GSMA

Driving digital transformation of the economy in Benin

Opportunities, policy reforms and the role of mobile

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1. Executive Summary

The digitalisation of the economy is a key driver of social and economic development, offering a path towards shared prosperity in Benin. By taking advantage of the opportunities offered by digitalisation, the Government of Benin can deliver on the development objectives that it has defined and achieve sustainable economic growth.

Adoption of digital technologies across both public and private sectors accelerates economic growth. Digitalisation increases productivity in agriculture, improves access to global value chains (GVCs) and improves the efficiency and transparency of government and public services. Moreover, access to emerging technologies such as mobile money[1], artificial intelligence (AI) and cloud computing are desirable as drivers of digital and financial inclusion which in turn supports human development.

This study identifies opportunities and quantifies the economic value of adopting digital technologies across selected sectors of Benin's economy. Accelerated development of the digital economy would benefit both the Government of Benin and the country's citizens in multiple ways. Economic growth would raise incomes, create jobs and raise tax revenues. Digital technologies also provide direct benefits through enhanced access to information, productivity-enhancing technologies and improved educational outcomes.

Policy will play a critical role in the future development of Benin's digital economy. This study identifies how opportunities for economic growth and development can be unlocked through policy reforms, particularly focusing on the role that the mobile telecoms sector plays in supporting the process of digitalisation.

The mobile telecoms sector in Benin has made steady progress in recent years but there remain significant gaps. Overcoming these gaps will require bold policy initiatives on the part of government to stimulate demand, reduce the cost of supply and ensure a sustainable business environment that promotes investment in networks, communications services and in mobile money.

The impact of decisions on sector policy is significant. This report identifies a series of policy recommendations that, if implemented, would increase the number of internet users by 1.2 million by 2028.

1 The term Mobile Financial Services is often used to refer to broad set of financial services provided over mobile networks, including mobile money. For simplicity and consistency, the term "mobile money" is used throughout this report to refer to mobile financial services.

The priority policy reforms include:

- **Reducing sector-specific taxes** on the mobile sector and setting appropriate spectrum fees to unlock investment and improve affordability for consumers.
- **Amending the regulatory framework for quality of service** towards one that protects the interest of consumers, promotes fair competition and choice, and encourages investments in network infrastructure and services.
- **Removing the mobile money levy** to support development of the financial services ecosystem.
- **Modernising the telecoms licensing framework** by adopting a unified access and technology neutral framework to allow deployment of all types of communications infrastructure. This will boost investment, improve the quality of telecoms network and services and strengthen competition.
- **Implementing demand-side policies** such as handset subsidies, digital skills training programmes, business support for SMEs, digitalisation of government services and programmes to increase adoption of new technologies by business and consumers.

These policy recommendations - if adopted – will make a significant contribution to Benin's success in achieving its objectives. The potential macroeconomic impacts are summarised below in Figure 1.

More details on these policy reforms and the explanation behind them is provided below, particularly in Section 5. More details on the modelling methodology and assumptions are provided in the separate methodology report published to accompany this series of country digital economy studies.[2]

Figure 1

Sectoral impact of increased digitalisation in Benin following policy reforms

	Agriculture	Manufacturing	Transport	Trade	Government
Digital value add (XOF billion)	197	134	74	39	-
% of sector GDP	4.3%	5.1%	6.3%	2.0%	3.0%
% of Total GDP	1.1%	0.8%	0.4%	0.2%	0.5%
Employment (thousand)	82	77	25	18	-
Tax revenue (XOF billion)	33	23	12	7	82

2 GSMA. May 2024. Driving digital transformation of African economies: Evidence and methodology document.

2.
Digital Economy Framework

A. Introduction

The African Union Agenda 2063 aims to achieve an integrated, prosperous, and peaceful Africa, driven by its citizens and recognised as a global powerhouse. Like many of its regional peers, the Government of Benin, through its National Development Plan 2018 – 2025 and Government Action Program 2021 – 2026 (GAP) is pursuing a path of economic growth and transformation. This recognises the need for diversification of economic activities and a more inclusive and equitable distribution of the benefits.

Policymakers are often faced with multiple objectives. They need to foster and achieve long-term sustainable economic growth, increase domestic revenues and reduce poverty and inequality. At the same time, they need to boost private sector development and attract investment from both domestic and international sources.

Digitalisation has the potential to drive the economic transformation of Benin in a way that supports these objectives. The digitalisation of the economy is a driver of both economic growth and socio-economic development. The mobile sector is the backbone of this digitalisation process, and a growing sector is an essential pre-requisite of a national digital transformation programme.[3]

This report discusses the role of digitalisation in supporting the government to achieve the objectives laid out in the NDP and the GAP. It also makes policy recommendations which, if adopted, could accelerate this process and support the government in its national development strategy.

B. How does the digital economy drive development?

The process of digitalisation is continuing across every country in Africa, including Benin. Digital services, mostly using mobile telecoms networks, are becoming more widely available and their usage is continuing to grow. As they do so, they are becoming more integrated into other sectors of the economy.

The mobile telecoms industry, and the digital sector more broadly, contribute significantly to the economy and to public services in Benin. Widespread adoption of digital technologies across the public and private sectors enables better interactions between individuals and a more efficient use of resources, thereby raising productivity and supporting innovation. This directly benefits users of digital technologies. It also benefits the government through increase tax revenues, improved productivity in the public sector and enhanced delivery of public services.

Most of the economic impact of mobile technology is realised outside of the mobile sector itself. The positive impact of mobile technology is mainly achieved through its effect on productivity in sectors such as agriculture, manufacturing and retail; and in public services such as government administration, education and healthcare.

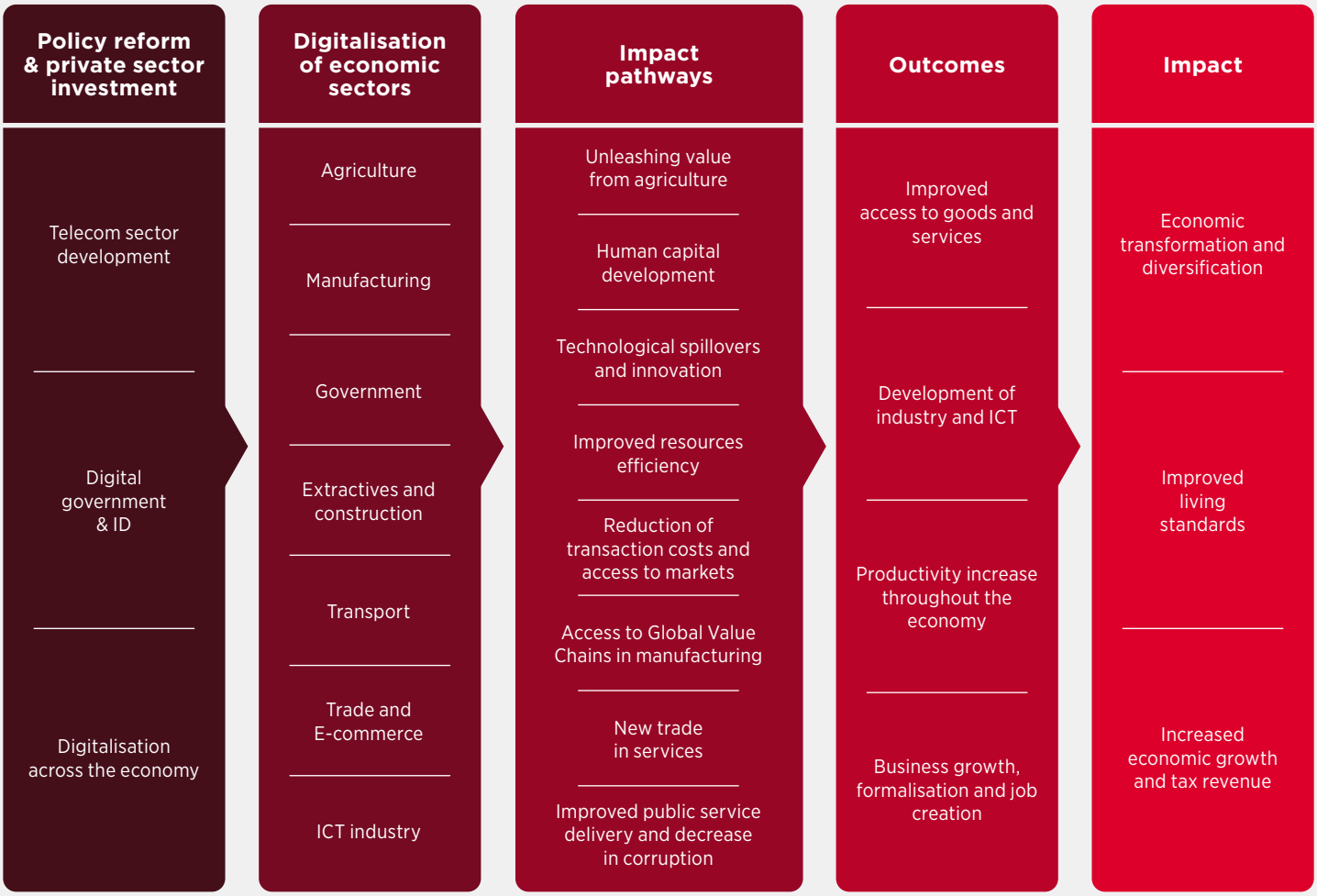
The adoption of digital technologies can unlock important development pathways. This happens in many different ways such as increasing value-added from existing agricultural resources, improving access to GVCs, enhancing education and healthcare provision, reducing transaction costs and improving efficiency, transparency and governance of government-to-business and government-to-citizen services. Access to emerging technologies such as AI, big data and cloud computing and to services such as mobile money drive increased digital and financial inclusion which, in turn, support human development.

As digitalisation works through each sector of the economy, the resulting effects include improvements in productivity, job creation and formalisation of the economy. These, in turn, lead to increased standards of living, higher economic growth and greater availability of public resources.

3 Throughout this study, the term digitalisation is used to denote the adoption of new technologies by consumers, businesses and governments across economic sectors. Digital transformation is the economic transformation resulting from such adoption. The digital economy encompasses the actors and exchanges taking place in the economy as a result of digitalisation.

Figure 2

Digital pathways to economic transformation



Source: Authors' synthesis based on literature, Government's strategy, discussion with stakeholders.

C. The role of the mobile telecoms sector in the digital economy

The mobile telecoms sector provides the digital connectivity which forms the foundation of the digital transformation process. Mobile network operators provide a technology platform for citizens to access information and communications services which enable many economic activities to be conducted digitally. This is particularly important in the delivery of public services. Digital technology helps to reduce corruption and enhance transparency which results in a more efficient use of public resources. Mobile money services also play an increasingly important role in economic development through enhancing financial inclusion, reducing transaction costs and providing citizens and small businesses with access to a range of financial services.

The mobile sector in Benin continues to face several policy and regulatory challenges that risk undermining future investment in mobile infrastructure and jeopardising the gains achieved in digital and financial inclusion. If these challenges are addressed, the mobile sector can support a greater economic impact through increased access, adoption and usage of digital technologies.

D. This study

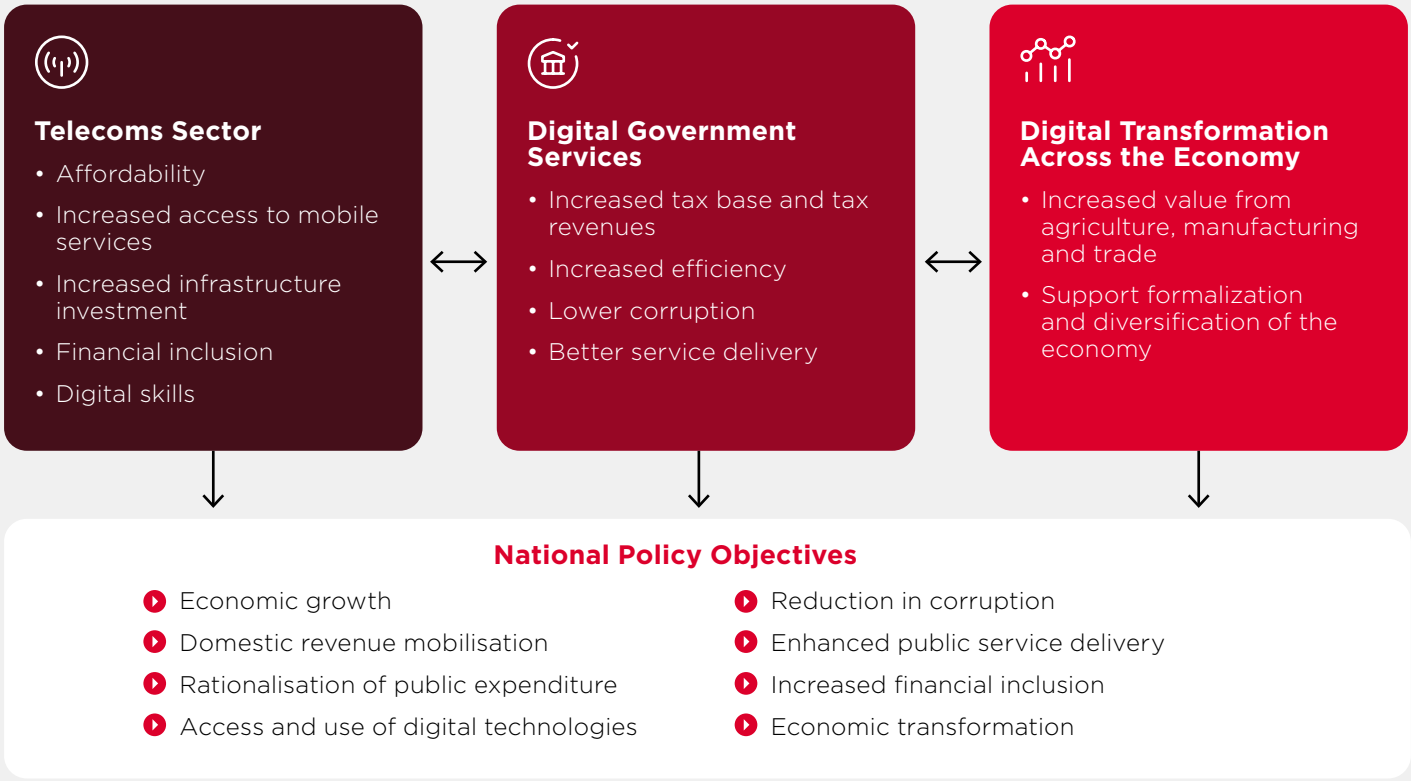
This study examines the role of digital technologies in the economic transformation of Benin. The starting point is an analysis of how digital technologies can drive socio-economic development through enhanced productivity and job creation, as well as how they can be used to improve the way in which government functions.

It identifies opportunities and quantifies the economic value of adopting digital technologies across specific sectors of the economy. It explains how these can be unlocked through policy reforms, recognising the role that the mobile telecoms sector plays in supporting the process of digitalisation.

The potential quantitative impacts of digitalisation on each sector are based on these policy reform scenarios. Their impact on adoption and usage is modelled and these effects flow through to the other sectors of the economy. This is summarised in Figure 3 and more details are provided throughout the report.

Figure 3

Digital economy links to policy



Source: Authors' synthesis.

The sections that follow consider how digitalisation affects outcomes in some of the key sectors of the economy. It is organised as follows:

- Section 3 discusses the digitalisation of the economy of Benin and explores how it can positively impact productivity, economic growth and job creation. For each sector, the potential economic impact of digitalisation is estimated, based on the policy reforms that are detailed later in the report.
- Section 4 focuses on the telecoms sector, assessing how the sector is performing in terms of infrastructure, access, and adoption of both digital services and mobile money. It identifies some important policy challenges and quantifies the impact of each policy reform scenario.
- Section 5 summarises the policy reforms that the Government could undertake to support the development of the mobile sector and the wider process of digital transformation.

3.
Digital Transformation Across the Economy of Benin

A. The economy of Benin

Benin is an open economy with a population of 13 million and a land mass of 115,000 km². In recent years the country has experienced growth that is above-average for the region, with average annual real GDP growth of 5.1% over the period 2011-2019, rising to an average of 5.7% in the years since 2020.

Benin has outperformed many country peers in terms of GDP growth. However, this growth is highly dependent on exports of key agricultural products, and the economy is therefore vulnerable to changes in global commodity prices and natural events such as weather.

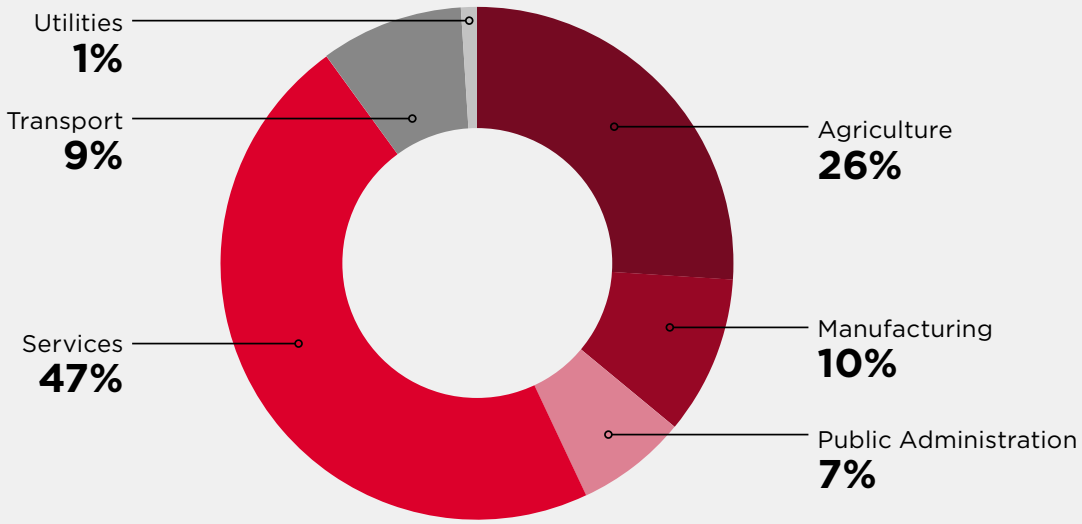
Table 1: Benin – key indicators

Gross Domestic Product *(GDP, XOF)*	**10,855 billion**
Gross Domestic Product *(GDP, USD)*	**17 billion**
GDP growth *(annual %)*	**6.3%**
GNI per capita *(Atlas method, current USD)*	**1,400**
Infant mortality rate *(per 1,000)*	**55.2***
School enrolment, primary *(% gross)*	**113%***
Life expectancy *(years)*	**60**
Population, *of which % rural pop*	**13.35 million, 50%**
Net ODA received *(% of GNI)*	**4.8%***

Data for 2022, except 2021 if marked *
Source: World Bank World Development Indicators

Figure 4

Composition of GDP by sector in Benin, 2023

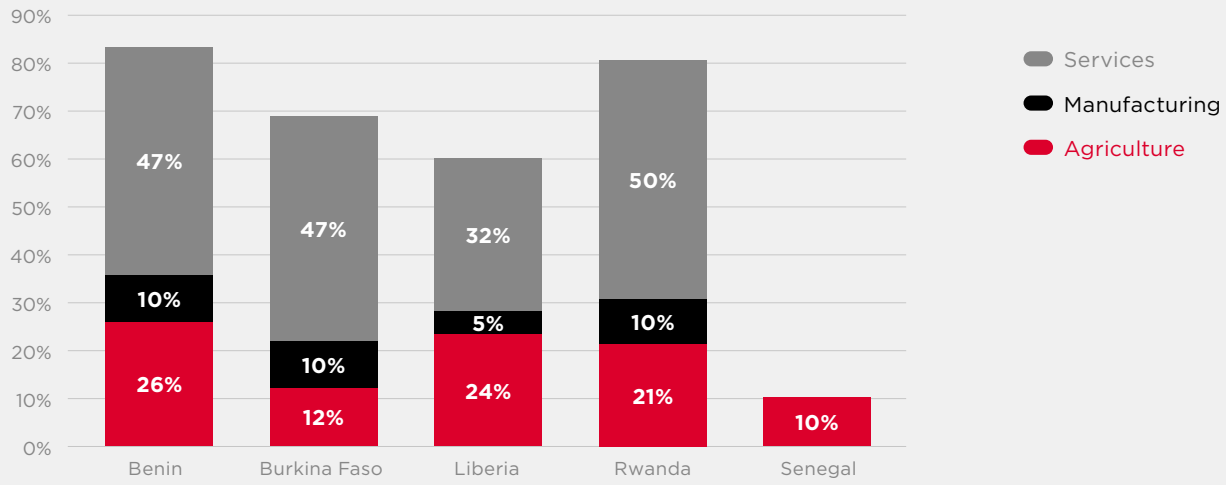


Source: Trading Economics

Figure 5

Structure of value add in Benin and peer countries in SSA

% of total value add by sector 2023



Source: World Development Indicators

Benin's GDP is more reliant on agricultural output than other countries in the region. The share of agriculture in total GDP is higher in Benin than in Liberia, Rwanda, Senegal, and Burkina Faso (Figure 5).

Gross investment has increased significantly in recent years, thanks to higher FDI, but at 23% of GDP it remains lower than countries such as Togo (28%), Rwanda (25%) and Senegal (24%). Productivity growth has lagged behind other countries, with the World Bank estimating that the average worker in Benin produced only 16.2% more real output than in 2001, compared to a 50.4% increase in Rwanda over the same period.[4] Government revenues in Benin are also lower than other countries in the region which creates a challenge for the country's national development.

Economic growth in Benin has yet to be reflected in significant increases in GDP per capita or in growth in public investment and public revenues. To sustain growth and human development, the country will need to promote diversification of its economy, raise productivity, and create high quality jobs for its young and rural populations.

B. Benin economic strategy

The Government's economic strategy centres on accelerating economic growth and promoting economic diversification. This is supported by the GAP which focuses on the country's digital strategy. It also involves increasing trade with other countries in the sub-region, formalising the economy and making the productive sector more dynamic.

Investment in digital is a key pillar of the GAP. The GAP focuses on digitalisation of the economy and builds on the previous 2016-2021 "Benin Revealed" Program of Action.[5] Both strategies focus on the development of digital businesses and the adoption of technology by traditional sectors as drivers of economic growth. These sectors include agriculture as well as energy, mines, infrastructure and other manufacturing. Integrating digital technologies and services into every sector of the economy is therefore a core part of the national development strategy.

4 World Bank. 2022. Benin Country Economic Memorandum 2022. See also: 2018-2025 National Development Plan (PND)
5 Benin Government Action Plan 2021-2016, and: http://revealingbenin.com/wp-content/uploads/2017/03/The-project-sheets.pdf.

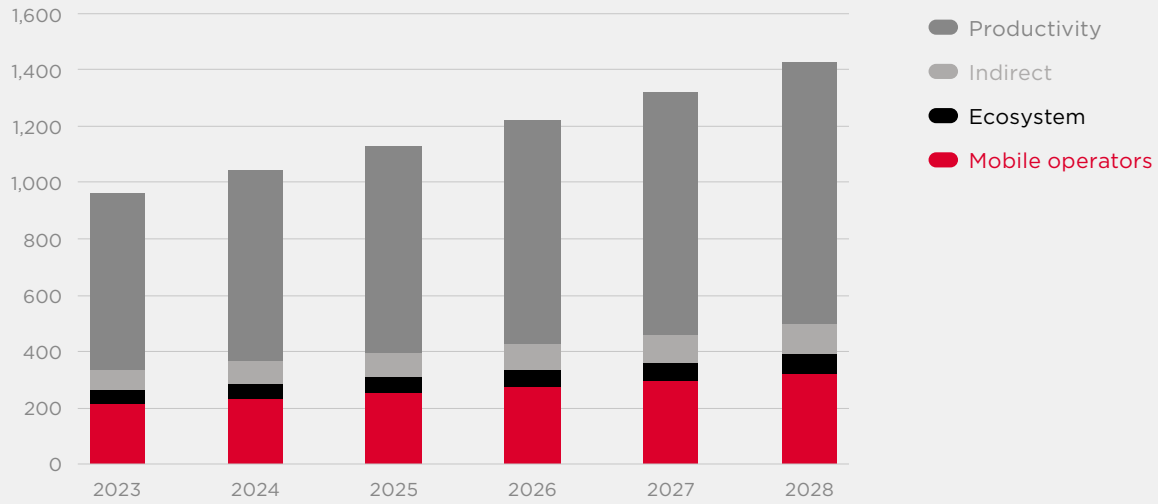
C. The overall economic contribution of the mobile sector

The mobile sector makes a significant contribution to the economy of Benin. Considering the direct and indirect contribution of the mobile ecosystem as well as the productivity impact on the wider economy, the mobile sector's total contribution to GDP is estimated at 960 billion XOF in 2023 equivalent to 8% of GDP, with 140 billion XOF in contributions to government revenues.[6]

Figure 6

Direct, indirect and productivity impacts of mobile in Benin

(Million XOF)



Source: GSMA Mobile Economy SSA, IMF WEO and authors calculations.

D. The potential economic impact of further digitalisation in Benin

This section estimates the macroeconomic impacts of increased digitalisation in Benin for each key sector of the economy, based on academic and policy research and data on the economy of Benin. These impacts reflect digital pathways to economic transformation and are mapped onto the Government's strategic objectives, as articulated in the GAP.

The policy objectives, impacts of digitalisation by sector and their relationships are mapped in the table below, as well as the evidence used to quantify them. More details on the methodology and evidence review are contained in the separate methodological document that accompanies this report. The methodology and data sources for the impacts calculated in this section are also in the separate methodological document.

6 GSMA. 2023. Mobile Economy Africa, 2023.

Table 2: Mapping digitalisation to policy objectives and estimating the impact

Sector	Policy objectives	Outcomes of digitalisation	Impact relationship	Evidence rule
Agriculture	Agricultural development and agricultural productivity, access to markets, increase and diversify production	Precision agriculture, targeted information, better access to markets	Access to technology by farmers → productivity, profits	Access to technology and precision agriculture increase crop yields between 10.5% and 20%, and profits up to 23%
Manufacturing	Diversify and develop manufacturing, attract FDI, increase technology exports	Expand manufacturing capabilities, diversify production, increase FDI and exports	Adoption of new technologies by firms → productivity, GDP, exports	Application of industrial IoT and Industry 4.0 increases value add between 15-25%
Transport	Improve trade links, infrastructure for transport and logistics, strengthen competitiveness of ports	Reduce transaction and logistics costs, border delays and tax leaks. Increases productivity and integration into . Global Value Chains (GVCs)	Digital platforms and infrastructure → increase productivity, port capacity, GDP	Transport upgrades increase incomes by 10%. Digitising ports reduces logistics costs by 15-25%. Digital customs increases revenue by 54% in 5 years
Trade	Economic diversification, strengthen trade and exports	Improves trade flows, growth of E-commerce and exports of ICT[7] services and digitally delivered services	Digital trade → increased integration in AfCFTA, E-commerce and service exports	Potential to increase E-commerce value to 15% GDP and ICT exports value to 7% GDP
MSMEs	Strengthening competitiveness and formalisation of MSMEs	Improves profits of MSMEs. Facilitates business registration, access to finance, formal contracts	Access to digital by MSMEs → increased incomes and formalisation	Technology adoption is associated with labour productivity of 2-4% for small firms
Government	Strengthen domestic revenue mobilisation, prevent corruption, improve services delivery	Increases tax revenue and provides saving in public expenditure through better targeting, transparency and reduction of corruption	Mobile money, P2G, G2P adoption → increase GDP, tax revenue, reduce leakage	Mobile money adoption increases tax revenue by 7-17%—12% on average. Digital ID for social protection decreases leakage by 41-47%

Note: For details and references see separate methodological document that accompanies this report[8]

7 ICT means Information Communications Technologies. A commonly used term over the last 2 decades. More recently, now being referred to as "digital".
8 Driving digital transformation of African economies: Evidence and methodology document, GSMA, May 2024

Impact of digitalisation on the agricultural sector in Benin

Agriculture is a key sector in Benin, accounting for 27% of total GDP. However, crop exports are highly concentrated, with cotton as the staple product (30% of exports), followed by cashew nut and oilseed crops, along with some wood products.[9] The GAP aims to support food crop production and improve agricultural productivity of small farmers. This can be achieved through a range of different technologies such as precision agriculture and targeted advice available through digital tools. Increased access to regional markets can also be facilitated by digital agricultural exchanges.

An example of a successful intervention to provide digital services to small farmers in Africa is the M-Kulima programme implemented by Vodacom in Tanzania. In 2020, Vodacom was awarded a grant under the GSMA AgriTech Innovation Fund to provide digitalisation of cotton, dairy and maize production. This has resulted in digitalisation of over 600,000 farmer profiles, processing over 10,000 mobile money payments and generated at least 10,000 digital procurement transactions. Under the programme, Vodacom also provided additional services such as lending to small farmers under their M-PESA Songesha service.[10]

Development of new agricultural value chains, such as those identified by the government (i.e. palm oil, pineapples, cashews and vegetables, rice, maize and cassava, dairy and poultry) can also be significantly enhanced by access to information and training tools online together with real time information on crops and weather patterns.

The policies described in this report would increase the level of digitalisation of agricultural value chains and the adoption of digital technologies by small scale farmers. This has the potential to increase the value-added in the agriculture sector by 197 billion XOF, equivalent to 4.3% of the sector's total value-added, by 2028. This would result in additional employment in agriculture of around 82,000 people by 2028 and 33 billion XOF in additional tax revenues generated by the sector.

Table 3: Potential impacts of increased digitalisation of agriculture in Benin in 2028

Digital agriculture value add (XOF billion)	197
% Sector GDP	4.3%
% of GDP	1.1%
Employment	82,000
Tax (XOF billion)	33

Constant 2023 XOF. See separate methodological document that accompanies this report.

Impact of digitalisation on manufacturing in Benin

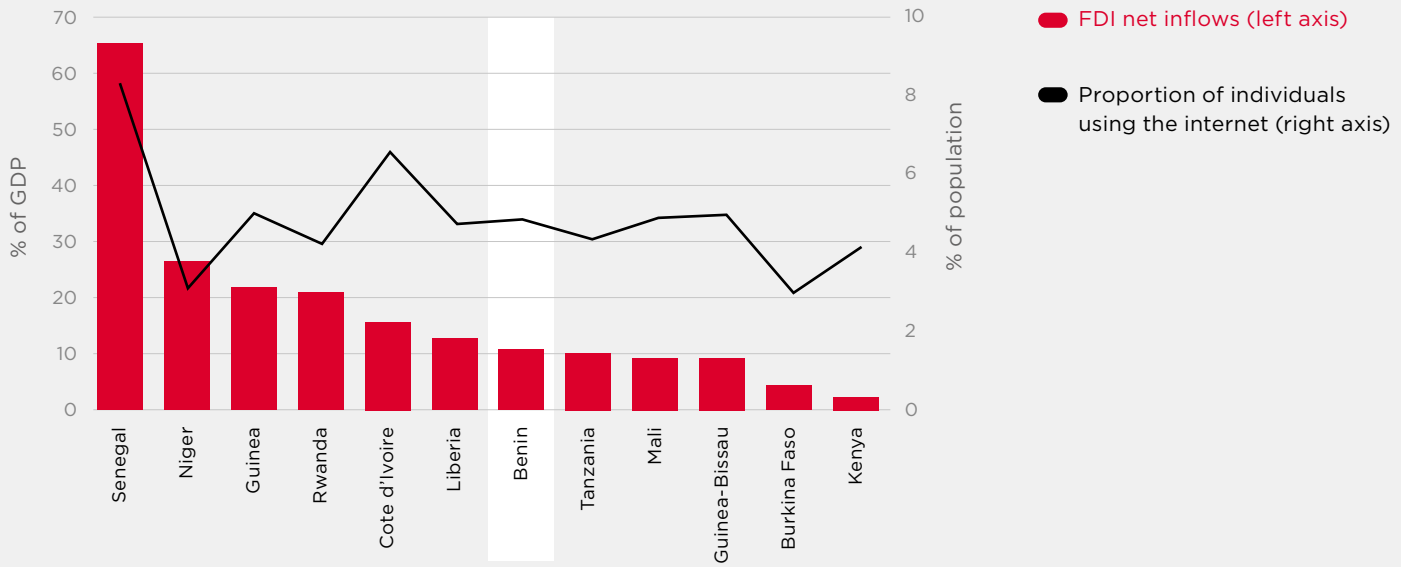
Benin has experienced falling manufacturing shares in terms of both employment and value-added in recent years, in line with many developing economies.[11] To counteract this trend, the Government of Benin is supporting industrial acceleration and diversification of manufacturing. Examples of programmes in this area include the Glo-Djigbé industrial platform[12] and the Grand Nokoué food crops platform[13] which is intended to support the growth of the agri-food processing industry.

Promoting manufacturing requires improved infrastructure to attract foreign investment and facilitate training for upskilling the labour force. Improved connectivity infrastructure, as well as customers who can access the internet to buy and find products are key drivers of increased FDI and innovation. Adoption of new technologies by manufacturing firms, such as remote diagnostics, IoT and 3D printing can allow Beninese companies to expand manufacturing capabilities and support diversification.

9 World Bank. 2022. Benin Country Economic Memorandum 2022. AfDB: benin_-_country_strategy_paper_2022-2026_0_1.pdf (afdb.org); Benin strategy under the Strategic Development of the Agricultural Sector (PSDSA) 2017-2025,
10 The State of the Industry Report on mobile money 2023, GSMA
11 Dasgupta and Singh 2006; Rodrik 2015.
12 www.ariseiip.com/project/gdiz/#
13 https://www.boad.org/en/our-financing/projects/construction-of-a-logistics-platform-for-the-grand-nokoue-agrifood-cluster-in-abomey-calavi-benin

Figure 7

Country comparison of digitalisation and FDI flows



Source: World Development Indicators 2022

The GAP recognises the role of foreign companies in strengthening industrial capacity and accelerating growth in local production. It seeks to focus especially in areas such as wood joinery, PVC pipes and other hydraulic equipment, prefabricated items (bricks and poles), electrical and electromechanical materials.

The mobile sector is supporting the development of advanced manufacturing capabilities in Benin. For example, MTN Benin has deployed two new sites for better network coverage and quality at Glo-Djigbé Industrial Zone as well as a wide range of other industries including garment manufacturing, ICT, electric vehicles, and pharmaceuticals.[14]

The policies described in this report would increase the level of digitalisation of the manufacturing sector. This has the potential to increase the value-added in the sector by 134 billion XOF, equivalent to 5.1% of the sector's total value-added, by 2028. This would result in additional employment in industry of about 77,000 people by 2028 and 23 billion XOF in additional tax revenues from the increase in value addition to the economy.

Table 4: Potential impacts of increased digitalisation of manufacturing in Benin in 2028

Digitalisation of industry value add (XOF billion)	134
% Sector GDP	5.1%
% of GDP	0.8%
Employment	77,000
Tax (XOF billion)	23

Constant 2023 XOF. See separate methodological document that accompanies this report.

14 https://gdiz-benin.com/

Impact of digitalisation on the transport sector in Benin

Benin benefits from its geographical location within the region. This includes its access to the coast, its integration into the West African Economic and Monetary Union (WAEMU) and its location close to Nigeria, which represents a substantial market for Benin businesses. The government's objectives include promoting trade relations with the countries of the sub-region, especially the large market of Nigeria.

In order to achieve these objectives and greater integration into GVCs, it is essential to improve the transport backbone and digitalise border procedures. The welfare gains from road and border investments in West Africa are estimated to amount to almost 10% of real income for Benin, when road upgrades are complemented by reductions in border delays.[15]

The GAP includes strengthening the competitiveness of the Autonomous Port of Cotonou (PAC) and Creation of a Port Information System. The PAC is among the most important ports in West Africa, alongside Abidjan, Lagos, Lomé and Tema. It handles 90% of Benin's trade in goods and accounts for 80-85% of the country's total customs tax collection (about 40% of total tax revenues). Modern digital platforms allow port stakeholders to share data and information digitally, improving port logistics and administrative processes and streamlining operations. Implementation of advanced digital platforms in ports facilitates trade and enhances the connectivity of international trade flows.

A digital port community system was implemented in the Port of Cotonou in 2012 which led to a reduction in dwell time for large trucks, from 269 hours to only 3 hours. The port also implemented the Electronic Cargo Tracking Note in 2021. The port currently ranks 65th in the customs score of the World Bank Logistics Performance Index.[16] Further digitalisation offers potential to improve the efficiency of the port's operations and thereby increase it performance relative to global benchmarks.

The policies described in this report would increase the level of digitalisation of the transport sector and digital port infrastructure. This has the potential to add 74 billion XOF to the value-added in the transport sector, equivalent to 6.3% of the sector's total value-added, by 2028. This would result in additional employment in transport of 25,000 people by 2028 and 12 billion XOF in additional tax revenues from the increase in value addition to the economy.[17]

Table 5: Potential impacts of increased digitalisation of transport in Benin in 2028

Digitalisation of transport value add (XOF billion)	74
% Sector GDP	6.3%
% of GDP	0.4%
Employment	25,000
Tax (XOF billion)	12

Constant 2023 XOF. See separate methodological document that accompanies this report.

15 World Bank, Policy Research Working Paper 9855, Corridors without Borders in West Africa, Mathilde Lebrand, 2021.
16 https://dlca.logcluster.org/21-benin-autonomous-port-cotonou and lpi.worldbank.org/international/global
17 For more detail on estimation methodology, see Driving digital transformation of African economies: Evidence and methodology document, GSMA, May 2024

Impact of digitalisation on trade in Benin

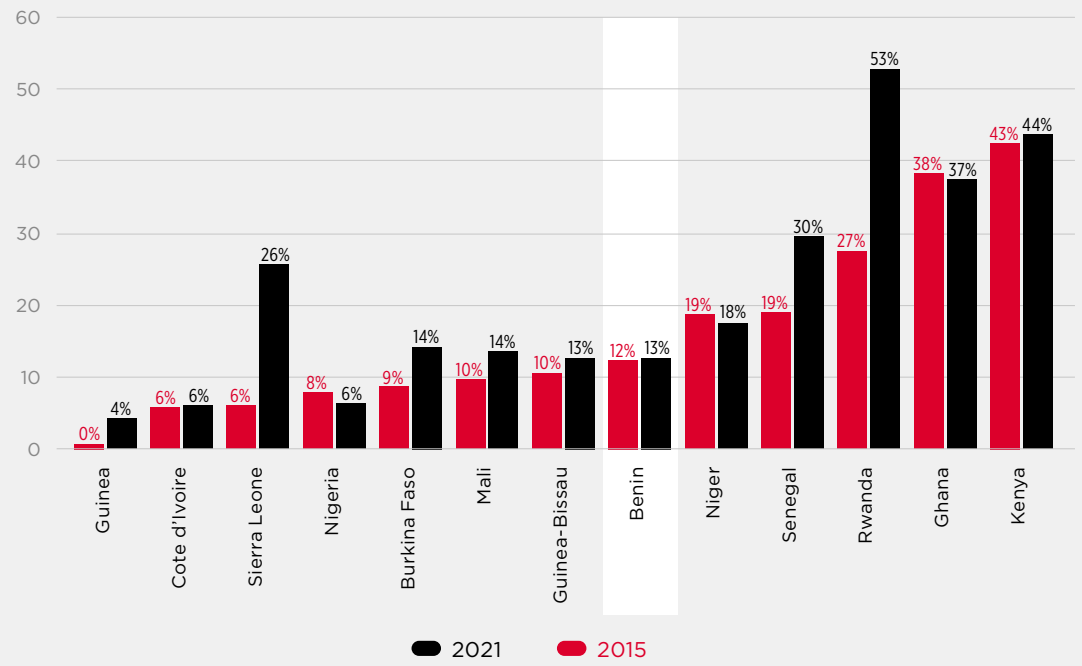
Trade in services is a key area of economic growth for developing countries, driven in part by the growth of digitally delivered services. Globally, trade in services account for 50% of the total value-added by trade and many such service exports are delivered digitally. Global trade in digitally delivered services grew by an average rate of 8.1% per year between 2005 and 2022 – faster than trade in goods and other (non-digitally delivered) services. By 2022, digitally delivered services represented 54% of total global services exports.[18]

Benin has high levels of trade openness, both in absolute terms and as a share of GDP, with exports of goods and services close to 22% of GDP. The country's openness to trade in services has increased but is below the level expected for its GDP per capita.[19] Services exports accounted for 12% of total exports in 2021 (USD 500 million) whereas it is closer to 20% or 30% in many of its peers. Of these, only 0.1% were ICT exports in 2020, increasing to 1.9% in 2021 (equivalent to approximately USD 10 million). As a comparator, services accounted for 48% of Kenya's total exports in 2022. Of these, around one half were accounted for by transport and travel.[20] This reflects Kenya's role as an economic, technological and logistics hub for the region with a large population of skilled professionals and modern competition and intellectual property legislation.[21] It also reflects the role of ICT in general and mobile money in particular in which Kenya is the regional leader.

Figure 8

Exports of services (2022)

(% of total exports)



Source: World Development Indicators.

18 World Bank, World Trade Organisation. 2023. Trade in Services for Development.
19 World Bank. 2022. Benin Country memorandum 2022.
20 UNCTAD, country profiles. Data for 2022
21 "Kenya and its role in intra-Africa regional trade The prospects of the EU-Kenya EPA", Directorate-General for External Policies, European Parliament, July 2023

Participation in GVCs for both goods and services is an important part of Benin's strategy for economic diversification. It provides an opportunity to increase economic activity, raise productivity and diversify away from dependence on the country's traditional sectors. Part of this evolution is the growth in services as a share of total exports. Service sectors tend to have higher productivity than commodity production and can support higher-quality jobs.[22] Goods and services exports can also be thought of as complements. As firms' exports of goods grow, they also demand more export-related services such as transport. Benin is particularly well placed to benefit from this type of economic development because of its role as a trade hub within the West Africa region.

Adoption of new technologies is an important enabler of growth in trade in both goods and services. Promoting the growth of export industries requires a mix of policies that complement a country's natural comparative advantages. These include the development of skills and training, investing in trade infrastructure and logistics services, improved governance and better regulation. ICT is becoming increasingly integral to all of these efforts. Exporting even basic commodities requires connectivity through the production and supply chain. As exports become more complex and higher value, more advanced ICT services are required to facilitate the production and export process. By improving the quality and availability of ICT services, developing countries such as Benin can support growth in the value of their exports.[23]

Through growth in digital payment services, E-commerce and the reduction of barriers to cross-border digital trade, Benin will also be able to t**ake advantage of opportunities in digital trade arising from the African Continental Free Trade Area (AfCFTA)**. This will further support diversification of the economy and deepening of economic cooperation in the sub-region.

There are a range of different policies that can be implemented to support growth in digitally-enabled trade. These include development of ICT infrastructure, support to innovation and business start-ups and skills development. On the regulatory side, issues such as business registration, competition policy, intellectual property protection and data protection all have an impact on the development of digital trade. Regulation of cross border data flows will also need to be carefully considered and localisation requirements set to the minimum necessary to achieve essential policy objectives and in ways that minimise restrictions to trade. The overall economic impact of such policies could be significant. It is estimated that improving mobile broadband connectivity could reduce average trade costs by 10% in low-income economies. This effect is doubled with an enabling regulatory environment for digitally delivered services.[24]

The policies described in this report would increase the digitalisation of trade in Benin. This has the potential to add 39 billion XOF in value add, equivalent to 2.0% of the sub-sector's total value add by 2028. This would result in additional employment in trade by over 18,000 people by 2028 and 7 billion XOF in additional tax revenues from the increase in value addition to the economy.

Table 6: Potential impacts of digitalisation of trade in Benin in 2028

Digitalisation of trade value add (XOF billion)	39
% Sector GDP	2.0%
% of GDP	0.2%
Employment	18,000
Tax (XOF billion)	7

Constant 2023 XOF. See separate methodological document that accompanies this report.

22 World Bank. World Development Report 2020.
23 World Bank. World Development Report 2020, Figure O.4.
24 WTO, IMF, Digital Trade for Development, 2023.

Formalisation of businesses and raising business productivity

Encouraging the growth of digital businesses - particularly Micro, Small and Medium Enterprises (MSMEs) – and supporting the formalisation of businesses are key objectives of the GAP. Digital entrepreneurship provides new, high-productivity job opportunities for Benin's large youth population, where under 25s account for nearly 65% of the total population.

Access to ICTs and digital services are essential for making this vision a reality. This access has been associated with benefits for MSMEs ranging from better access to information and markets, to increased productivity and job creation. Technology adoption is associated with increases in labour productivity of up to 2% for formal firms and up to 4% for informal firms.[25] Mobile money is also an important enabler for businesses, particularly MSMEs. This is the channel through which they predominantly make and receive payments. It is lower cost than traditional payment channels and provides access to a greater number of customers and suppliers. The growth in adoption of mobile money is therefore an essential ingredient in supporting businesses to become established and increase their revenue and profitability.

Formalisation of businesses is an important first step on the path to them becoming taxpayers. Formalisation of a business does not, in itself, result in it becoming a taxpayer. Indeed, many informal firms pay some types of tax. However, the process of formalisation can be thought of as an important step in the process of expanding the size of a country's tax base. Once a company or individual is officially registered, it is easier for tax authorities to bring them into the tax net and enforce tax compliance. A World Bank study in Benin, for example, showed that 55% of informal firms paid some tax with the average amount of tax paid equal to 9% of annual profits. 84% of formal firms, on the other hand, paid some taxes and paid, on average, 17% of profits.[26]

There are significant barriers to companies switching from informal to formal status. Multiple steps are usually required to register a business with significant fees payable to government. Once registered, a company is then more likely to be subject to other types of regulatory or licensing rules which raise the costs of doing business.[27]

25 Cirera, Comin, and Cruz 2022. Also: Bhattacharya, 2019 and Mothobi, Gillwald, and Aguera, 2020

26 World Bank. Can Enhancing the Benefits of Formalization Induce Informal Firms to Become Formal? Experimental Evidence from Benin, Policy Research Working Paper 7900.

27 ILO. 2018. New technologies and the transition to formality: The trend towards e–formality.

Increasing the rate of formalisation involves a broad and sustained effort by government to create positive and negative incentives. Ideally, it should be as simple and as cheap as possible for companies to register as formal businesses so that the barriers to registering are reduced. This needs to be complemented by more efforts at compliance in which companies are penalised for not complying with rules.

Digitalisation has an important role to play in the process of business registration. The time and financial cost of registering a business can be significantly reduced if the processes are digitalised. Similarly with tax compliance, requirements to register and file taxes electronically can reduce costs and improve the quality of service.

There are many examples from around the world of developing countries using digital technology to enhance formalization of businesses and grow tax revenues. In Ghana, the e-Transform project resulted in significant improvements in the services provided to businesses. The length of time that it takes to register a business, for example, fell from 4 days to 2 as a result of the automation of the administrative processes.[28] The government also established the Ghana.gov.gh website which is a single portal that provides access to a wide range of government services, including business registration and collection of fees owed to government. It is an integrated service that handles payments and transfers, post-payment workflows and provides customer notification and feedback. Take-up on the platform has been significant with the number of transactions increasing from 1.61 million in 2020 to 10.03 million in 2022. The value of payments made through the platform also increased from GHC 5 billion to GHC 63 billion over the same period.[29]

Digitalisation in Benin could play an important role in the efforts to increase the level of formalisation in the economy and thereby to broaden the tax base. Benin has a large informal sector, accounting for around half of the total GDP of the country. A study of selected countries in West Africa placed it at the top of the list for the share of the total economy that is generated by informal businesses, above Mali, Guinea-Bissau, Guinea, Senegal, Burkina Faso, Togo and Côte d'Ivoire.[30] Benin has historically not compared well with other countries on the ease of doing business. In 2020, for example, it was ranked 171 out of 190 economies for the ease of paying taxes.[31] The launch of digital channels for interactions between the state and the private sector will have improved this situation and will significantly reduce the cost of business-to-government (B2G) and person-to-government (P2G) interactions. Such digital channels also result in greater efficiency and fewer opportunities for leakage and corruption. Some recent initiatives in Benin have been designed specifically to utilise digital technologies in supporting businesses to get established and register with the authorities. MonEnterprise.bj, for example is a digital portal designed to help investors and entrepreneurs to establish their businesses in Benin.[32]

Mobile telecoms operators are important players in this process. They provide the basic communications infrastructure through which these channels operate. They also increasingly provide the financial payments platforms through which interactions with governments are mediated. The impact of this is seen in the economic performance of countries. Increased uptake of telecom services and mobile internet have been shown to have a strong positive impact on the level of formalisation in an economy.[33] Further investment in digital infrastructure and services is therefore needed to support efforts to transform the economy of Benin.

The government is already taking initiatives to support the development of MSMEs. For example, it is supporting the development of Sèmè City International City of Knowledge and Innovation Project, an incubator and laboratory for startups and SMEs to test and prototype their digital solutions. This aims to make Benin a hub for innovation and entrepreneurship in West Africa.[34]

28 World Bank. 2023. Restructuring Paper On A Proposed Project Restructuring Of E-Transform Ghana.
29 GSMA. July 2023. Inclusive E-Government Services in Ghana: Enhancing Women's Access and Usage.
30 IMF. July 2017. The Informal Economy in Sub-Saharan Africa: Size and Determinants, IMF Working Paper WP/17/156.
31 World Bank Group. 2020. Doing Business 2020.
32 https://monentreprise.bj/
33 ILO. 2018, New technologies and the transition to formality: The trend towards e–formality, Table A.1.
34 https://semecity.bj/en/

Impact of digital government in Benin

The EGDI 2022 ranks Benin at 149 of 192 UN Member States. This places the country in the Middle EGDI Group and it has improved its ranking from 157th position in 2020. It is assessed as in the high group for the Online Services Index, and in the medium groups, with further investment required, in the Telecommunications Infrastructure Index and Human Capital Index.[35]

This improvement reflects the commitment by the Government to digitalisation and digital government. This commitment is illustrated by the implementation of the Digital Code 2018 (as amended in 2021) and reforms to other pieces of legislation. The GAP incorporates digital transformation projects as part of the structural transformation of the economy and the acceleration of economic growth.[36] Progress in the implementation of the GAP is also testament to the government's commitment to digital transformation (Table 7).

Table 7: Achievements in implmentation of e-government programmes

Programme	Progress
Smart Gouv	More than 80% of SMART GOUV initial objectives have been achieved, including: • establishment of a national electronic payment platform • establishment of a national public services platform and the national interoperability platform • deployment of the 3000 km national fibre optic backbone network for government, covering 86% of Benin Municipalities[37] • and development of the telecom infrastructure master plan 2021 - 2030[38]
Digital Access Points	Operators are required to install digital access points throughout the country in order to facilitate access to digital services, particularly in underserved areas and low-income households.[39]
National e-portal	Benin being recognised as a pioneer in government online services through its national e-service portal since 2020, as part of a partnership with the Government of Estonia. This portal provides access to over 560 public services and created new e-services like national exam results publication, electronic driver's license exams and e-voting.[40]
Ministry of Economy and Finance e-services	https://eservicesbudget.finances.bj platform for civil servants since April 2023, providing: medical examination report, salary statement, pension statement, application for a death benefit, and bank domiciliation.[41]

35 United Nations Department of Economic and Social Affairs E-Government Survey 2022, page 22.
36 Government Action Programme 2021-2026 | Programme d'Action du Gouvernement - République du Bénin (beninrevele.bj)
37 Dans le cadre du projet de Deploiement de l'Internet Haut et Tres Haut Debit sur l'ensemble du territoire national
38 Questionnaire response provided by Ministry of Digital Economy and Communication
39 ARCEP Decision No. 2020 210 of 17 July 2020.
40 https://ega.ee/news/the-launch-of-beninese-national-e-service-portal/; 10 Examples of Successful African e-Government Digital Services (ictworks.org) .
41 Implementing Smart Administration: Five new e-Services launched at the Directorate-General for Budget | Government of the Republic of Benin (gouv.bj)

Programme	Progress
National electronic payment platform	The national electronic payment platform facilitates electronic payments, mobile money payments, and banking payments of services including electricity, water, taxes and other public services. This has deepened financial inclusion, especially in rural and other underserved areas, reducing costs and processing time.[42]
National data centre and government IT network	A national data centre has been built and a National IT network now connects government ministries, authorities, and offices across 77 municipalities, enabling public administration tasks to be conducted effectively, securely, and transparently.[43]
Digital ID	The National Agency for the Identification of Persons has established a National Register of Natural Persons and grants Personal Identification Number (NPI) which is used for e-government services. Digital Identity is resulting in improved efficiency, reduced administrative costs, improved user experience and greater transparency of government services. Benin is seeking to further progress the country's digital identity programme through its participation in the Smart Africa Trust Alliance blueprint pilot and the West Africa Unique Identification for Regional Integration and Inclusion.[44]
AI and Big Data Strategy	Commencement of its National Artificial Intelligence and Big Data Strategy 2023 – 2027 setting out a programme for legislative and regulatory changes, building institutional and organisation capabilities and developing AI and big data ecosystem and skills, with the objective to be a leading AI country in West Africa.[45]
Cyber security and data protection	Benin is a signatory to the African Union Convention on Cybersecurity and Personal Data Protection (Malabo Convention) which entered into force in 2023. It criminalises a broad range of cyber activities, including hacking, cyber fraud, and identity theft. It also establishes procedures for investigating and prosecuting cybercrime, including international cooperation between African countries.[46] Benin also became a signatory to the Budapest Convention on cybercrime on 20 June 2024.

42 Questionnaire response provided by Ministry of Digital Economy and Communication
43 https://www.kfw-entwicklungsbank.de/Global-commitment/Subsahara-Africa/Benin/Projektinformation-Good-Governance/
44 Questionnaire response provided by Ministry of Digital Economy and Communication
45 national-artificial-intelligence-and-big-data-strategy-1682673348.pdf (gouv.bj) .
46 https://au.int/sites/default/files/treaties/29560-treaty-0048_-_african_union_convention_on_cyber_security_and_personal_data_protection_e.pdf

The Government's continued commitment to digitalisation was communicated in the priority areas outlined by the Minister for Digitalisation's budget presentation submitted to the National Assembly budget committee in November 2023: "CFA12.79 billion will specifically be used for digital transformation projects, including the development of digital infrastructure, the accelerated deployment of fiber optics, connectivity for administrative centers, improvement of national GSM coverage, digitization of public administration, and the establishment of a digital skills school".[47]

The Government has set out a clear digital strategy over the next 3 years. This is in line with the GAP, overseen by the Ministry of Digital Economy and implemented through agencies including ARCEP and the Agency for Information Systems and Digital Technology. The strategy includes:

- digital transformation of local communities, including municipal administration, e-services, and community internet points;
- modernisation of public service media and access to quality information;
- deployment of high and very high-speed internet throughout the national territory (phase 2) – including 484 km of optical fibre and 205 km of metropolitan network to be deployed;
- implementation of SMART GOV (phase 2), including e-govt system, e-payment, e-gates, e-advice, e-passport, e-health and telemedicine information, e-pharmacy;
- development of digital use and confidence;
- digital development in higher education; and
- digitalisation of public service contracts, customers, taxes and national social security.[48]

As part of the World Bank support programme of the GAP and digital strategy, digitalisation of public service delivery has been identified as a key priority with a USD 150 million funded program and a series of targets (Table 8).[49]

Table 8: E-government implementation targets

Target	Baseline Sept 2021	Target Dec 2028
Tax revenue collected digitally (Percentage)	65	85
Digital Government to Person payments (Percentage)	70	95
Number of recipients of government-to-person payments and payers of person-to government payments with access to an online platform for submitting and processing claims (Percentage)	0	95
Procured goods and services value contracted through the e-procurement online platform (Percentage)	0	70
Digital human resource management administrative processes and services for civil servants (Number)	0	13
Health facilities using the e Attendance system (Percentage)	0	50
Education facilities using e Attendance system	0	49

47 Benin: Govt approves $20bln Action Plan for next five years - Ecofin Agency.
48 Strategic Framework, Government Action Programme 2021-2026, pages 34, 96, 98, 100.
49 World Bank. August 2024. Benin Economic Governance for Service Delivery Program, Implementation Report.

The World Bank estimates that successful implementation of this programme could result in increased in tax collection of 3.4 percentage points of GDP - exceeding USD 4.9 billion during the Program life. The Net Present Value (NPV) of economic benefits linked to efficiency gains is estimated at USD 213.7 million with an Economic Internal Rate of Return (EIRR) of 152.7 percent.[50]

Countries are seeing benefits from advanced digital government services, notably when integrated with digital payments. This has been documented by research and analysis of the effects of digital transformation in the public sector. For example, studies have found that digitalizing government payments could save roughly 0.8–1.1% of GDP.[51] Similarly, it has been shown that countries that have adopted digital payment-to-government (P2G) services experience a 1.2–1.3 percentage point boost in direct tax revenue as a share of GDP.[52]

It is estimated that the increased adoption of digital government services that would arise if the policies described in this report were implemented has the potential to add 82 billion XOF in additional tax revenues for the Government, equivalent to 3% of total tax revenue by 2028.

Table 9: Potential impacts of increased adoption of digital government on tax revenue in Benin in 2028

Digital government revenue increase (XOF billion)	82
% tax revenues	3%
% of GDP	0.5%

Constant 2023 XOF. See separate methodological document that accompanies this report.

50 World Bank. July 2023. Benin Economic Governance for Service Delivery Program Proposal Document.

51 Susan Lund, Olivia White, and Jason Lamb. 2017. The Value of Digitalizing Government Payments in Developing Economies, in Digital Revolutions in Public Finance.

52 Abdoul-Akim Wandaogo, Fayçal Sawadogo, Jesse Lastunen. 3 February 2022. Does the adoption of peer-to-government mobile payments improve tax revenue mobilization in developing countries? UNU-WIDER Working Paper 2022/18.

4.
The Digital Communications Sector in Benin

A. Sector Overview

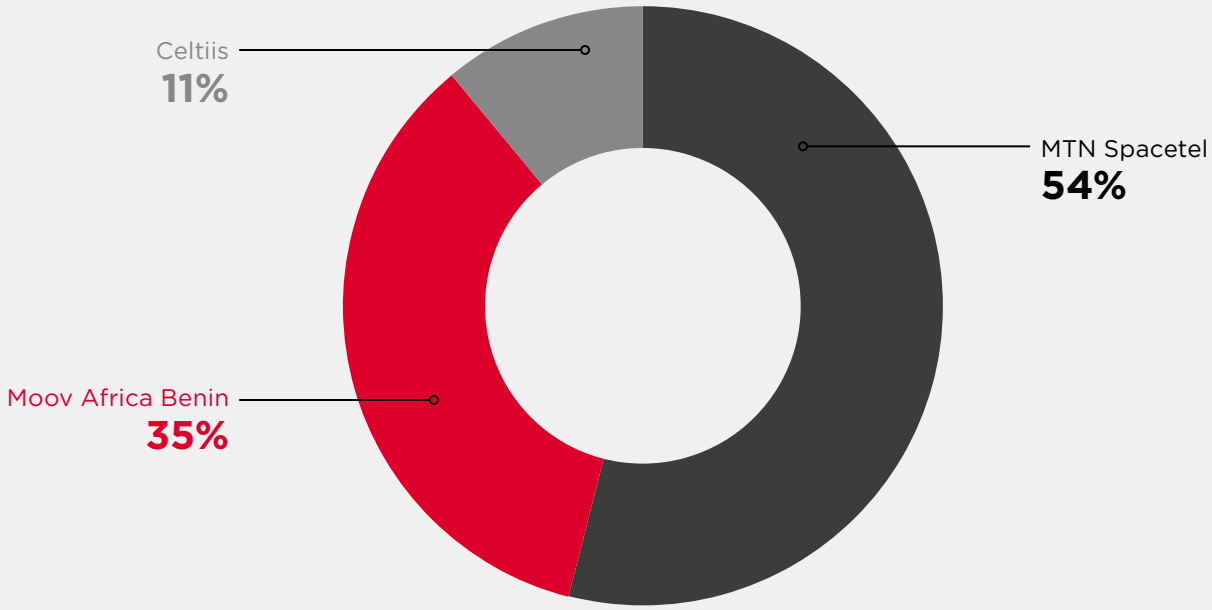
Market structure

Benin has three mobile network operators which offer a range of mobile voice, data and mobile money services. MTN/Spacetel is the largest operator with Moov Africa Benin the second largest followed by Celtiis.

The mobile sector combines both local and international ownership. MTN Spacetel is owned by MTN Group of South Africa. Moov Africa Benin is owned by Maroc Telecom, which is itself owned by Etisalat Group of the UAE. Celtiis entered the market in 2022. It is operated by SONATEL of Senegal and owned by SBIN which is 100% owned by the Government of Benin. SBIN is the only operator currently permitted to operate fixed-line infrastructure and provides fixed line broadband services to both retail and wholesale customers.

Figure 9

Mobile subscriber market shares (Q2 2023)



Source: ARCEP Benin, Tableau de bord au 31 mars 2024

Mobile penetration

ARCEP reports the total number of mobile connections as 17.3 million in Q1 2024. This is equivalent to a total population penetration rate of 121% and an adult population penetration rate of 212%.[53] When adjusting for multiple SIMs, ARCEP estimates that the total number of unique mobile subscribers at the end of 2023 was 8.5 million, a penetration rate of 67%.[54]

Benin's mobile penetration rate, at 121%, is above the African average penetration rate of 96%, and in line with the West African average of 102%.[55]

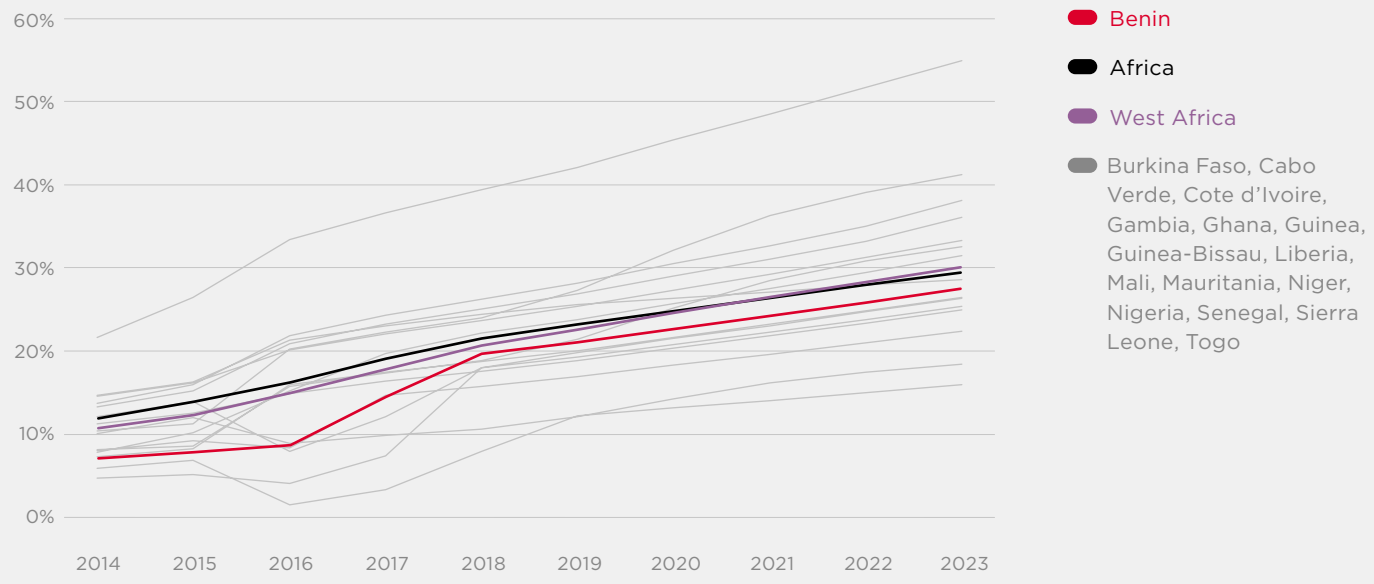
Adoption of mobile internet has increased significantly in recent years. Data from ARCEP indicates that there were 10.9 million mobile internet subscribers in Q4 2023.[56] This equates to a mobile internet penetration rate of 78.6% of the total population or 136% of the adult population.[57] Measures of broadband subscriber penetration are usually based on the number of broadband capable SIMs that have been issued and that are active. When accounting for multiple SIMs, ARCEP estimates that the number of unique internet users at the end of 2023 was 7.0 million, or 55.4% of the total population.[58]

GSMA undertakes analysis of the number of unique subscribers across the region. This is done using a consistent methodology that allows cross-country comparison. This analysis estimates the number of people in the country who access the internet on their mobile devices on a regular basis as around 3.8 million in 2023 which is equal to 28% of the total population or 48% of the adult population.[59] This puts Benin very close to the West African average in terms of unique mobile internet subscribers when using a like-for-like comparison (Figure 10).

Figure 10

Mobile internet penetration (2014-23)

(% of population)



53 Population older than 15 years
54 ARCEP. Rapport Annuel d'Activités 2023.
55 The African and West African average penetration rates are taken from GSMAi data. This GSMAi data also reports a slightly lower penetration rate for Benin (of 110%), but this is still above both the African and the West African average.
56 ARCEP. 2024. Observatoire de l'Internet, Tableau de bord au 31 décembre 2023.
57 Population over the age of 15 years
58 ARCEP. 2024. Rapport Annuel d'Activités 2023 :
59 GSMA Intelligence

Mobile coverage and the internet usage gap

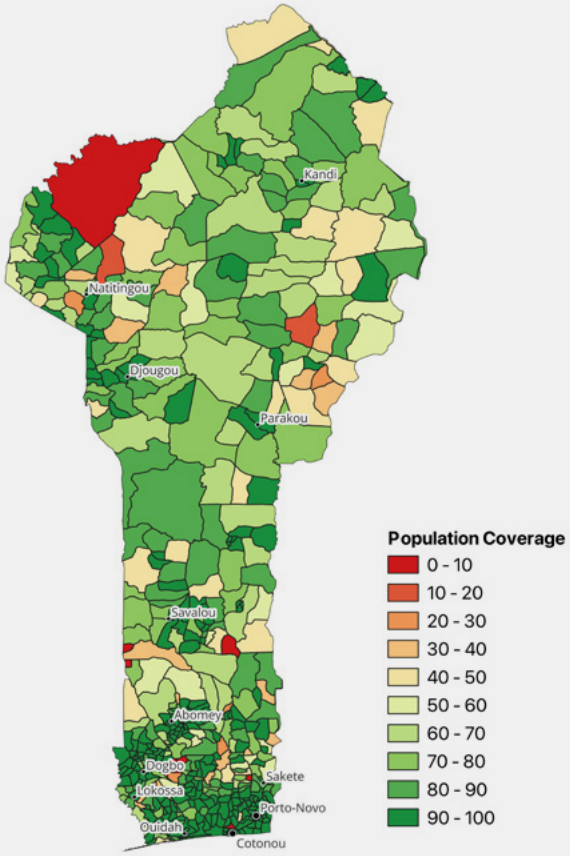
Mobile broadband coverage is growing as a result of consistent levels of investment into network infrastructure by the MNOs. Mobile coverage can be measured either as a proportion of the population or as a proportion of the land area of the country.[60] Providing network coverage in unpopulated areas of the country provides no economic benefit so, in countries where there are significant areas with no or low levels of population, it is more relevant to measure population coverage than geographical coverage. This is reflected in many of the targets and objectives set at national and international level. The UN, for example, is focused on ensuring access to digital services by people and institutions, rather than geographical coverage.[61]

In Benin, over the past 5 years, the population coverage of mobile broadband networks has grown at a sustained rate. 4G network coverage stood at 88% of the population in 2024. In urban areas, coverage is close to 100%. In peri-urban areas, it is 96% and in rural areas 63% of the population is living within reach of 4G networks (Figure 11). This represents a significant increase in recent years. National 4G population coverage stood at 62% in 2020 so the MNOs have expanded their 4G population coverage by 26 percentages points in just over three years.

Figure 11

4G population coverage

(% of population)



Source: Analysis of operator site data by GSMA Intelligence and GoYo Analytics and also in Annex[62]

60 Benin, in common with most other countries, has some areas of its country where the population density is low. Measures of population network coverage are therefore generally higher than measures of land area coverage.

61 Achieving universal and meaningful digital connectivity in the decade of action Aspirational targets for 2030, United Nations, Office of the Secretary-General's Envoy on Technology

62 More details on the modelling methodology used for the coverage analysis used in this report are provided in the Appendix to this report.

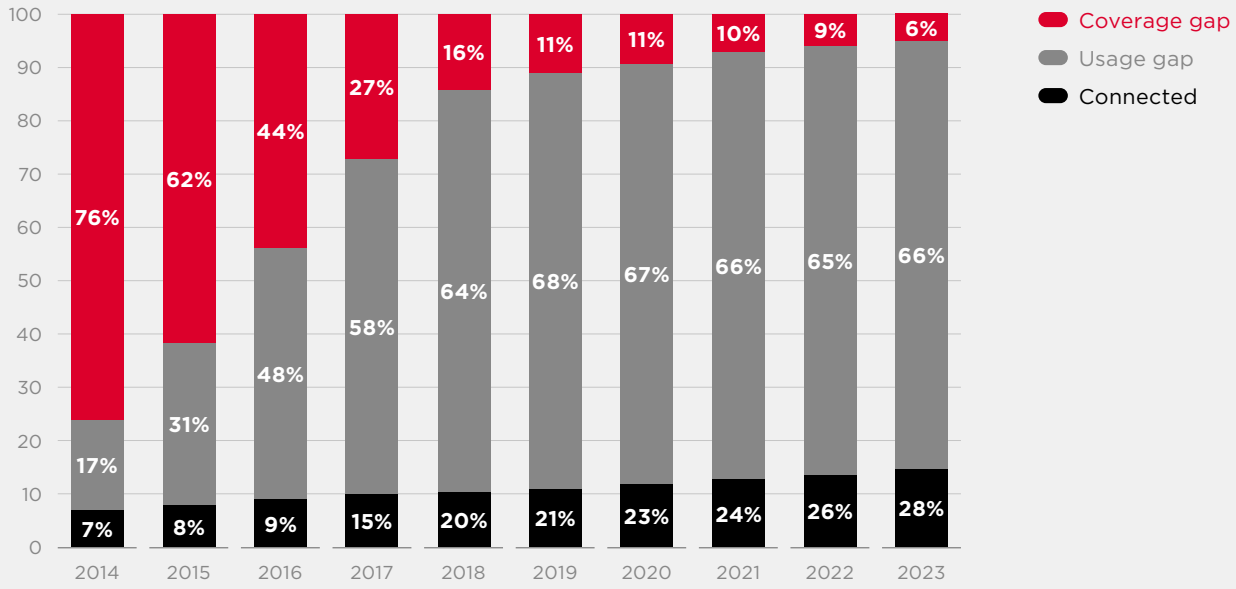
This sector performance has put Benin above the West African average. The almost universal 2G coverage in Benin has long placed the country near the top of the rankings for West Africa. Its high levels of mobile broadband coverage are well above the West African averages of 90% and 77% respectively. When placed is a wider Sub-Saharan Africa context, Benin performs well although behind some of the regional leaders.

The usage gap is calculated by comparing the number of unique mobile broadband users with the size of the population covered by the mobile broadband networks. This is a measure of the number of individuals covered by mobile networks but who do not use it. Based on these estimates, it is estimated that between 39% and 66% of the overall population lives within range of the mobile broadband networks but remains unconnected. This is known as the "usage gap" (Figure 12).[63]

Figure 12

Evolution of mobile internet connectivity in Benin (2014-23)

(% of population)



Source: GSMA Intelligence and authors' calculations. See separate methodological document that accompanies this report.
"Connected" refers to unique mobile internet users[5] as a % of population; "Usage gap" refers to the population covered by at least a 3G network but without a mobile internet subscription; "Coverage gap" refers to the population not covered by at least a 3G network.

As a result of sustained investment in network coverage by the MNOs, Benin now has a significant usage gap. The main driver of this has been the sustained investment by the MNOs into network infrastructure and the resulting growth in network coverage. Mobile internet adoption, however, has not kept pace. The result is that the gap between those who live within reach of a network but have not yet adopted has expanded (Figure 13).

The rapid expansion of the mobile broadband networks is a good outcome for the country. It indicates that operators have been able and willing to invest in network expansion. The size of the usage gap indicates that the next challenge is to increase rates of adoption. This is one important area of focus for the policy recommendations in this report.

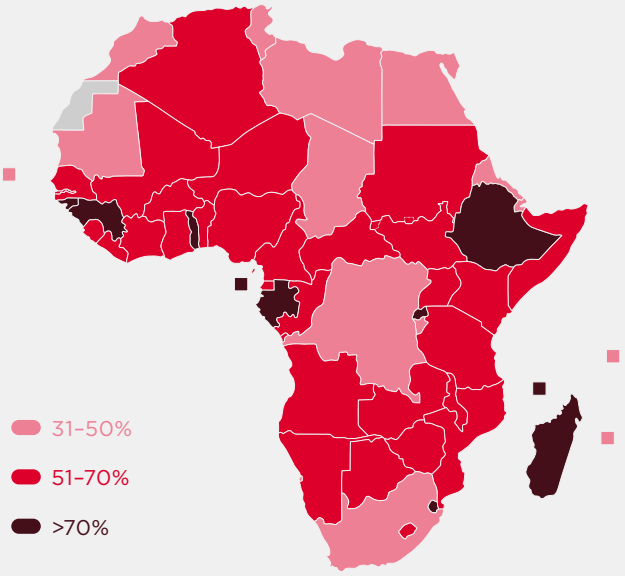
63 The precise size of the usage gap depends on the definition and measure of unique mobile internet subscribers used. ARCEP's measurement implies the lower 39% usage gap, while the GSMA's measure implies the higher 66% usage gap. Figures in this report are based on the GSMA number, as this can be compared across African countries.

64 In this report "mobile internet users" or "unique mobile internet users" refers to unique individuals using the mobile internet. It does not refer to the number of SIM cards or mobile internet accounts, which is usually greater than the number of individuals using the internet.

Figure 13

Mobile internet usage gap, African countries

(% of population)

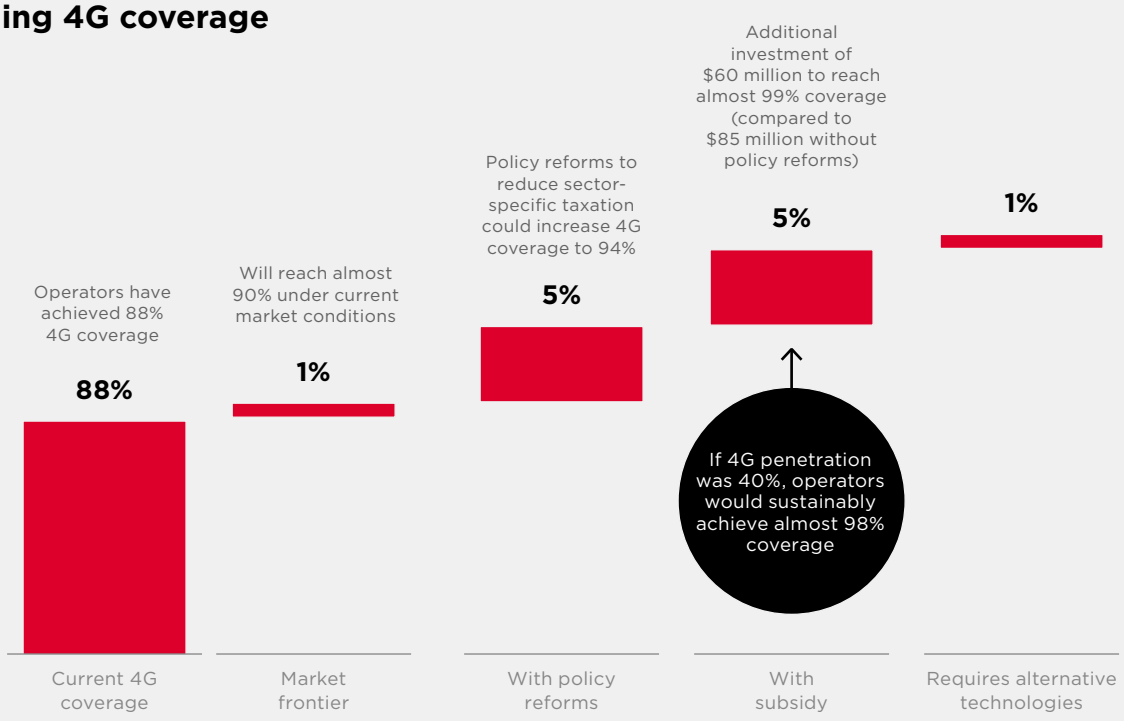


Source: GSMA Intelligence

The population of Benin that is currently not covered by mobile broadband networks can be divided into sub-groups. These sub-groups are a) those people who are expected to be covered by the MNOs under the current market conditions; b) those people who would receive coverage if the right policy reforms were implemented; c) those people for whom some form of infrastructure subsidy would be required if they are to be covered by the MNOs; and d) a final small group of the population for whom it is not likely to be viable to provide broadband coverage using the mobile networks (Figure 14).

Figure 14

Expanding 4G coverage



Source: GSMA analysis

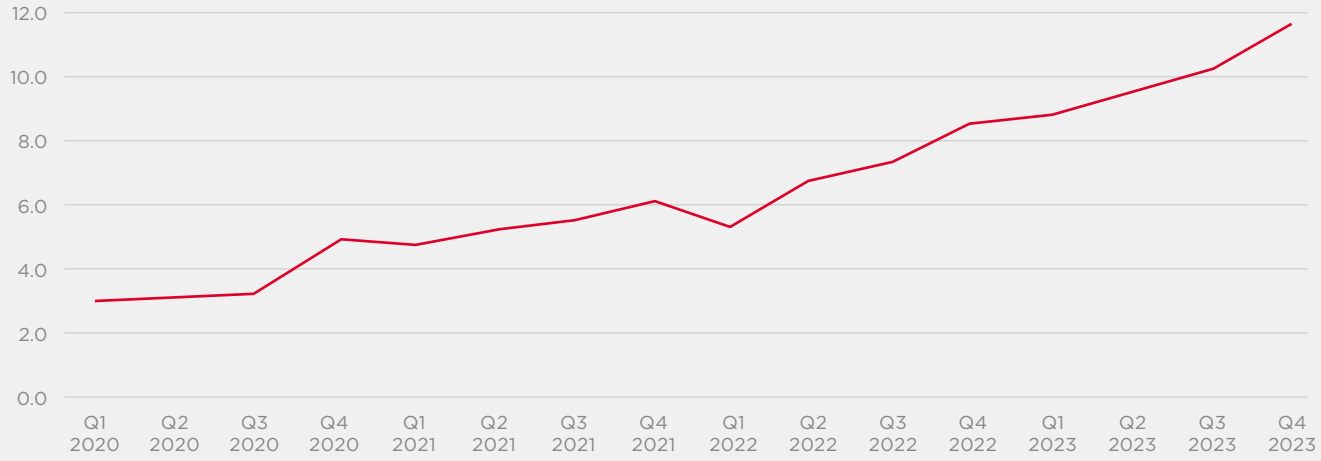
Mobile money

Benin has seen sustained growth in mobile money since 2018. Whether measured by the number of active users, the volume of transactions or the value of transactions, Benin has experienced a steady rise in the use of mobile money over recent years. This has been largely the result of the launch and promotion of mobile money services by providers and the strong underlying demand for readily accessible, low-cost financial services. The total number of registered mobile money accounts reached 30.6 million by the end of 2023. Of these, 11.2 million accounts were considered to be active, a mobile money account penetration rate of 89% of the total population (Figure 15). When compared against the adult population, the mobile money active account penetration is higher at around 140%.[65] This indicates that many mobile money users have more than one account. This is typically the case where people have subscriptions to more than one network and have a mobile money account for each.

Figure 15

Growth in mobile money use in Benin (2020-23)

(number of active users)

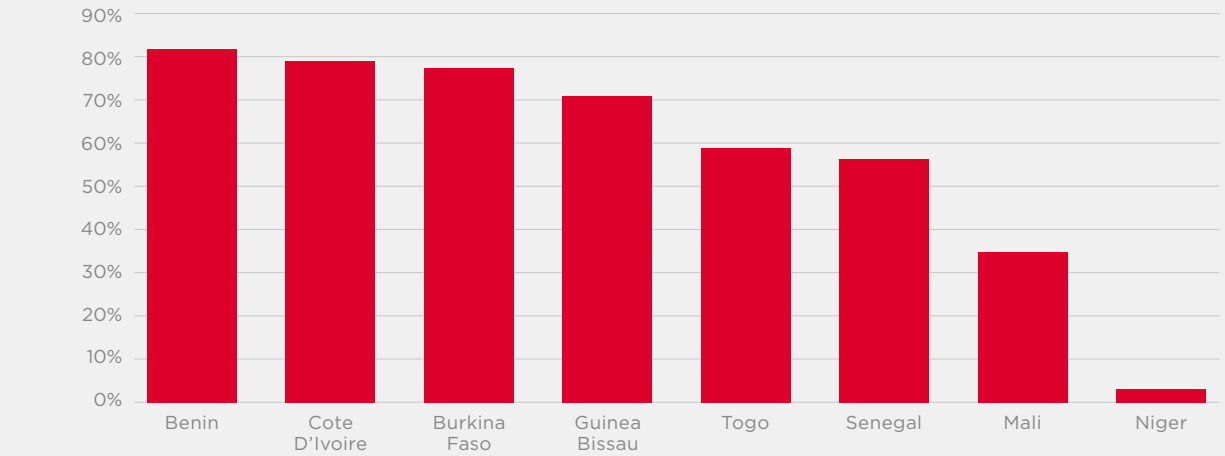


Source: ARCEP

Figure 16

Mobile money penetration (2022)

(active mobile money accounts as % of adult population)



Source: BCEAO

65 Active mobile money accounts as a % of population over the age of 15 years old.

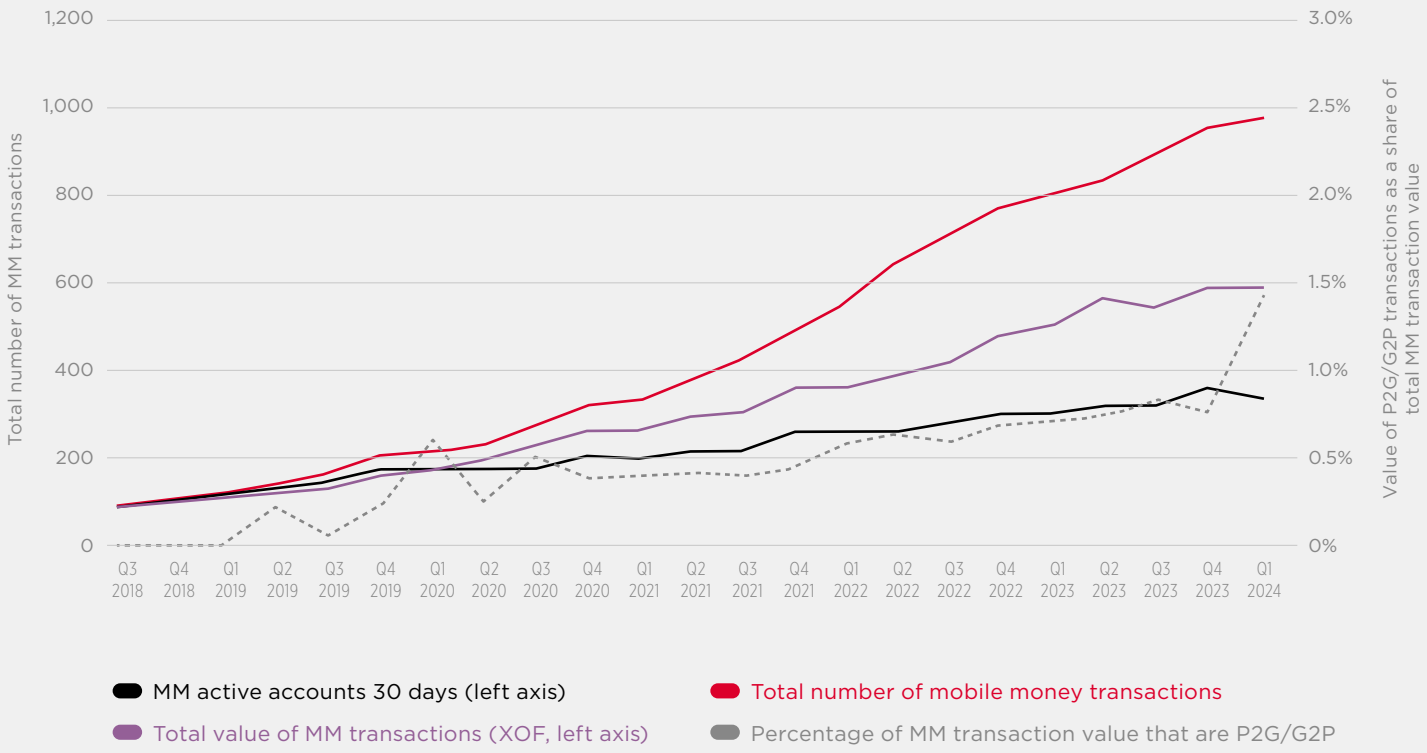
Benin is one of the leaders in mobile money adoption in the West Africa region. It has the highest rate of mobile money penetration among the Francophone countries in West Africa (Figure 16).

However, when compared with a larger set of countries in Africa and considering financial inclusion more broadly, including all types of financial account (e.g. traditional financial accounts), Benin remains behind some of the regional leaders such as Kenya and Ghana.

The launch of e-government services has also been a contributing factor in the growth of mobile money. The share of the total value of mobile money transactions accounted for by transactions between citizens and government is a small part of total mobile money transactions (currently around 1.5%). However, this share is growing steadily, indicating an increasingly important role of P2G and G2P payments in the overall mobile money ecosystem in Benin (Figure 17).

Figure 17

Growth in mobile money and value of G2P/P2G transactions (Q3 2018-Q1 2024)



Source: MNO data

Despite this overall growth trend in the adoption of mobile money, there are signs that growth is slowing down. The government introduced a levy on mobile money transactions in 2021. The design of the levy meant that operators have been prevented from passing on the tax to customers. However, the levy has affected the commercial sustainability of the mobile money services. Operators have therefore responded to the imposition of the tax by reducing the amount they invested in the expansion of their mobile money agent networks. This investment is a key driver of access to mobile money services as it grows the network and increases the availability and adoption of mobile money services (Figure 18).

Figure 18

Impact of the mobile money levy network (2019-23)

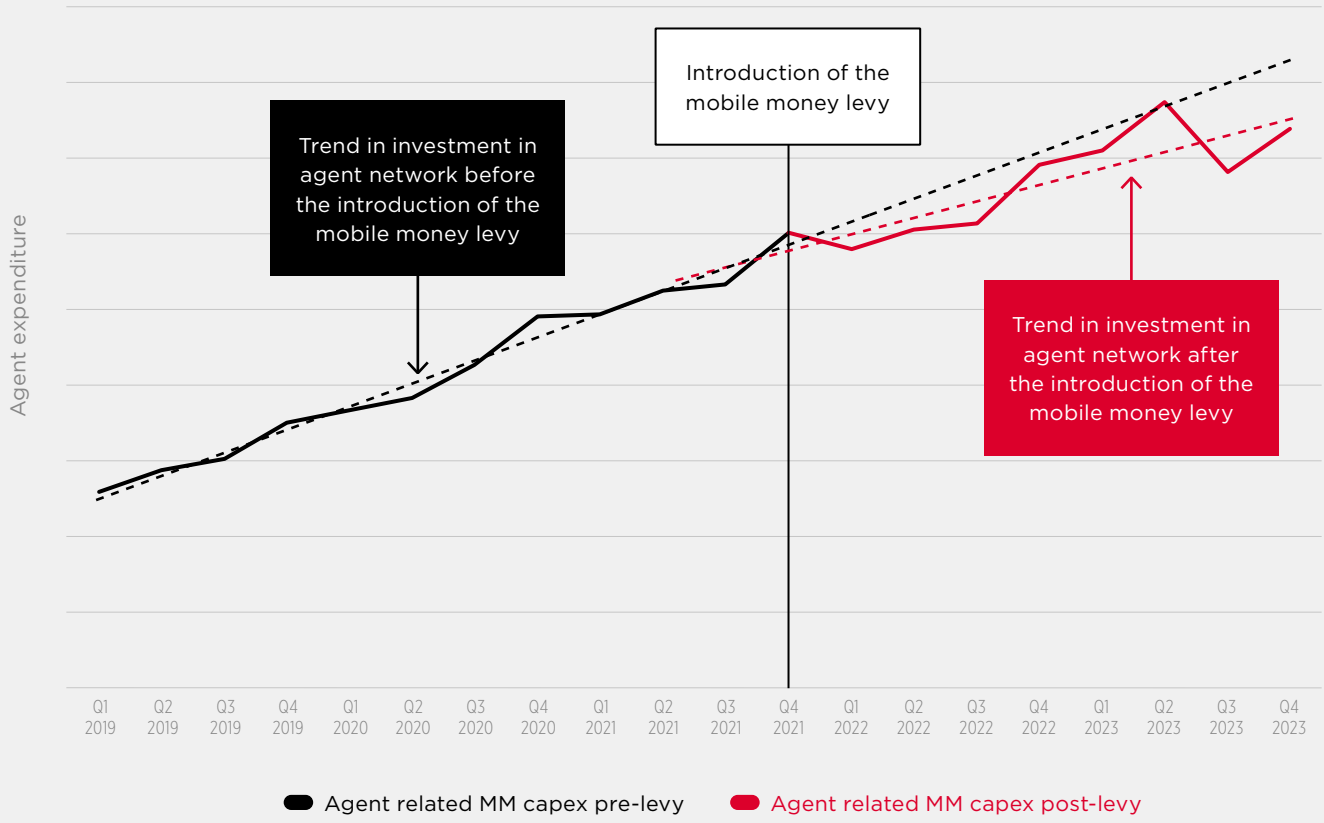


Figure 18 shows that there was a change in the trend of agent-related capex by the MNOs following the introduction of the mobile money levy in 2021. Such capex did continue to grow as the mobile money networks expanded but at a slower rate as operators felt the effect of the levy. This agent capex is an important driver of mobile money availability and adoption. Policies such as the mobile money levy that adversely affect expenditure on the agent network therefore slow down the growth in adoption of the services. Customers were protected from the effect of the levy in the short-run by operators not being allowed to pass it through to prices. However, they have suffered as a result of reduced investment and a slow-down in the growth of access and uptake.

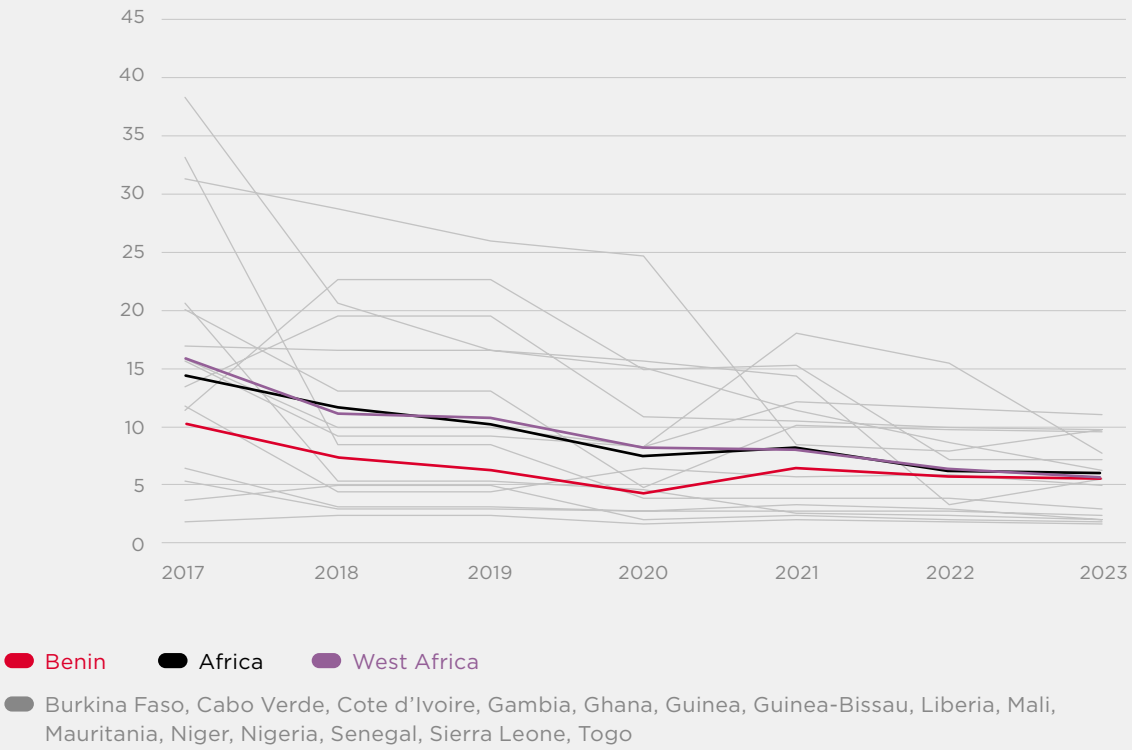
Mobile prices

Prices for a basic data-only mobile broadband basket in Benin have been lower than the regional average in the past but are now in line with prices in the rest of Africa. When measured as a % of GNI per capita, prices for a basic basket of data in Benin have been below African and West African averages in recent years. However prices in other African countries have declined more rapidly and, as of 2023, Benin's basic data prices were in line with the African average of 6% of GNI per capita.

Figure 19

Cross-country comparison of cost of basic data (2017-22)

(% of GNI per capita)



Source: ITU

B. Policy challenges

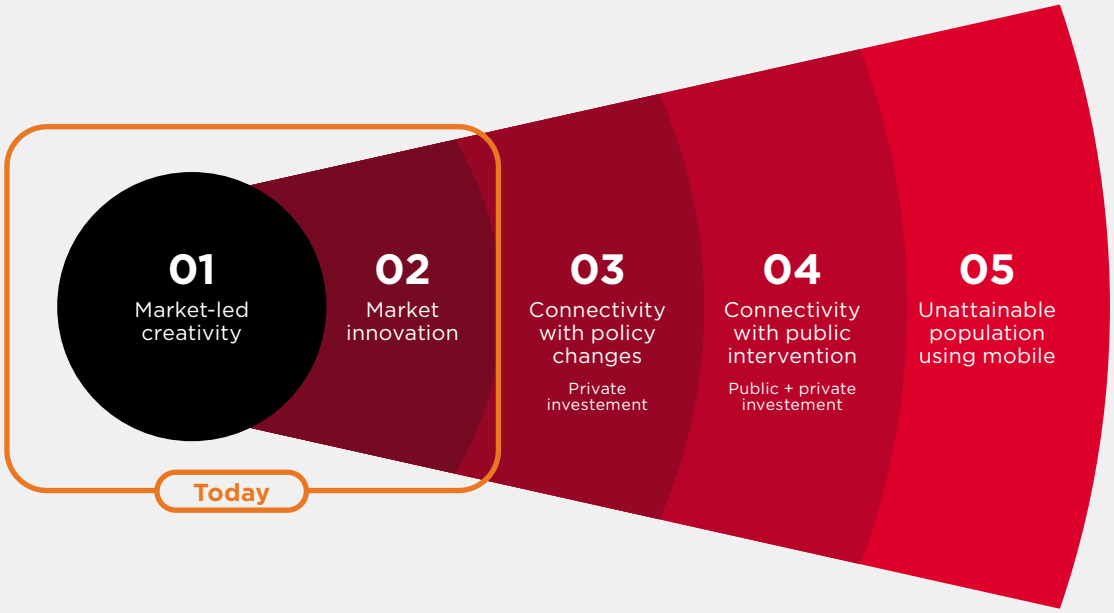
The "Business as Usual" (BAU) scenario

The mobile telecoms sector in Benin has made steady progress in recent years and this is likely to continue into the future. Coverage and availability of mobile telecoms services have increased progressively, and prices have generally fallen. Together, these trends have stimulated uptake and raised levels of adoption of mobile telecoms services. On the current trajectory, the sector will continue to grow but the current regulatory and policy framework for the sector will stifle growth which will be slower than it otherwise would be.

Reducing the significant usage gap will require that bold actions are taken to stimulate demand, reduce the cost of supply and promote a policy environment that supports investment in both mobile telecoms and mobile money. In order to promote growth in the mobile sector, several key policy challenges will need to be addressed. These focus on reducing the cost to customers of using mobile telecoms services and promoting investment into network expansion. By addressing these issues, the government will promote adoption and usage of mobile telecoms services to the benefit of all citizens. Further, wider adoption and usage of mobile telecoms services in the country will benefit both the government and citizens in the form of higher productivity, better and more efficient public services, economic growth, and social inclusion.

Figure 20

Illustration of mobile connectivity analysis



01 **Market-led connectivity:**
The level of coverage and adoption expected in prevailing market conditions with no policy reform or innovation

02 **Market innovation:**
The additional coverage and adoption expected due to the deployment of recent technology innovations

03 **Connectivity with policy changes:**
The additional coverage and adoption that could be achieved by implementing enabling policy reforms

04 **Connectivity with public intervention:**
The additional coverage and adoption that could be achieved with additional investment*

05 **Population unattainable using mobile:**
Population unlikely to obtain mobile coverage, as the costs are too high; other technologies needed

**infrastructure and demand subsidies*

Source: GSMA, World Bank

Taxes and fees on mobile telecoms services and handsets

The mobile sector is a significant contributor to government revenue in Benin. In addition to taxes such as VAT and corporate profits tax which are levied on all businesses, the Government of Benin applies a wide range of taxes on mobile operators that are specific to the sector (Table 10).

Table 10: Telecoms Sector Specific Taxes in Benin

Tax	Application	Base	Current Value
Numbering fee	Specific	One-off connection charge	XOF 100
Import Duty on handsets	Ad valorem	Import value of goods	10%
Universal Service Fund	Ad valorem	Revenue	2.0%
Annual licence fee	Ad valorem	Revenue	13%
Annual spectrum fees	Various	% of revenues	7%
Import duties on equipment	Ad valorem	Import value of goods	10%

Source: World Bank

Excessive taxation of the sector raises costs to consumers. Although these taxes are levied on mobile operators, most of them are ultimately passed on to customers in the form of higher prices. Previous studies have found that 90% of changes to the value of consumer taxes (e.g. sales and usage taxes) tend to be passed through to consumers, while 85% of changes to the value of operator taxes (e.g. revenue and profit taxes, spectrum and license fees) tend to be passed through to consumers.[66,67] Other studies show a relationship between data and handset prices on the one hand and the rate of uptake of mobile broadband on the other.

Excessive taxation can also reduce investment in network infrastructure and mobile telecoms services. Lower taxes on operators frees up funds which can be invested in additional network infrastructure and services. In a recent World Bank study, it was estimated that these tax reductions would allow the operators to roll out mobile broadband coverage to an additional 7% of the rural population.[68]

Reducing mobile taxation could result in 351,000 additional unique mobile internet users in 2028. The table below shows outputs from modelling of the impact of a mobile tax reduction on mobile internet uptake.[69]

Table 11: Mobile internet uptake with sector-specific tax reduction

Mobile internet users (m)	2023	2024	2025	2026	2027	2028
BAU	3.84	4.13	4.44	4.78	5.14	5.52
Tax reduction	3.84	4.19	4.57	4.97	5.41	5.88
Y-on-Y difference to BAU	*0%*	*1%*	*3%*	*4%*	*5%*	*6%*
Increase in growth vs BAU	*0%*	*+2%*	*+3%*	*+5%*	*+7%*	*+9%*

66 World Bank. 2022. Using Geospatial Analysis to Overhaul Connectivity Policies, Table A.2.
67 ARCEP is responsible for regulating the sector. Setting the rates of taxes and spectrum fees in Benin are the responsibility of other agencies of the government.
68 World Bank. February 2022. Using Geospatial Analysis to Overhaul Connectivity Policies.
69 See Appendix and separate methodological document for detailed assumptions.

Quality of Service obligations on mobile broadband services

The quality of experience (QoE) that customers receive is a concern for them and for the authorities.[70] When customers pay for mobile telecoms services, including voice, SMS and data, they have legitimate expectations about the quality of the services that they should receive. In a competitive market, subscribers are able to switch operators if they are not satisfied with the experience they are receiving. Subscribers generally do not utilise operators whose quality drops below a minimum acceptable level and such operators experience higher rates of churn and declining market share.

Operators are primarily focused on ensuring that their networks deliver the coverage and quality of service that their customers value. This helps to retain existing subscribers and gain new ones. In doing so, customers also benefit as they are being provided with services that they value. Operators' network planning, capex and operational decisions are focused on optimising the customer experience in the most cost-effective way. In addition to network planning, operators deploy Customer Experience Management (CEM) solutions that focus on addressing specific lapses in customer experience. Operators also apply demand side measures such as discounting prices in off-peak periods or in low traffic sites to manage the load on the network.

Regulators also typically monitor the coverage and the quality of service (QoS) that MNOs provide and may set regulatory rules around minimum standards. Licenses and the associated agreements contain coverage obligations that operators have to meet in the years following their launch. Further coverage obligations can be imposed on licensees when spectrum is subsequently assigned to operators. Regulatory authorities define signal strength parameters which they use when monitoring compliance with these network coverage obligations. In addition to these coverage obligations, regulatory authorities may also impose QoS regulations on operators. These introduce requirements to provide services at specified levels of QoS which are usually defined using parameters such as call blocking and dropping rates and data download speeds. The authorities then monitor the outcomes and may apply penalties if the specified level is not achieved. The coverage obligations, signal strength requirements and any additional QoS regulations together constitute the regulatory controls on the quality of service experienced by subscribers.

Higher levels of QoS results in higher costs to operators. Higher levels of signal strength and QoS are achieved by operators spending more on sites and network equipment. In order to deliver the specific QoS, the networks need to be designed to cater for traffic at the busiest hour of the day when the load on the network is typically 2-4x the annual average traffic per hour. Outside of this busy hour, the network is not fully utilised and has spare capacity.

The cost of higher QoS can be very significant. Doubling the speed requirements for 4G networks through QoS regulations increases the capex cost of the network by between 20% and 50%, depending on the initial volumes.[71] Increases in signal strength used in coverage monitoring also has a very significant impact on costs. In order to comply with them, operators are required to establish and operate more sites, even - as is often the case - such sites are not commercially viable.

QoS requirements in Benin are high by international standards. The QoS regulations in Benin require operators to provide 4G network speeds of >5Mbps for the downlink, >3Mbps for the uplink and a failure rate of <3%.[72] These average speed requirements are significantly higher than in other countries, even those with higher incomes. An example of this is South Africa, a country with higher GDP and higher rates of mobile internet adoption than Benin, where the regulator has specified an average speed of 5Mbps for downloads and 1.5Mbps for uploads.[73]

70 More details on best practice for QoS/QoE regulations are provided in Modernising quality of service regulations in Sub-Saharan Africa, 2020, GSMA
71 Source: Through Line Advisors Ltd.
72 Résultats-de-contrôle-QoS-du-3-au-10-mai-2023.pdf (arcep.bj)
73 ICASA. 2023. End-User and Subscriber Service Charter Fourth Amendment Regulations 2023.

Regulatory rules about signal strength have a major impact on the financial sustainability of the operators. The strength of the mobile network radio signal reduces with distance from the site. Mobile devices are able to operate within a range of signal strengths but there is a lower bound below which the customer experience becomes unsatisfactory. Regulators use signal strength as a way of evaluating whether an area is within the coverage of mobile networks. They typically undertake tests in a number of different locations and measure the strength of the mobile signal. If it is below a defined threshold, that location is deemed to be outside of the area of network coverage. These tests are often used by regulators to assess whether operators are meeting their coverage obligations. The higher the signal strength requirements, the more an operator has to spend on establishing and operating sites. For example, if an operator failed to meet signal strength thresholds in a particular area, it would need to invest in additional sites or expand existing sites with taller towers and more powerful equipment. Continued failure to meet coverage obligations at the signal strength defined by the regulatory authority can result in financial penalties. Signal strength thresholds defined by the regulatory authority therefore have a major impact on the cost of building and operating a mobile network. If they are too high, they can significantly undermine the financial sustainability of the business.

The signal strength requirements in Benin are also higher than in comparable countries. Signal strength is measured using decibel-milliwatts (dBm), with smaller negative values representing higher signal strengths. In Benin, the signal strength requirements for 2G are -87dBm for 90% of the sampled sites. This is higher than for Côte d'Ivoire, Cameroon and Burkina Faso. Similarly, the requirement for 4G is -90dBM with a 90% compliance threshold. This is also significantly higher than Côte d'Ivoire (-122dBM and 80% compliance), Cameroon (-105 dBM and 90% compliance) and Burkina Faso (-102 dBM and a compliance threshold between 90% and 98%, depending on location) (Table 12).

Table 12: Signal strength requirements in West Africa

		2G	3G	4G
ARCEP (Benin)	Signal level	Rxlev> -87dBm	RSCP> -85dBm	RSRP> -90dBm
	Compliance threshold	>= 90%	>= 90%	>= 90%
ARTCI (Côte d'Ivoire 2017)	Signal level	Rxlev> -87dBm	RSCP> -102dBm	RSRP> -122dBm
	Compliance threshold	>= 80%	>= 80%	>= 80%
ART (Cameroon)	Signal level	Rxlev> -99dBm	RSCP> -99dBm	RSRP> -105dBm
	Compliance threshold	>= 90%	>= 90%	>= 90%
ARCEP (Burkina Faso)	Signal level	Rxlev> -92dBm	RSCP> -95dBm	RSRP> -102dBm
	Compliance threshold	>= 98% in main city of urban commune >= 95% in main city of rural commune and highways >= 90% for other localities		

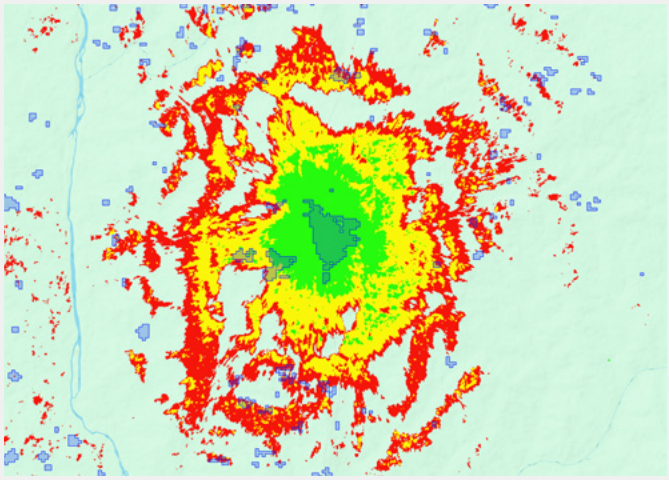
The QoS requirements have a large effect on costs. A 2023 IMF study of the cost of providing universal 4G broadband access found that reducing busy hour reliability from 95% to 50% decreased the cost of universal access by 30% in SSA as a whole (from USD 91 billion to USD 64 billion).[74] Benin's required failure rate of <3% for 4G networks is even higher than the upper bound used by the IMF (of 95% reliability/5% failure rate).

The unduly high QoS standards in Benin would result in higher prices paid by subscribers. Meeting the high levels of QoS required by the regulator in Benin would result in much higher capex and opex. For instance, the 5 Mbps downlink speed requirement results in costs that are up to 50% higher than if the standard was 2.5Mbps. This feeds through into higher prices paid by subscribers.

The signal strength requirements applied by ARCEP also have major implications for the cost of building and operating networks in Benin. The signal strength requirements have a major impact on the area that is defined as being "covered" by a site - the higher the signal strength requirement, the smaller the size of area that is covered. This is illustrated in Figure 21 which shows the area covered by a site depending on which signal strength is used. In this illustration, applying the standard signal strength results in 92km^2 being covered by the site. If the higher signal strength applied by ARCEP is used, the area "covered" by the network is reduced to 13km^2.

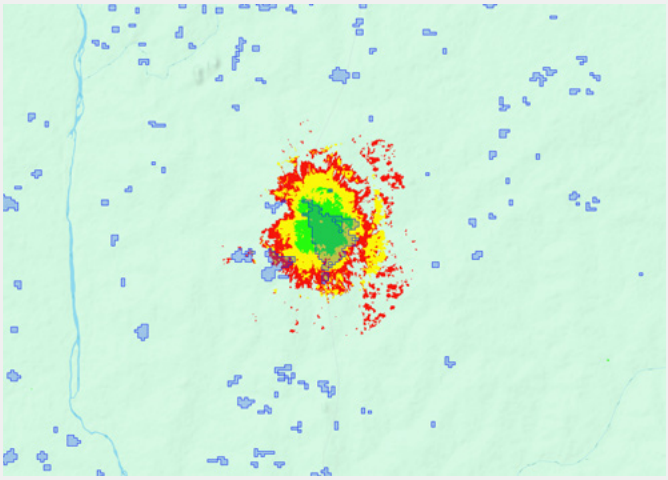
Figure 21

Impact of signal strength on coverage area



Coverage for one cell using the GSMA signal thresholds for a 4G site

(-96dBm: green, -106dBm: yellow, - 113dBm: red).



Coverage for one cell using the ARCEP recommended signal thresholds for a 4G site

(-78dBm: green, -90dBm: yellow, -95dBm: red).

Source: Analysis of operator site data by GSMA Intelligence and GoYo Analytics and also in Annex

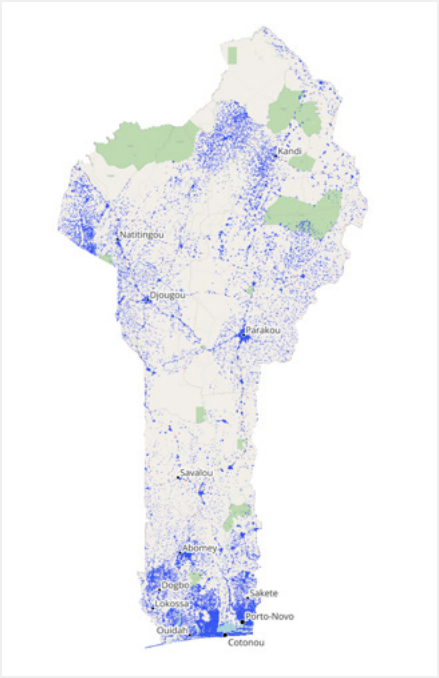
74 IMF. 2023. Estimating Digital Infrastructure Investment Needs to Achieve Universal Broadband.

These signal strength requirements have major implications for the financial sustainability of the MNOs. In order to meet ARCEP's signal strength requirements, the operators would have to build a large number of new sites to ensure that they meet coverage obligations at the signal strength as specified by ARCEP. This is clear from Figure 22 which shows a) the distribution of population in Benin, b) the current 4G network coverage under standard signal strength thresholds, and c) the current 4G network coverage under the signal strength thresholds set by ARCEP. It is clear from this figure that a large number of additional sites would be needed to match the coverage that is provided under standard thresholds for signal strength.

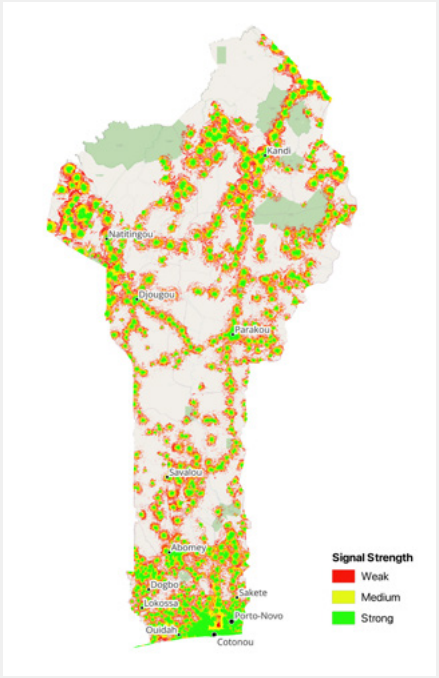
Figure 22

Impact of signal strength on measures of network population coverage

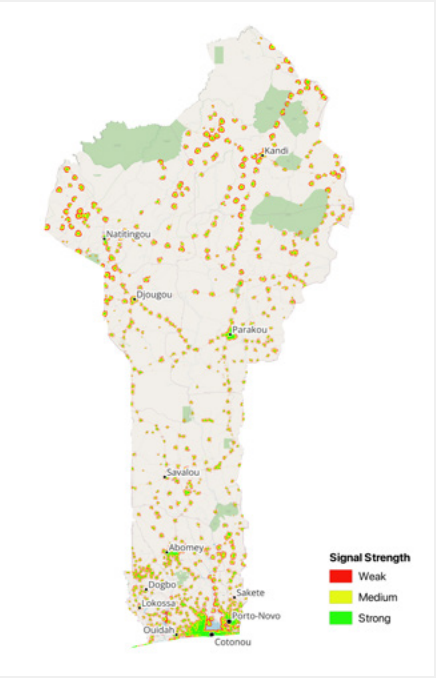
Population distribution



4G Coverage GSMA threshold



4G Coverage ARCEP threshold



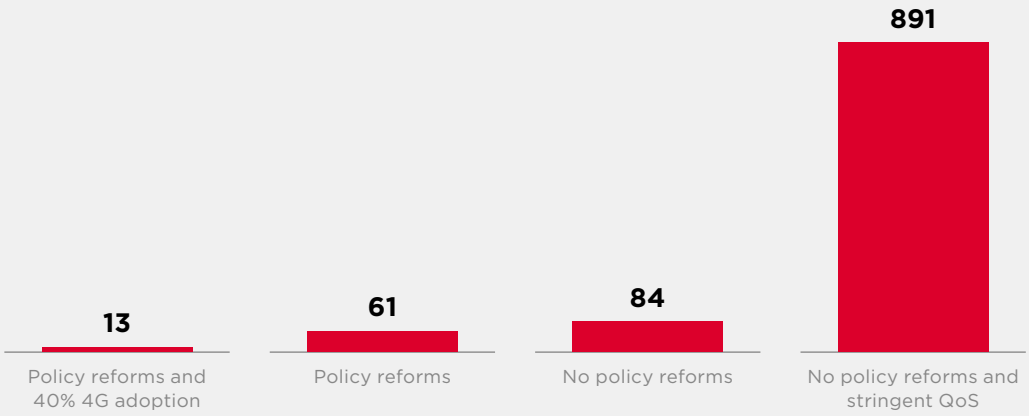
Source: Analysis of operator site data by GSMA Intelligence and GoYo Analytics and also in Annex

The implications of this issue for customers are profound. It is estimated that, under ARCEP's current QoS rules and signal strength thresholds, it would cost one of the larger MNOs USD 891 million to reach 99% population coverage. If all three operators are required to independently meet the regulatory requirements, the total cost would approach USD 3 billion. It would be particularly difficult for Celtiis since it currently has lower levels of network coverage than the other two operators. By contrast, if standard QoS regulations and signal strength thresholds were applied, the cost for one operator to meet 99% population coverage would be approximately USD 84 million. It would cost 90% less to provide 99% of Benin's population with 4G if standard regulatory rules were applied compared with the ones currently set by ARCEP. The cost of this 4G provision would be further reduced if pro-investment policy reforms were implemented (Figure 23).

Figure 23

Additional investment needed for 99% 4G population coverage

(USD million)



Source: GSMA analysis

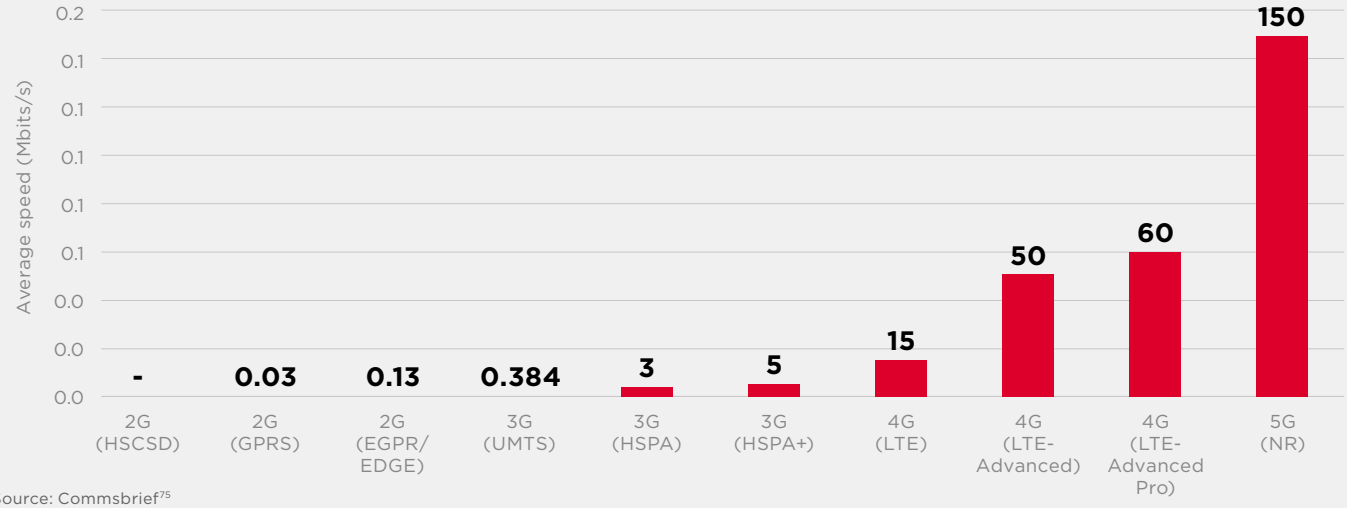
Excessively high QoS and signal strength thresholds imposed by ARCEP are bad for customers. Mobile broadband devices are designed to operate under a range of signal strengths. Most 4G devices are able to deliver a good customer experience at relatively low levels of signal strength. This is the rationale for regulators setting signal strength thresholds at around -100 to -120 dBm (Table 12). The higher thresholds set by ARCEP therefore have negative consequences for the customers. They force operators to channel capex into building sites in areas where there is already coverage rather than rural areas that do not yet have any mobile broadband. At the same time, they provide no additional benefit to customers who live within existing network coverage because they are already able to use their mobile broadband devices.

Mobile QoS improves over time as technology has improved. Data speeds on mobile networks have increased significantly as network technology has evolved from 2G through to 5G. The average speeds delivered by 4G are often 100 times faster than the average speeds delivered by 3G (UMTS) networks (Figure 24).

Figure 24

Average data download speed

(Mbits/s)



Source: Commsbrief[75]

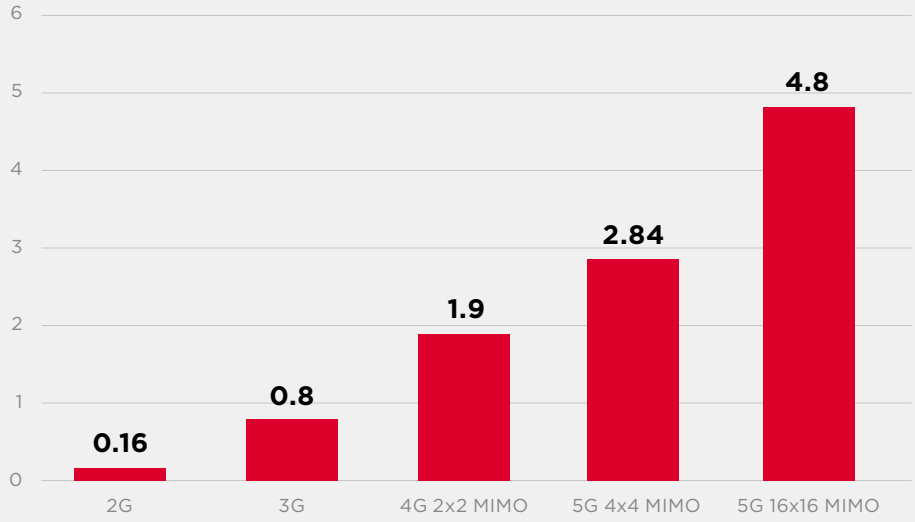
75 Commsbrief. 7 January 2020. Mobile data speed with 2G, 3G, 4G and 5G cellular networks.

The cost to deliver mobile data has also fallen with the evolution of mobile technology. As the network technology has evolved through 2G, 3G, 4G and most recently 5G, the efficiency with which the networks use spectrum to transmit data has improved significantly (Figure 25). This is one of the key drivers of the steep declines in the average cost to deliver data to customers (Figure 26).

Figure 25

Spectral efficiency by network technology

(Bits per Hz)

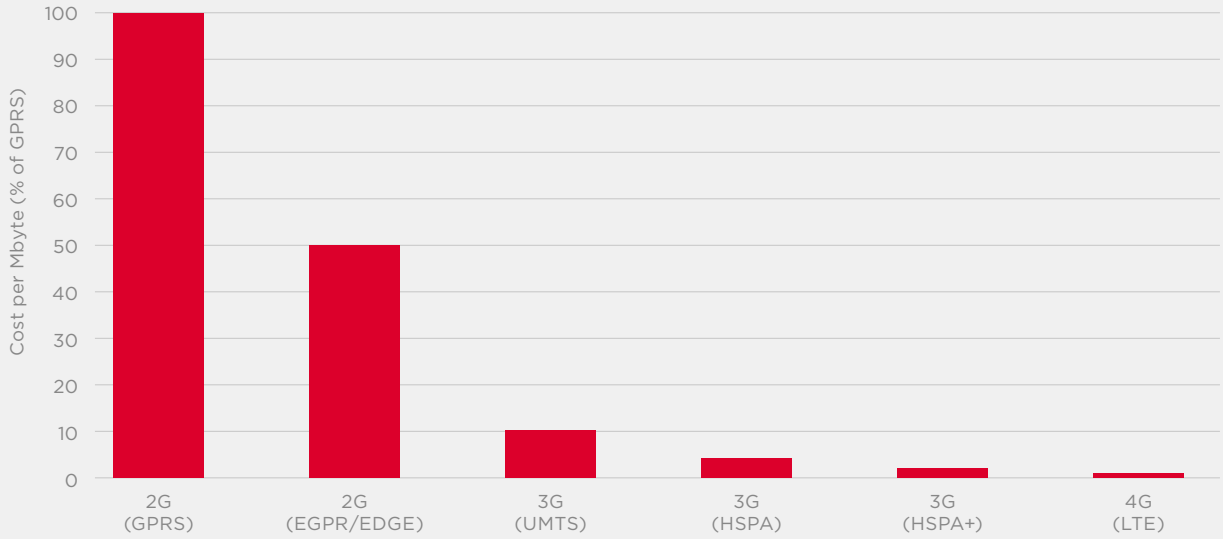


Source: GSMA[76]

Figure 26

Average relative cost per Mbyte of mobile technologies

(cost per Mbyte as % of GPRS)



Source: Source: Frontier Economics/GSMA[77]

76 GSMA. June 2019. The Benefits of Technology Neutral Spectrum Licences.
77 Frontier Economics. May 2015. Assessing the case for in-country mobile consolidation A report prepared for the GSMA.

QoS regulation affects the commercial viability of upgrading networks from 3G to 4G and from 4G to 5G. By investing in new generations of mobile network technology, operators can reduce the cost to deliver mobile broadband to customers. However, high QoS regulations forces them to spend capex on meeting these requirements rather than investing in new technologies. Reducing QoS regulatory requirements to more reasonable levels would release capex for investment in upgrading sites to 5G.

Lowering QoS regulatory requirements (i.e. excluding changes to the signal strength requirements) could result in at least 342,000 additional unique mobile internet users in 2028, as well as significant network upgrades to 4G and 5G and data prices that are up to 13% lower than in the BAU scenario. The table below shows outputs from modelling the impact of a reduction in QoS requirements on mobile internet uptake.[78]

Table 13: Mobile internet uptake with QoS reduction

Mobile internet users (m)	2023	2024	2025	2026	2027	2028
BAU	3.84	4.13	4.44	4.78	5.14	5.52
QoS reduction	3.84	4.18	4.54	4.94	5.38	5.87
Y-on-Y difference to BAU	*0%*	*1%*	*2%*	*3%*	*5%*	*6%*
Increase in growth vs BAU	*0%*	*+1%*	*+3%*	*+4%*	*+6%*	*+9%*

This is in addition to the financial implications of the high signal strength thresholds discussed above.

The mobile money levy

Demand for mobile money arises because customers value the service and prices are affordable. The growth in mobile money in Benin, as elsewhere in Africa, clearly demonstrates the demand for financial services in the region. People value them as an alternative to cash because of ease of use, speed, flexibility, and security. The lack of access to traditional financial services for many people further increases demand for mobile money.

Benin enjoys a harmonised regulatory framework for mobile money common to WAEMU countries. At the national level, progress can be made through dialogue with the BCEAO on the regulation of deposit insurance and support for cross-border data flows and international remittances. There have also been some recent developments on international payments within the WAEMU countries with the launch of a pilot scheme for instant international payments between participating countries.[79]

The mobile money levy in Benin affects operators' ability to continue growing mobile money services. The mobile money levy was introduced in Benin in January 2022. The levy was set at 5% of the fee but with minimum amounts payable depending on the value of transactions (Table 14). The levy is applicable to all mobile money transactions, including cash-out, P2P and international remittances. Mobile money operators have paid close to 14 billion XOF for the levy from its introduction to the end of 2023.

78 See Appendix and separate methodological document for detailed assumptions.
79 BCEAO. 22 July 2024. Démarrage de la phase pilote du système de paiement instantané interopérable de l'Union Economique et Monétaire Ouest Africaine.

Table 14: Schedule of tax base for the mobile money levy

Cash out

Transaction Value	Tariff	Tax base
0 - 500	50	400
501 - 5 000	100	400
5 001 - 10 000	200	400
10 001 - 20 000	350	400
20 001 - 50 000	700	700
50 001 - 100 000	1,000	1,500
100 001 - 200 000	2,000	2,000
200 001 - 300 000	3,000	3,500
300 001 - 500 000	3,500	3,500
500 001 - 750 000	5,000	6,000
1 000 001 - 2 000 000	5,000	10,000

P2P

Transaction Value	Tariff	Tax base
0 - 1000	-	100
1 001 - 500 000	100	100
500 001 - 750 000	100	200
750 001 - 1 000 000	100	300
1 000 001 - 1 500 000	100	400
1 500 001 - 2 000 000	100	500

Intl. Remittances

Transaction Value	Tariff	Tax base
0 - 5 000	100	500
5 001 - 25 000	500	500
25 001 - 50 000	1000	1,000
50 001 - 100 000	1,600	2,500
100 001 - 200 000	2,600	2,600
200 001 - 300 000	3,800	3,800
300 001 - 400 000	5,000	5,000
400 001 - 500 000	6,200	6,200
500 001 - 600 000	7,000	7,000
600 001 - 1 000 000	10,000	10,000
1 000 001 - 1 500 000	12,500	12,500

Source: Government of Benin[80]

80 www.mtn.bj/momo/particuliers/frais-denvoi-et-de-retrait-dargent/ and Benin Finance Law 2022

Mobile money services require ongoing investment. For mobile operators to provide mobile money services, they need to invest continually in technology and their networks of agents. This increases coverage and access to the services, maintains security and supports product innovation.

The mobile money levy has had a negative impact on customers. Operators were prevented from increasing prices as a result of the levy so Benin has not experienced the short-run demand response that has been seen in other countries in SSA when similar taxes were imposed.[81] However, as noted above, since the introduction of the mobile money levy in Benin, operators have slowed down their investment in their agent networks. This, in turn, affects adoption and access to mobile money services across the country.

The mobile money levy in Benin has an adverse impact on other government objectives. Mobile money is an important enabler of deepening financial inclusion and a wide range of other benefits to citizens and to the government. It is one of the digital services that enhances productivity in small and micro enterprises and is also one of the core functions that enable e-government. Promoting the use of mobile money in interactions between government and citizens is also a key part of the GAP. By limiting access and adoption of mobile money, the levy is therefore constraining growth of businesses in the country. It is also limiting the gains that the government could make through the further rollout of e-government services.

Removing the mobile money levy could result in 1.8 million additional active mobile money accounts in 2028.[82] The table below shows outputs from modelling of the impact of a removal of the levy on mobile money uptake.

Table 15: Mobile money uptake with levy removal[83]

Mobile money active accounts (m)	2023	2024	2025	2026	2027	2028
BAU	10.40	12.18	13.97	15.76	17.54	19.33
Levy removal	10.40	12.30	14.31	16.44	18.71	21.16
Y-on-Y difference to BAU	0%	1%	2%	4%	7%	9%
Increase in growth vs BAU	0%	+1%	+3%	+7%	+11%	+18%

81 GSMA. 2023. Tanzania and Ghana E-levy impact assessments, 2023.
82 Note that these are not unique users, and may include individuals with multiple accounts.
83 Note that these figures are not unique users, and may include individuals with multiple accounts.

Modernising the digital communications licensing framework

The digital communications licensing framework in Benin would benefit from being updated. The licensing framework for digital communications operators in Benin has been updated in recent years to apply a more service and technology neutral approach.[84] However, some aspects of this updated framework still reflect an earlier approach to licensing in which separate licences were required for each technology deployed and each type of service that is offered. In today's digital communications markets, operators deploy multiple technologies and offer a wide range of services at wholesale and retail levels.

Globally, there has been a shift towards technology and service-neutral licensing. Recognising these technology trends that have shaped markets around the world, regulatory authorities have adapted their licensing frameworks. The trend globally has been towards a much lighter approach to licensing which has focused more on the use of scarce resources such as spectrum and numbering. Where traditional licenses are still required, there has been a shift towards fewer restrictions on the types of technology that licensees can deploy and the services that they can offer. Globally, frameworks have evolved toward unified licenses in which one general licence is given covering all technologies and services. In many cases, this process has gone further and countries have adopted an authorisation regime in which there are few specific regulatory restrictions placed on how many companies enter the market and what activities they undertake. In all cases, countries continue to require licences for some specific activities that involve the use of scarce resources such as radio spectrum.

The shift to neutral licensing across the world has promoted competition and investment.[85] By removing undue licence restrictions, countries that apply this approach have allowed operators to invest in new areas, innovate and compete more effectively. The benefits of this are clear. Mobile operators have built fibre networks that have enhanced their quality and range of services that they are able to provide to customers. Fixed operators have been able to innovate with wireless technologies which have made it much cheaper to serve customers.

The licensing framework in Benin has placed some constraints on competition and market development. The current structure of licensing prevents operators from entering some markets and deploying certain types of technology. This has increased costs and reduced the quality of service that they are able to offer. It has prevented business customers from benefiting from modern enterprise-level communications services and retail customers have suffered in a similar way.

Stimulating additional demand for mobile telecoms services

There are multiple policies that the government could adopt that would have the effect of stimulating demand for mobile internet and mobile money. Even when affordable mobile internet is physically available to citizens, there remain significant barriers to adoption for many people. Addressing these demand-side barriers is therefore a critical part of the policy for promoting digital adoption.

Improving the affordability of broadband devices. Broadband enabled devices are more expensive than voice-only devices and the cost of purchasing them can be a barrier to adoption, particularly in low-income households. Tax – discussed in more detail above – is one of the factors that affects the cost and affordability of device purchase and ownership. Some countries, such as Kenya, have taken steps to reduce costs by encouraging local assembly of broadband devices.[86] Other measures to improve affordability focus on the provision of financing for the supply and purchase of devices. Consumer credit has been a key facilitator of the adoption of broadband devices in high-income countries. The very high rates of pre-paid subscribers in most African countries have made this mechanism difficult to establish. However, private-sector companies and other types of organisation are looking at business models that could provide consumer credit to support the purchase of broadband devices in low-income markets.[87] These efforts could be enhanced by supportive government policies such as regulatory sandboxes, credit guarantees and other forms of support to financial service providers.

84 Décret 2019-216 du 31 juillet 2019
85 GMSA. June 2019. The Benefits of Technology Neutral Spectrum Licences.
86 https://www.safaricom.co.ke/media-center-landing/press-releases/kenya-sets-up-first-smartphone-assembling-plant-in-east-africa.
87 See https://watuafrica.com/watu-simu/ for an example.

Promoting e-government services can also be a driver of increased demand for broadband. Benin is one of the leading countries in the region for implementation of e-government services. Major efforts have been made to digitise services and this is reflected in the level of interaction between citizens and government agencies. As shown above in Figure 16, the volume and value of G2P and P2G transactions has risen steeply in recent years. Despite the increase, this type of payment remains a small share of the total volume of mobile money transactions. However, as the utilisation of e-government services increases, it is expected that G2P and P2G transactions will form an increasing share of the mobile money ecosystem and will contribute to increased adoption of mobile financial services. One example of this - the M-Kulima programme in Tanzania – has shown how, by establishing digital profiles for small farmers and using mobile technologies to provide services such as payments and loans, e-government is providing an incentive for small farmers to adopt mobile and mobile money services.

There are a wide range of further initiatives that governments can take to promote the productive use of mobile internet. Training and education for digital knowledge and skills is an essential component of the policy framework. This should be targeted at all levels within the education system, adapted to local contexts and combined with awareness campaigns that promote the safe and productive use of the internet.

The Government of Benin has launched some major initiatives to address this skills gap. The Hackerlab 2024 competition run by ASIN is one example.[88] The SENIA event is held annually by the Ministry of Digital Affairs and Digitalisation and there is an annual Digital Week (SENUM). Such initiatives, supported by a wider programme of digital skills and literacy implemented within the education system, shows that the government recognises the importance of digital skills and digital literacy in promoting digitalisation more widely.

Another barrier to adoption is the lack of locally relevant content. This can be addressed by providing additional support to local digital businesses and entrepreneurs. The private sector ecosystem is the best source of locally relevant content, and these businesses create a virtuous circle in which they produce content that increases adoption which further promotes demand for local businesses. The SENIA 2024 event held in Cotonou included a competition to demonstrate the use artificial intelligence to translate foreign language digital content into local languages. This is a good example of the virtuous circle that can be established between local technology entrepreneurs and stimulating broader update of digital services.

Concerns about digital safety and security also constrain uptake in many countries such as Benin. The government can help address this through the right policy framework and supporting education and awareness among users.

Implementing such policies to increase demand could result in at least 702,000 additional unique mobile internet users in 2028. The table below shows outputs from modelling of the impact of a demand stimulation on mobile internet uptake.

Table 16: Mobile internet uptake with demand stimulation

Mobile internet users (m)	2023	2024	2025	2026	2027	2028
BAU	3.84	4.13	4.44	4.78	5.14	5.52
Demand stimulation	3.84	4.23	4.67	5.14	5.66	6.23
Y-on-Y difference to BAU	*0%*	*3%*	*5%*	*8%*	*10%*	*13%*
Increase in growth vs BAU	*0%*	*+3%*	*+6%*	*+9%*	*+14%*	*+18%*

88 https://asin.bj/article/22/les-finalistes-hackerlab-2024/

C. Modelling future developments in the telecoms sector

The impact of changes in regulation and policy towards the sector are summarised below in (Table 17).

Table 17: Modelled policy and regulatory reform scenarios

Policy/regulatory change	Expected Impact	2028 increase in users vs BAU
1. Reduce sector-specific taxes and fees on the mobile sector	Reducing sector-specific taxes on the mobile sector and setting appropriate spectrum fees, will lower retail prices which will boost uptake and adoption of mobile broadband. It will also make it more commercially viable to invest in rural areas which will increase network coverage.	6% - 351,000 additional unique mobile internet users
2. Reform the regulatory framework for quality of service to focus on customer needs	Bringing the QoS regulations into line with other countries in the region will allow operators to invest more in expanding coverage and reducing costs. This will feed through into subscriber growth and increased broadband adoption. In the medium-term, a shift to a more customer-oriented quality of experience framework will allow operators to focus on maximising the benefit to customers.	6% - 342,000 additional unique mobile internet users
3. Remove the mobile money levy	Removing the mobile money levy will boost investment in the mobile money services ecosystem. In particular, it will increase spending on the agent network, thereby expanding coverage and uptake of mobile money services.	9% - 1.8 million additional active accounts
4. Modernise digital communications licensing framework	Modernising the licensing framework will boost investment, improve the quality of network services and will strengthen competition between players in the market. This will feed through into increased adoption of mobile broadband and lower prices.	
5. Demand-side policies	Adoption and usage of mobile internet and mobile money is also affected by demand-side factors. Increased demand increases adoption and usage. Policies aimed at supporting demand and close the usage gap could include interventions such as handset subsidies, digital skills training programmes, business support for SMEs, digitalisation of government services, programmes to increase adoption of new technologies by business and consumers, including mobile money.	13% - 702,000 additional unique mobile internet users

The base case scenario shows a steady increase in mobile broadband. In this scenario, the number of unique mobile subscribers is forecast to increase from 5.9 million in 2023 to 7.9 million in 2028. The number of mobile broadband users is expected to increase from 3.8 million in 2023 to 5.5 million in 2028 and the number of mobile money active accounts is expected to increase from 10.4 million in 2023 to 19.3 million in 2028.

The impact of the policy recommendations would be to boost the level of mobile broadband adoption over the period dramatically, from 1.7m new users in the BAU scenario to 3.1m if all policies are implemented. Taking into account the existing base of mobile internet users, this would increase the number of unique mobile internet users by 25% compared to the BAU scenario. These recommendations would have a significant impact on access to and adoption of mobile broadband. It is forecast that the reduction in sector-specific taxes would increase the number of mobile broadband users by 6% over the BAU scenario. Amendment of the QoS regulations would further boost mobile broadband users by 6%. The impact of the reform of the licensing framework on mobile broadband adoption is harder to quantify, so the impact of this has not been included in the quantification. Implementing demand-side policies would increase mobile broadband users by 13%. The combined effect of these policy changes would be to increase mobile broadband users by 25% compared to the BAU scenario. This would mean that 80% more people are using the mobile internet in 2028 than were using it in 2023, amounting to an additional 3.1 million mobile broadband users in Benin within five years. Table 18 and Figure 27 below show outputs from modelling of the combined impact of mobile internet uptake policies.

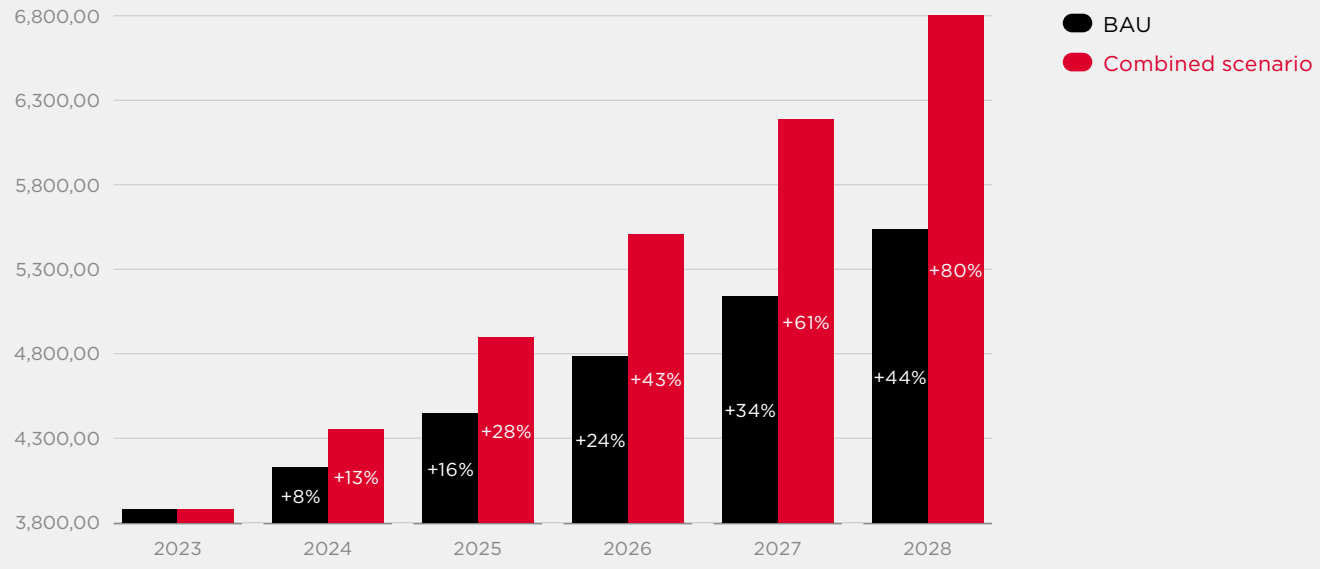
Table 18: Impact of policy recommendations on internet uptake

Mobile internet users (m)	2023	2024	2025	2026	2027	2028
BAU	3.84	4.13	4.44	4.78	5.14	5.52
Combined policies	3.84	4.35	4.89	5.50	6.18	6.92
Y-on-Y difference to BAU	*0%*	*5%*	*10%*	*15%*	*20%*	*25%*
Increase in growth vs BAU	*0%*	*+6%*	*+12%*	*+19%*	*+27%*	*+36%*

Figure 27

Impact of policy reforms on use of the internet

(number of mobile internet unique subscribers)



Source: See separate methodological document that accompanies this report.

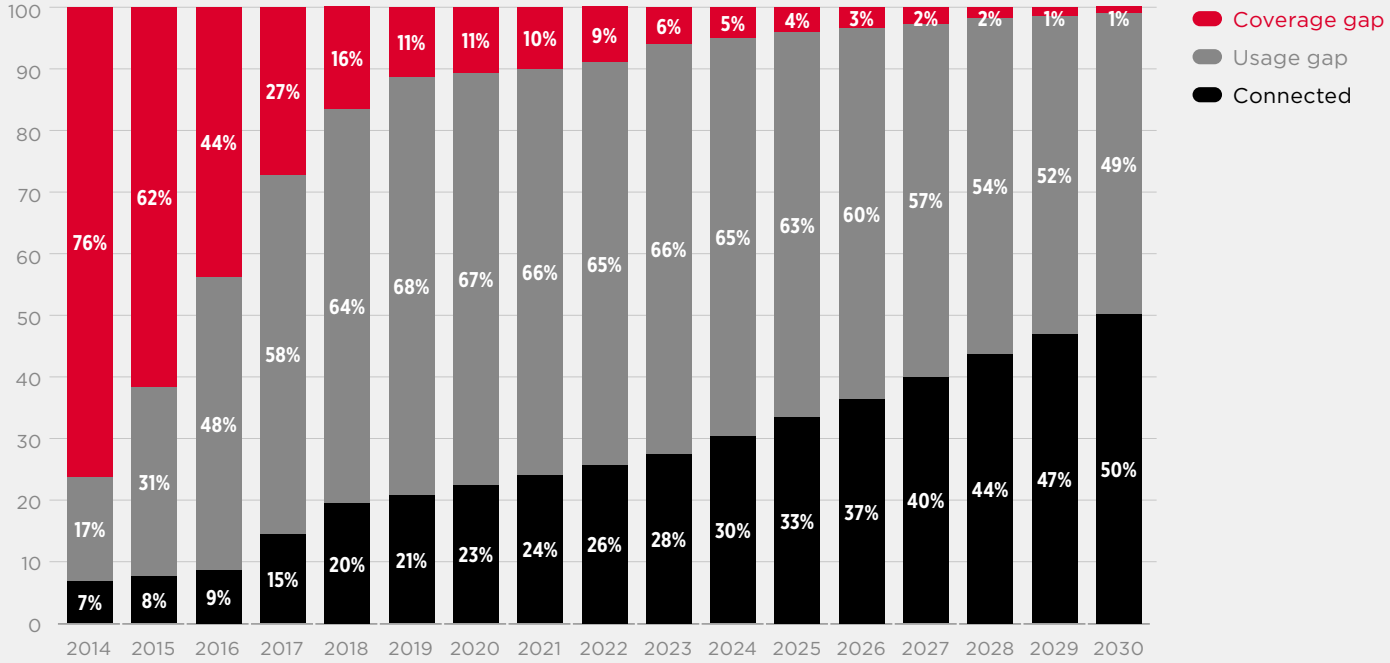
These policies would go some way towards closing the usage gap. By boosting adoption of mobile broadband, more people living within range of the networks would start using broadband (Figure 28).

The recommended changes to the mobile money levy would also have a significant impact on access to mobile money services. It is estimated that removing the mobile money levy entirely would increase access to mobile money services by 9% in 2028 compared to the BAU scenario. This means that there would be a further 1.8 million active mobile money accounts, in addition to the new users that would adopt the service under the BAU scenario. Altogether, this would mean that there are almost 11 million more active mobile money accounts in 2028 than in 2023 (Figure 29).[89] Simply removing the lowest (XOF 400) tax base on cash outs would also have a significant impact, increasing access to mobile money services by 4% in 2028.

Figure 28

Evolution of mobile internet connectivity in Benin, subject to policy reforms

(% of population)



"Connected" refers to unique mobile internet users[90] as a % of population; "Usage gap" refers to the population covered by at least a 3G network but without a mobile internet subscription; "Coverage gap" refers to the population not covered by at least a 3G network.

Source: GSMA Intelligence and authors' calculations. See separate methodological document that accompanies this report.

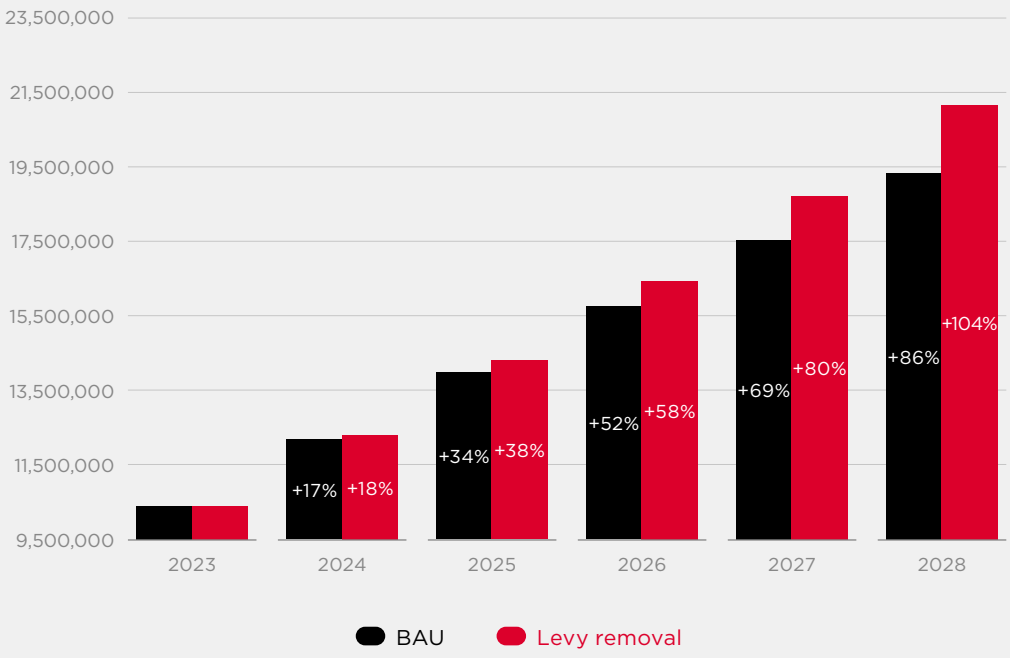
89 Note that these are active users, rather than unique users, and may include individuals who have accounts with multiple networks.

90 In this report "mobile internet users" or "unique mobile internet users" refers to unique individuals using the mobile internet. It does not refer to the number of SIM cards or mobile internet accounts, which is usually greater than the number of individuals using the internet.

Figure 29

Impact of the removal of the mobile money levy on access to mobile money

(number of mobile money active accounts)



Source: See separate methodological document that accompanies this report.

5. Policy Recommendations

Digitalisation of the public and private sector in Benin offers benefits for both the government and citizens. The government can significantly reduce the cost of delivering some public services while also improving quality and coverage. The boost to economic growth and the improvements in tax collection afforded by digital technologies have a direct positive impact on the government. Similarly, Benin's citizens benefit from improved access and quality of public services. Private companies benefit from enhanced productivity, reduced costs and easier access to markets. Supporting the digitalisation process would therefore benefits the whole of the country. In order to realise the full potential of digital transformation in Benin, policy reforms are needed. These reforms must balance short-term objectives with long-term investment and development.

To reap the wide-ranging benefits of digitalisation will require bold actions to support demand, reduce the cost of supply and promote a policy environment that supports investment towards the collective goals of digital transformation and universal connectivity.

The economic and social value of digital and emerging technologies rely on mobile networks as the backbone of digitalisation of the economy and the mobile sector is best positioned to partner with the government towards a mission-oriented public policy that can catalyse innovation across multiple sectors in the economy.

This report identifies four supply-side policy recommendations to unlock the catalysing role of the mobile sector.

Supply-side policy recommendations

Policy recommendation	Expected Impact
Reduce sector-specific taxes on the mobile sector	Reducing sector-specific taxes on the mobile sector is likely to have two broad effects. It will feed directly through to lower retail prices which will boost uptake and adoption of mobile broadband. It will also make it more commercially viable to invest in rural areas which will increase network coverage.
Reform the regulatory framework for quality of service to focus on customer needs	The regulatory approach to QoS should focus on maximising the benefits to customers. The objective should be to ensure that the maximum number of people have affordable access to effective mobile broadband. Where QoS and signal strength thresholds are applied, they should be based on what customers need to access the internet in the most affordable way. They should also explicitly take into account the trade-offs between quality of service, on the one hand, and effective access to communications services on the other. In particular, the regulatory framework for QoS should not result in unnecessary duplication of infrastructure and focus on extending coverage to unserved areas. Ultimately, the QoS approach should move towards a customer-oriented QoE framework that places greater reliance on competition between operators to deliver a better experience for customers. As an initial first step, the QoS and signal strength regulations in Benin should be brought into line with other countries in the region. This would make investment in capacity upgrades and coverage in rural areas more commercially viable. Instead of allocating capital expenditure to enhancing network capacity in areas that are already covered, operators could use it to expand coverage in underserved areas and invest in customers services. Such amendments would ultimately feed through into lower retail prices which would benefit customers. This should be followed by a evaluation towards a more explicitly customer-oriented framework for monitoring and regulating the quality of experience.
Remove the mobile money levy	Removing the mobile money levy will boost investment in the mobile money services ecosystem. In particular, it will increase spending on the agent network, thereby expanding coverage and uptake of mobile money services.
Modernise digital communications licensing framework	Modernising the licensing framework, towards a unified licensing framework, will boost investment, improve the quality of network services and will strengthen competition between players in the market. This will feed through into increased adoption of mobile broadband and lower prices.

In addition, the government should make efforts to increase demand and adoption of digital services. These include the following measures.

Demand-side policy recommendations

Policy recommendation	Expected Impact
Accelerate implementation of e-government	Benin's e-government strategy has already promoted digital adoption among citizens. By accelerating the execution of the digital transformation strategy and projects set out in the GAP, the government will further stimulate demand for digital adoption among citizens. In doing so, the government should also make efforts to enhance the quality and user-centricity of e-government services. It should also support improved platform performance (e.g. reduced platform downtime, increased speed times for transactions, data light versions for mobile devices etc.). An enhanced customer experience in using e-government services will further boost adoption and usage.
Digital skills and literacy	Enhancing digital literacy and skills among the general population will support demand for digital adoption. This will include a wide range of initiatives from basic digital education through to advanced digital skills, programming etc. Such digital skills training and information needs to be designed and delivered in a way that is appropriate to the educational level of subjects and also for the types of applications that they will be using. This includes appropriate delivery mechanisms, languages and levels of literacy. The government's initiatives on more advanced technologies such as AI is also an important part of this overall approach to digital skills. By supporting development of AI skills and technology within Benin, the government is creating a virtual circle of increasing demand for digital services.
Promote adoption of digital technologies by businesses	By providing incentives to businesses to adopt digital technologies, the government can boost demand. This can include initiatives such as digital entrepreneurship schemes and direct support to MSMEs focused on the local development digital technologies. Digitalisation of e-government services also has an impact on digital adoption among firms. Further digitalisation of G2B processes will support this process.
Increase confidence and trust in digital safety and security	By ensuring that the regulatory frameworks around data protection, cybersecurity, trust and consumer protection are up to date, the government will increase trust in the digital ecosystem. This will help overcome caution about transition from manual to digital processes and thereby promote digital adoption.

Telecoms Modelling Appendix

Detailed information on the modelling methodology is provided separately in the accompanying methodological document. This appendix outlines the specific assumptions applied for the scenarios modelled for Benin.

Tax and fee reduction scenario

In the tax reduction scenario, the impact of a 15 percentage point reduction in operator-specific taxes and fees is estimated, along with the complete removal of import duties on handsets (currently at 10%). These feed through to price reductions for consumers, which in turn lead to greater uptake of mobile internet than in the BAU scenario (6% more unique users by 2028).

QoS regulation scenario

For the QoS regulation scenario, the impact on investment of QoS requirements in Benin is modelled. The analysis shows that high QoS requirements can have a very significant impact on the cost and economics of upgrading or expanding a mobile network.

As a result of greater investment, it is estimated that around 34% of subscribers will be able to move up the mobile internet technology ladder (e.g. from 3G to 4G or 4G to 5G), and that this will drive lower data costs (per MB) and prices and greater uptake of mobile internet. Compared to the BAU, this would result in 6% more unique mobile internet users by 2028.

Demand stimulation scenario

For the demand stimulation scenario, a proxy for the aggregate effect of demand-side policies is based on a study by the World Bank in Benin which estimated that providing handset subsidies would increase mobile internet uptake by 12.7 percentage points after five years and 16.2 percentage points after 10 years.[91] This is a conservative estimate and if all proposed policies are implemented, it is possible that the effect will be larger. By 2028, it is estimated that this scenario will result in 13% more unique mobile internet users than in the BAU.

Mobile money levy removal scenario

Operator data in Benin is used to estimate the impact of the mobile money levy on agent expenditure, and the impact of agent expenditure on the uptake of mobile money. It is estimated that in Benin the removal of the mobile money levy would result in 21% more operator expenditure on their agent networks by 2028 compared to the BAU scenario. This would feed through to 9% more mobile money accounts in 2028.

Mobile money levy reduction scenario

The impact of reducing the effective size of the levy by removing the tax base thresholds is also estimated (e.g. there is currently a XOF400 minimum tax base for cash-outs, regardless of the size of the actual cash-out fee). Setting the tax base equal to the actual fee, rather than the minimum base for each transaction value, would have the effect of reducing the effective tax rate on mobile money transactions. It is estimated that this simple change would result in 4% more active users of mobile money by 2028.

4G Coverage modelling

4G network coverage modelling is done using a detailed geospatial analysis of mobile network coverage and population distribution. The modelling methodology is summarised in the following diagram.

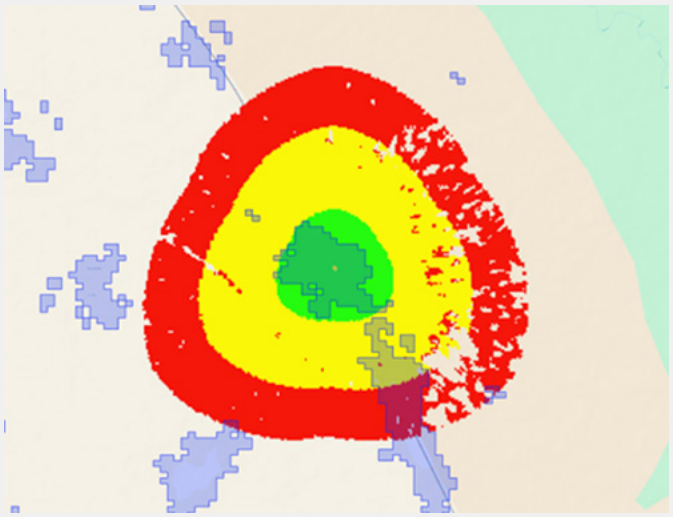
91 World Bank 2022, Mobile Infrastructure in Benin.

Collect infrastructure and population data	Prepare population data	Calculate existing coverage	Calculate population and geographic coverage	Optimal network analysis
Collect and clean mobile network infrastructure data from MNOs	Use data from satellite imagery to create settlements with population estimates	Use radio signals propagation models to calculate the existing coverage for each existing mobile cell in the country	Overlap network coverage and population distribution to calculate the state of coverage for each population settlement in the country	Overlap network coverage and population distribution to calculate the state of coverage for each population settlement in the country
Collect georeferenced population distribution data derived from satellite imagery analysis		Consolidate the coverage masks (layers) for each MNO and technology	Calculate the average geographic and population coverage for each administrative area in the country	Calculate the average geographic and population coverage for each administrative area in the country
Collect other necessary data like administrative areas, urban/rural classification, or network operations costs				

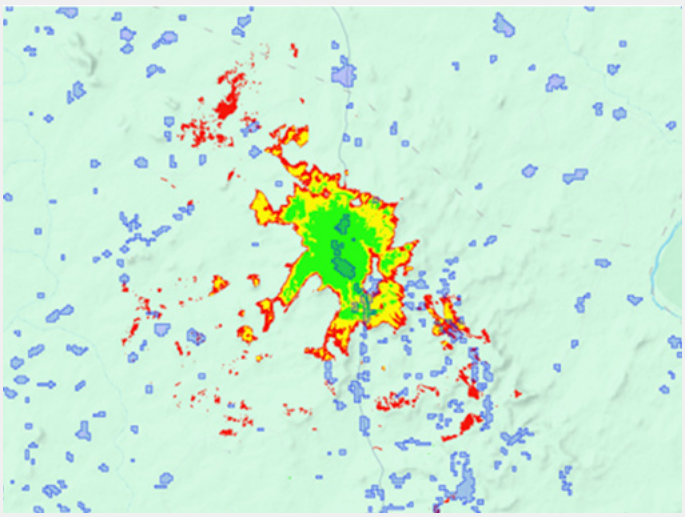
Coverage is calculated using a Cost-231 signal propagation model that considers the local environment as well as the technical parameters of the MNO's existing networks. These models are similar to those used by MNOs to design and optimise their network. The main technical parameters included in the modelling are: sites geographic coordinates, tower height, transmitting power, antenna gain, antenna azimuth and tilt, spectrum frequency. This is combined with data on terrain, type of climate and any obstacles that may be present.

The result is a mapping over coverage against population which takes into account signal propagation in the physical environment.

Coverage calculation examples



Site built in flat area. Signal strength is mainly determined only by distance to the transmitter. Population settlements are in blue, note some are within coverage while others are outside of coverage.



Site built in rugged terrain. Signal strength is limited by hills surrounding the tower.

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