payments.

52 A smartphone is a device that has an open operating platform (where new applications can be developed and installed by the user).
53 A feature phone is a device with a closed platform, where non-native applications can be installed.
54 This could mean that in some markets cheaper alternatives could be available.
55 PwC Tax Summaries, 2016 pwc.com/gx/en/services/tax/worldwide-tax-summaries.html
56 Indirect tax rates studies, KPMG, 2017 home.kpmg.com/xx/en/home/services/tax/tax-tools-and-resources/tax-rates-online/indirect-tax-rates-table.html
57 OECD Tax Database oecd.org/tax/tax-policy/tax-database.htm
58 IBFD Database ibfd.org
59 Digital inclusion and mobile sector taxation 2016, GSMA and Deloitte, 2016; Digital inclusion and mobile sector taxation 2015, GSMA and Deloitte, 2015; Global Mobile Tax Review 2011, GSMA and Deloitte, 2011.
60 Digital inclusion and mobile sector taxation in Ghana, GSMA and Deloitte, 2016; Digital inclusion and mobile sector taxation in the Democratic Republic of the Congo, GSMA and Deloitte, 2015; Digital inclusion and mobile sector taxation in Nigeria, GSMA and Deloitte, 2015; Digital inclusion and mobile sector taxation in Tanzania, GSMA and Deloitte, 2015; Digital inclusion and mobile sector taxation in Chad, GSMA and Deloitte, 2016; Digital inclusion and mobile sector taxation in Niger, GSMA and Deloitte, 2017.
61 Tax payments for 2014 were retrieved from Digital inclusion and mobile sector taxation 2016, GSMA and Deloitte, 2016 gsma.com/mobilefordevelopment/wp-content/uploads/2016/07/Digital-Inclusion-and-Mobile-Sector-Taxation-2016.pdf. Tax payments for 2015 follow the approach in Mobile Taxation Survey, A methodological note for GSMA and Deloitte, 2017 gsma.com/mobilefordevelopment/wp-content/uploads/2017/06/Mobile-taxation-survey-methodology-note.pdf

Appendix 2 Calculation of the total cost of mobile ownership (TCMO) and its tax component

A2.1 Calculation of TCMO

The total cost to a consumer of owning and using a mobile phone can be defined by using the concept of TCMO. The TCMO is calculated in monthly terms, on the basis of three building blocks:

- The handset price, i.e. cost of the mobile device required for the use of mobile services. This represents a one-off cost that can be spread over the lifecycle of the device (after which it is assumed to be replaced). Handset prices were converted to a monthly price based on a handset lifecycle assumption of three years for developing markets and two years for developed markets, in order to take into account differences in usage patterns, disposable income and willingness to pay. [62]
- The activation and connection price or any other charges incurred to connect to the MNO's network. For prepaid customers this usually consists of an initial charge for activating the SIM card. For postpaid customers there may be additional upfront costs, such as an initial charge for activating the number. Activation and connection prices were converted into monthly prices assuming they follow the lifetime of the device.
- The price related to use and comprising voice, SMS and data charges, which can be prepaid or postpaid. This price is already expressed in monthly terms.

To account for the fact that the handset, activation and connection and usage prices are different across consumption profiles, the TCMO was calculated for two baskets for each country – the Basic and Low baskets, as defined in Table 8, taking into account the relevance of these profiles for lower income quintiles. Since these two baskets have different usage characteristics (in usage allowance, type of contract and technology), they can have different prices in the usage block of the TCMO as well as in the activation and connection component. As far as the device component is concerned, the same device was used for both baskets, since it was assumed these two profiles use it with similar purposes and services[63] and hence require a similar technology.

62 This assumption is based on Global Mobile Tax Review, GSMA and Deloitte, 2011 gsma.com/publicpolicy/wp-content/uploads/2012/03/gsmaglobaltaxreviewnovember2011.pdf
63 This assumption is based on the fact that the data allowance is not substantially different, which should to a certain extent drive similar usage patterns.

The calculation of the TCMO for basket *b* of country *i* is as follows.

$$TCMO_{bi} = \frac{Handset\ price_i}{Handset\ lifecycle_i} + \frac{Activation\ and\ connection\ price_{bi}}{Handset\ lifecycle_i} + Usage\ price_{bi}$$

In order to account for income differences across countries, the TCMO was expressed as a proportion of income per capita across different income quintiles,[64] using the most recent information on income distribution available from the World Bank.[65] The TCMO measure presented in this report was estimated for 2016 – i.e. using pricing and income data as of 2016. Since data collection of prices was carried out throughout the first quarter of 2017, for countries experiencing substantial inflation, adjustments have been made to allow for better estimates of 2016 mobile service prices. Prices were captured in local currencies and converted to US dollars using exchange rates from Oanda in 2017.

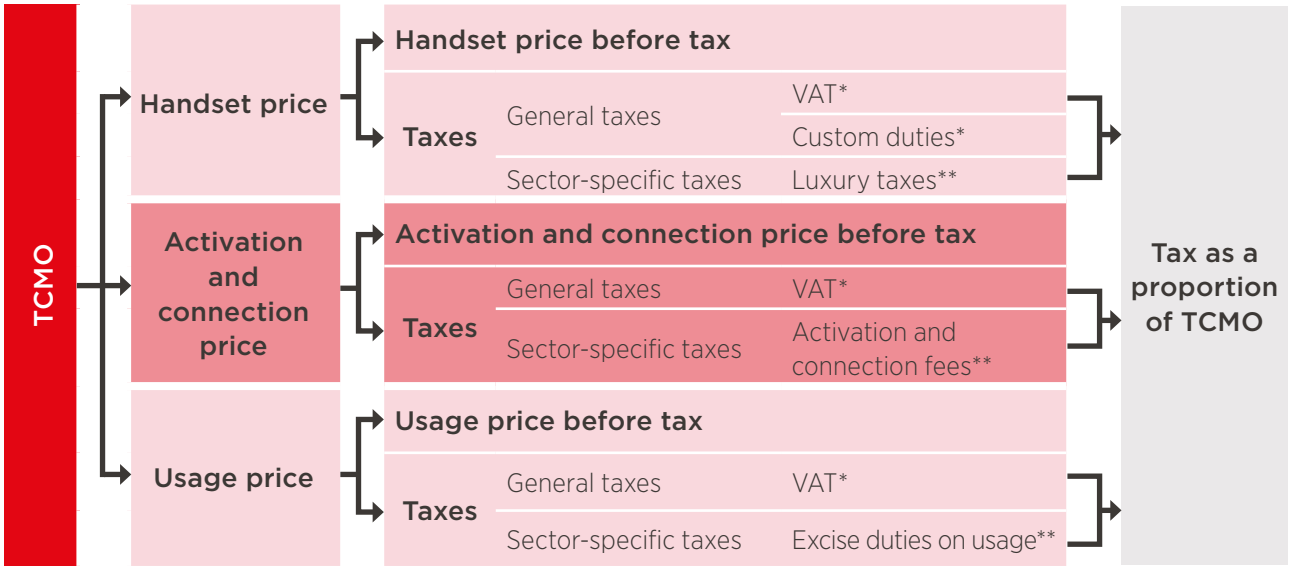
A2.2 Estimation of tax as a proportion of TCMO

The price of the three building blocks presented above can be further broken down into the price before tax (which covers costs and profits) and taxes. The latter can vary between general consumer taxes and sector-specific taxes. Figure 23 presents the tax rates that have been considered for this analysis.[66]

Note that this study only covers consumer taxes. Any potential pass-through of taxes levied on the operator to consumers were not considered due to the complexities involved in modelling the latter.[67] Therefore, there is likely to be an underestimation of tax as a proportion of TCMO presented here.

Figure 23

Calculation of the proportion of tax in TCMO



* Ad valorem tax rates

**Tax rates can either be ad valorem or fixed fees

Source: GSMA Intelligence

64 This results from estimating the share of nominal GDP across different income deciles and then distribute this between the number of individuals in each decile.
65 The most recent year being 2013 or from previous years up to 2003 for some countries where 2013 data was not available.
66 Due to lack of data, the analysis of tax rates excludes rates on international traffic (hence, we assume no international calls) and additional tax rates related to importing devices such as processing fees.
67 Estimating the percentage of an operator tax or fee that is reflected in the retail price of mobile services depends on the type of tax, the prevailing market conditions of competition and the price elasticity of demand across different groups of consumers, among other factors.

Taxes in the TCMO were calculated by applying tax rates to the appropriate tax base.

- In the case of ad valorem taxes (VAT and excise duties), the relevant tax base is the retail price of the relevant TCMO building block that was used.
- In the case of custom duties, the selected tax base was the retail price of the device building block in the TCMO. A more accurate calculation of custom duties would have involved using the price of goods at the import level as the tax base since retail prices incorporate a number of additional factors (such as transport costs or retailer costs and margins). No data is, however, available on import prices hence our approach to use retail prices as a close proxy.[68]
- In the case of fixed amount taxes, a number of assumptions were made. For activation and connection fees applied on the value of the SIM card, it was assumed that the average retail price of the SIM is $1.2.[69] For general fixed fees, the tax payments were converted to a monthly level.[70] In rare cases where fixed are applied per day of usage, it was assumed that the average consumer uses mobile services for 20 days in a month.[71]

68 Note that the difference between retail and import prices is likely to be country-specific (i.e. due to differences in transport and logistic costs and/or different market structures at the retail level, for instance).
69 This is an illustrative assumption, based on $1 wholesale price plus illustrative costs and margins that add to retail. Wholesale prices retrieved from www.budgetelectronics.cat
70 Yearly fees were brought to monthly level by dividing by 12. One-off fees were brought to monthly level by dividing by the lifecycle of the device (consistent with the approach taken with regards to fixed fees when measuring the TCMO as such).
71 This is an illustrative assumption.

Appendix 3
Analysis of mobile tax payments

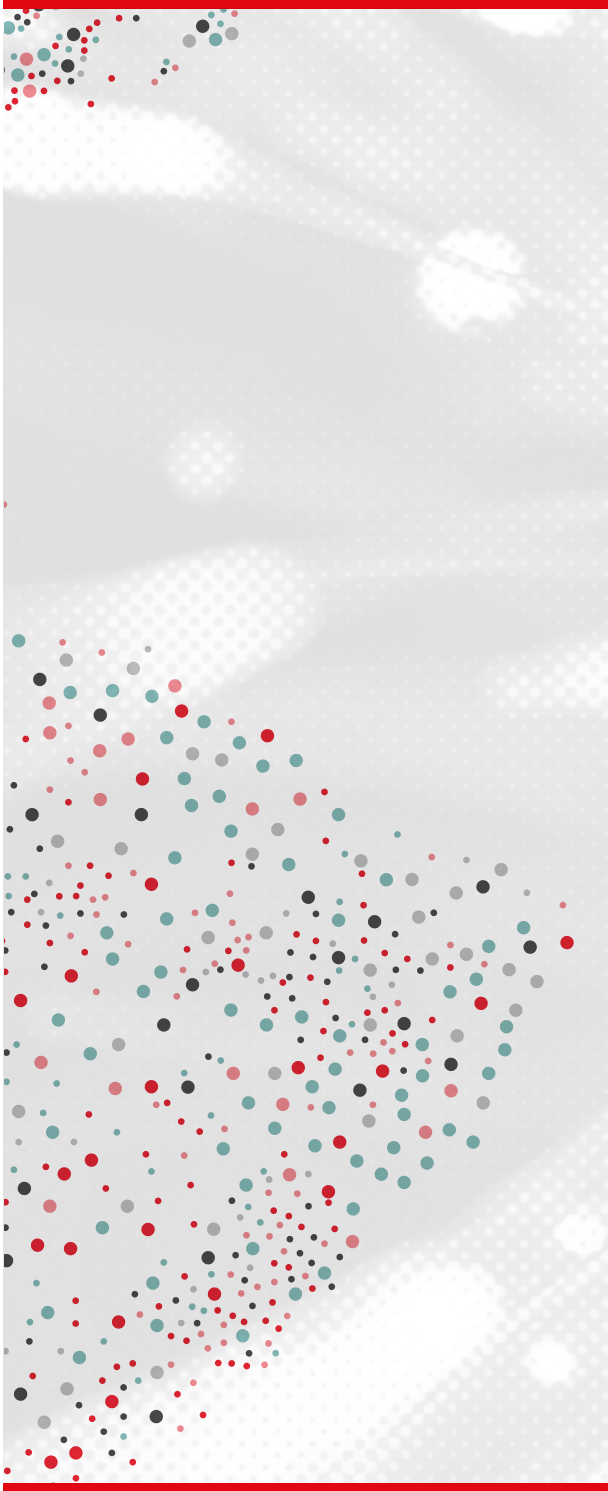
Total tax and fee payments were divided into the two categories of standard taxation and sector-specific taxes and fees on the basis of information provided by mobile operators, following the breakdown below:

- General taxation included sales taxes, such as VAT or GST, and import duties on devices, as well as corporate taxes, import duties on network equipment and general revenue-based taxes.
- Sector-specific taxes applying to consumers included excise duties on usage, luxury taxes on handsets and connection and activation fees. For operators, this included regulatory taxes and fees and other revenue-based sector-specific taxes. For those countries where the mobile sector is subject to special corporate tax or VAT rates, the differential between standard rates and sector-specific rates was not been classified as sector-specific due to data limitations.

Where operator-level data was not complete to derive an estimate of total payments for the country, a market uplift has been applied using mobile operators' market share data from GSMA Intelligence. Local currency units were converted into US dollars using average exchange rates for 2014 and 2015 as sourced from Oanda.

For the analysis that looks at the relative contribution of the mobile industry to taxes raised by governments, mobile sector tax payments presented above were used against the total tax revenue as sourced by IMF for 2014. The IMF provides total tax revenues as a proportion of GDP, which was used together with nominal GDP data. The result of this analysis was then compared to the broader economic contribution of mobile operators to the economy, calculating the share of mobile operators' revenue (sourced from GSMA Intelligence) in GDP.

Where tax payments were presented as a proportion of total mobile market revenue, data from GSMA Intelligence was used for 2014 and 2015, depending on the year of the tax payments data.



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