Digital ECOWAS: Pathways to investment, innovation and inclusion

The GSMA represents the interests of mobile operators worldwide, uniting more than 750 operators with over 350 companies in the broader mobile ecosystem, including handset and device makers, software companies, equipment providers and internet companies, as well as organisations in adjacent industry sectors. The GSMA also produces the industry-leading MWC events held annually in Barcelona, Los Angeles and Shanghai, as well as the Mobile 360 Series of regional conferences.

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Detecon is the leading, globally operating technology management consulting company with headquarters in Germany, which has been combining classic management consulting with high technological competence for over 40 years. The focus of its activities is on digital transformation: Detecon supports companies from all areas of business to adapt their business models and operational processes to the competitive conditions and customer requirements of the digitalized, globalized economy with state-of-the-art communication and information technology. Detecon's expertise bundles the knowledge from the successful conclusion of management and ICT consulting projects in over 160 countries. It is a company of Deutsche Telekom.

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1. Executive summary

1.1 Introduction

The purpose of this paper is to assess how supportive regulatory frameworks can encourage investment, innovation and digital inclusion in ECOWAS Member States.

Statistics reveal continual increases in the number of mobile internet users in West Africa. However, there are still large numbers of people who remain unconnected and are classified as digitally excluded.

Mobile internet users in West Africa

100m in 2018

increase of **19m** over previous year

This represents

1/4

of the population

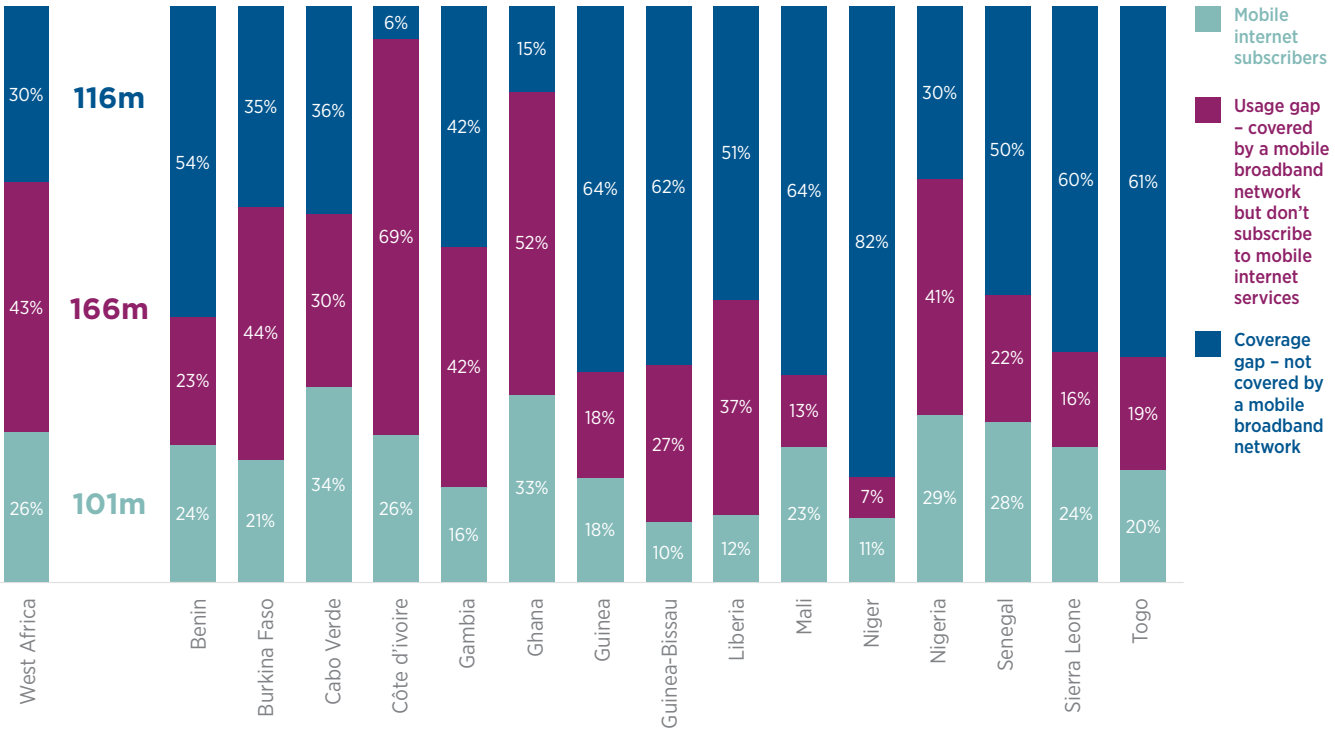
Leaving more than

280m

people digitally excluded

Mobile internet subscribers in West Africa

Percentage of population, 2018



Source: The GSMA Mobile Economy West Africa 2019 report

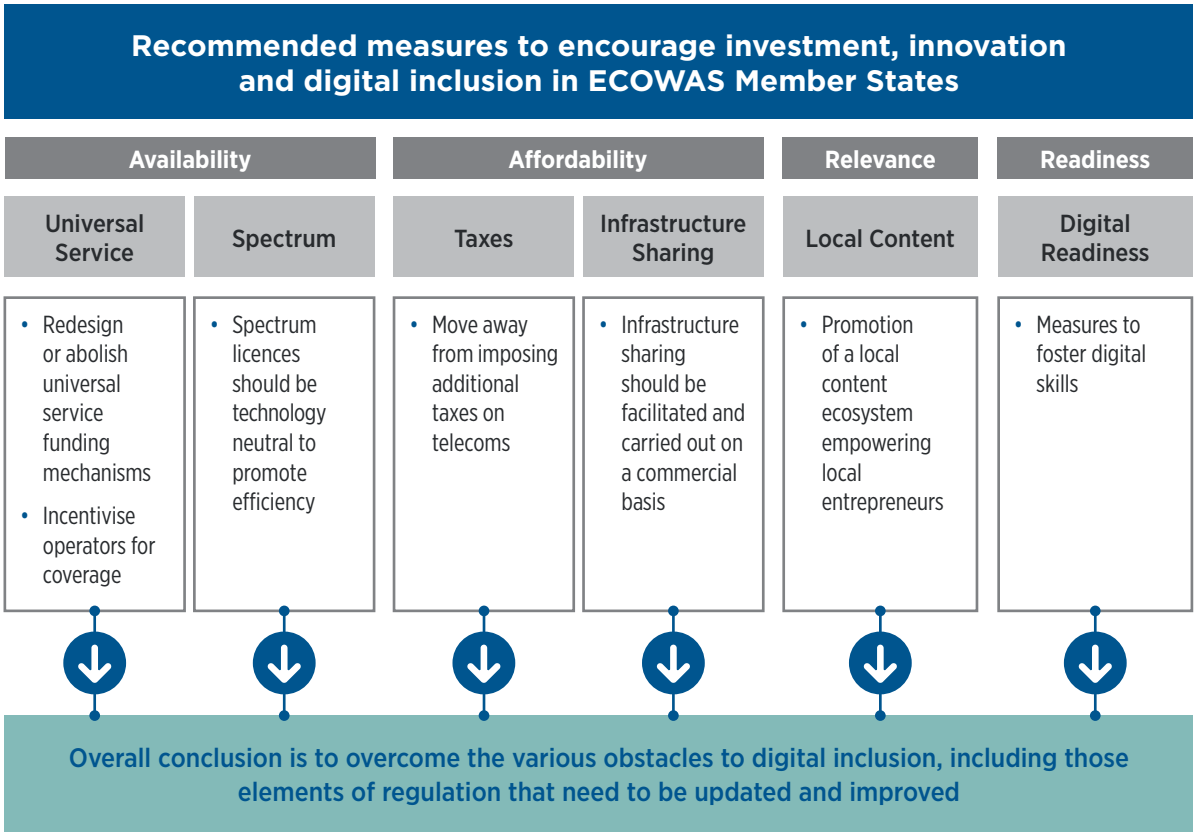
The particular challenge with digital exclusion is that the longer it persists, the longer it takes people (and regions) to catch up with a moving target. Digital exclusion can quickly result, therefore, in economic exclusion.

Addressing and reducing digital exclusion requires a significant amount of investment because the unconnected are typically in rural areas where the subscriber acquisition costs are higher than in urban areas. Furthermore, the unconnected typically have lower disposable incomes, making the economics of network rollout even more challenging for service providers.

This problem cannot generally be solved by governments alone. State budgets struggle with providing universal coverage in developed countries, and in Africa the magnitude of the unmet need is greater. Therefore, the emphasis should be on encouraging and enabling further investment, with the logical sources of such investment being the service providers. A regulatory framework that encourages investment, enabling and motivating service providers to extend connectivity, could lead to the commitment of the necessary financial resources to improve rates of digital inclusion.

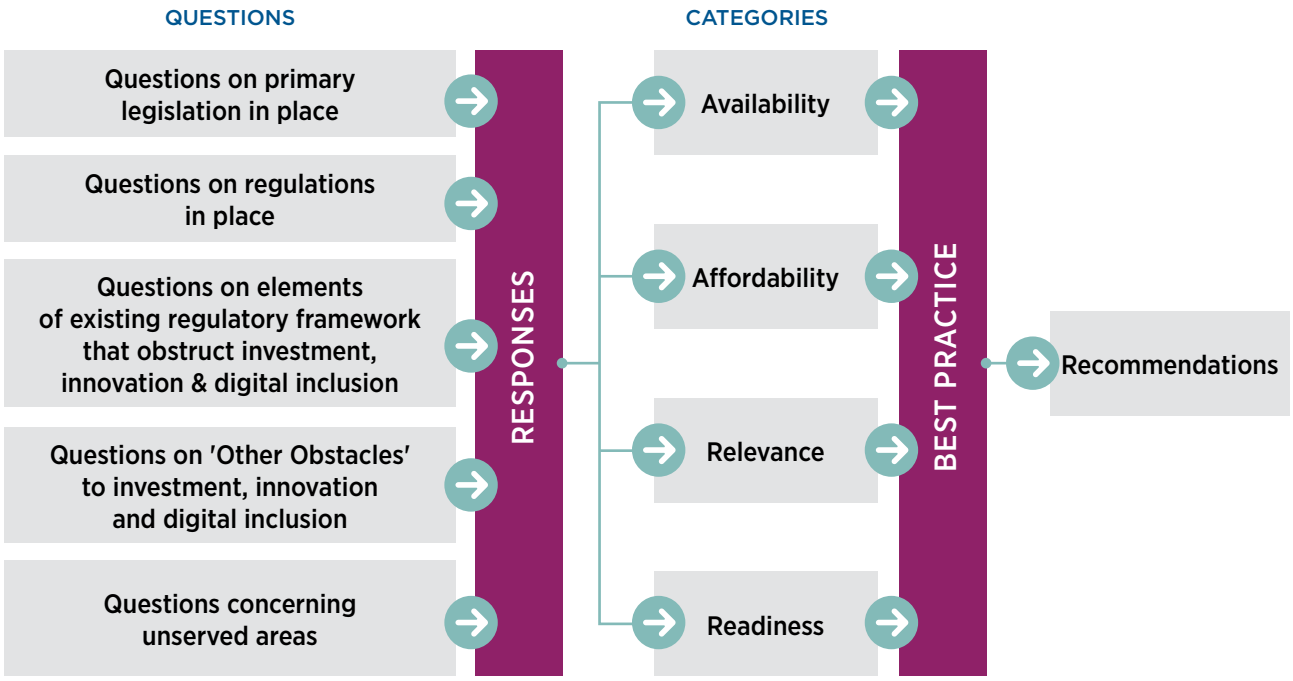
A key component to encouraging investment is to remove unnecessary barriers to such investment that may reside in the legal and regulatory frameworks. The objective of this paper is to develop a common view of the way forward.

At the highest level, the key outcomes can be identified as follows:



1.2 Methodological approach

The approach taken to produce this paper is illustrated in the diagram below. An information and opinion gathering phase was followed by an analysis of the results, a review of best practice and the development of recommendations based on the findings.



The first phase involved posing a range of questions to the appropriate authorities in the ECOWAS Member States.

The questions were about the existing situation regarding the legal and regulatory frameworks, and what the respondents considered to be the main obstacles to investment, innovation and digital inclusion (both regulatory and non-regulatory).

The cited obstacles to investment, innovation and digital inclusion were then categorised according to **availability**, **affordability**, **relevance** and **readiness**[1]. This framework was selected because it is all inclusive and measurable. The factors have equal weight and importance.

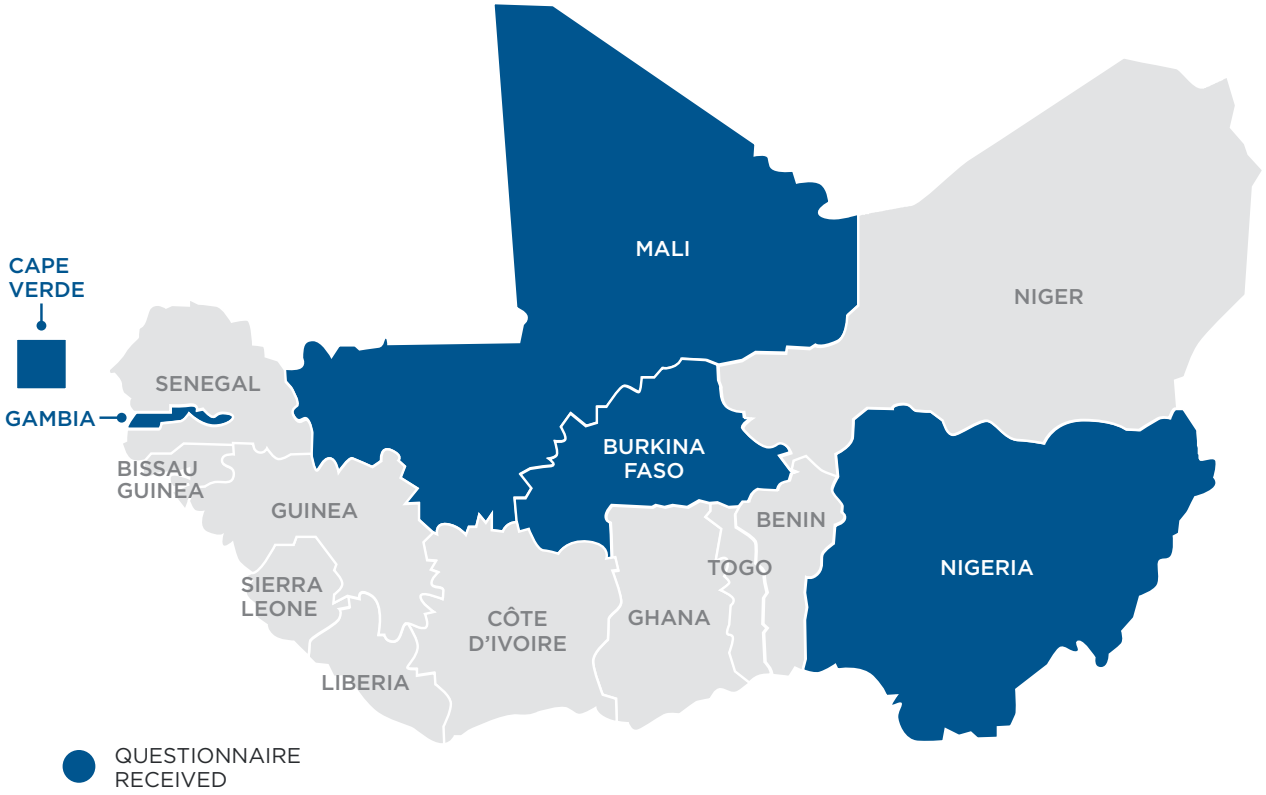
On the basis of the responses, best practices were illustrated for each category and overall recommendations provided.

1. Based on the approach adopted in the Inclusive Internet Index published by The Economist Intelligence Unit

1.3 Research overview

As noted, the study involved obtaining responses from government and regulatory authorities to questionnaires exploring the current legal and regulatory situation and their perceptions on the main obstacles to investment, innovation and digital inclusion.

The respondent countries are indicated in the following map:



1.4 Key obstacles identified

The obstacles to investment, innovation and digital inclusion identified by the respondents can be summarised as follows:

Availability

In terms of availability (i.e. mobile broadband coverage), the identified obstacles are:

- The low effectiveness of universal service funding mechanisms
- Spectrum inefficiencies including technology specific licences and lack of low frequency spectrum

Affordability

In terms of affordability, the challenge for those in the low income bracket is exacerbated by:

- Sector-specific taxes on equipment, terminals and telecommunications in general
- The ineffectiveness of existing infrastructure sharing regulations

Relevance

In terms of relevance, the identified obstacle is:

- Lack of local language content that is locally relevant

Readiness

In terms of readiness, the identified obstacle is:

- Lack of digital literacy

1.5 Recommendations

Recommendations on availability – Achieving the widest possible coverage

Incentivise service providers to deliver the widest possible mobile broadband coverage by reducing spectrum costs and considering coverage obligations on sub-1GHz assignments.

The chosen mechanism for increasing coverage has usually been a Universal Service Fund (USF), but these have generally had limited success in overcoming the overall problem and sometimes the funds have not been deployed, leaving USF as a de facto tax.

The recommendation, therefore, is to move away from USF mechanisms and move towards Universal Service Obligations linked to low frequency spectrum. The 700 MHz and 800 MHz digital dividend spectrum will become available for assignment in African countries over the next few years. It is recommended that this spectrum be assigned to service providers that can deploy it efficiently with obligations to further improve mobile broadband coverage. The roadmap regarding the assignment of the International Mobile Telecommunications (IMT) spectrum and the roll out of coverage should be planned in consultation with the service providers.

As part of this process, the licences for all spectrum should be technology neutral to allow the service providers to maximise on mobile broadband capacity while still catering for 2G (and 3G) customers.

To ensure that networks are rolled out at minimum cost it is necessary to have a clear view of the spectrum that will become available and when and for what purpose. It is also necessary to have long term planning to ensure that the bands are cleared and existing legacy users migrated at minimum cost.

For this purpose, the appropriate mechanism is an IMT roadmap that undertakes the above and creates a clear view of the spectrum that will be released.

It is proposed that the ECOWAS Member States, in consultation with the wider group of stakeholders that use spectrum, facilitate the production of such a roadmap. This will also serve as a positive example for other countries and regions in Africa.

Recommendations on affordability – Lowering the cost to communicate

Lower the cost for citizens to communicate by reducing the costs of operation – by removing additional taxes on telecommunications, keeping spectrum fees reasonable and allowing service providers' full scope in passive and active infrastructure sharing.

Questionnaire respondents identified the cost for those on low income to access mobile as a major constraint to take up of mobile broadband. Addressing this issue requires lowering the cost of operations to allow cost savings to be transferred into lower pricing (lower cost of ownership).

A key component of the cost has been tax and import duties. Many governments suffer from a small tax base, and in many countries the service providers are the largest entities that can be taxed and mobile services the largest service that can be efficiently taxed. Therefore, it is not surprising that governments feel compelled to place additional taxes on mobile communications. However, mobile communications is critical to digital inclusion which in turn is an enabler for economic inclusion.

Therefore, the first recommendation is to reduce or abolish any taxes or import duties on telecommunications services over above normal corporate income tax and import duties. The cost reductions that ensue will allow more people to participate in the digital economy and this will broaden the tax base.

A similar effect can be observed with resource costs and the need to avoid over-pricing spectrum. Thus the second recommendation is to keep spectrum fees reasonable, specifically:

- Spectrum auctions should be designed to ensure that the spectrum price is appropriate and does not impose costs that have to be passed on to consumers.

- Administrative spectrum fees should be based on covering the costs of spectrum administration and not on raising revenue.

The third recommendation is to lower the costs of telecommunications through the facilitation of infrastructure sharing, including passive and active infrastructure, and spectrum resources. Experience has shown that infrastructure sharing is the most effective when it is left to the market to negotiate rather than trying to mandate terms and conditions. In cases where it is perceived that competition is failing, there should be a process in place to investigate this scenario (e.g. competition analysis, market definition) to inform whether regulatory action is required or not. Where infrastructure is built with universal access and service funds particularly in unserved and underserved areas, sharing can be mandated after a grace period.

Allowing the service providers to undertake passive and active infrastructure sharing (and voluntary national roaming), together with equitable coverage obligations (see 'availability' section), will achieve the twin aims of availability and affordability.

Recommendations on relevance and readiness – Incentivising digital inclusion

Support stakeholders in providing digital training and facilities to promote the development of local content and giving users the necessary skills to become digitally engaged.

Relevance

The objective is to provide incentives to the unconnected to connect to the internet. These are not global multi-linguists but people, often in rural areas, who want content in the local language with local relevance.

While there is already a lot of activity in this domain, the recommendation is to support service providers in encouraging and fostering local digital ecosystems, enabling local entrepreneurs to set up websites in the local language that meet local needs. This may take different forms in different places, but the service providers can fulfil a key role as follows:

- Provide training in basic programming or support in programming
- Provide low cost hosting for such websites / applications
- Facilitate payments by leveraging mobile money applications

Readiness

Many people do not get connected because they do not know how.

It is recommended that service providers should be incentivised to provide training in simple digital skills to use smartphones or feature phones. For the totally illiterate, apps should be developed with intuitive visual aids.

2. Context and background

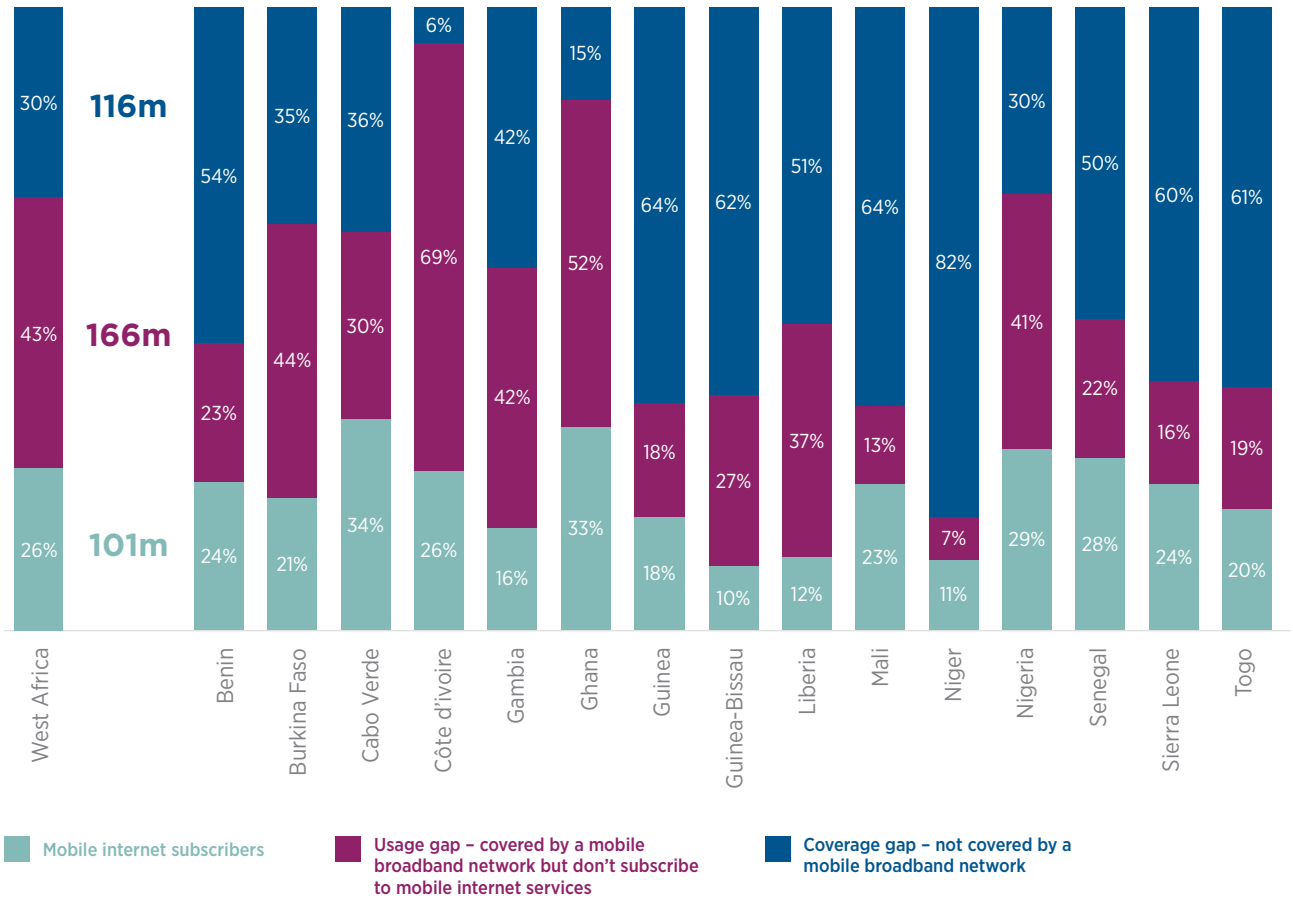
2.1 Moving towards digital inclusion

In West Africa, mobile is the primary platform for accessing the internet. Statistics reveal continual increases in the number of mobile internet users in West Africa. However there are still large numbers of people who are not connected and are classified as digitally excluded. Figure 1 below shows some key statistics regarding mobile internet usage in the region.

Figure 1

A quarter of the population subscribe to the mobile internet[2]

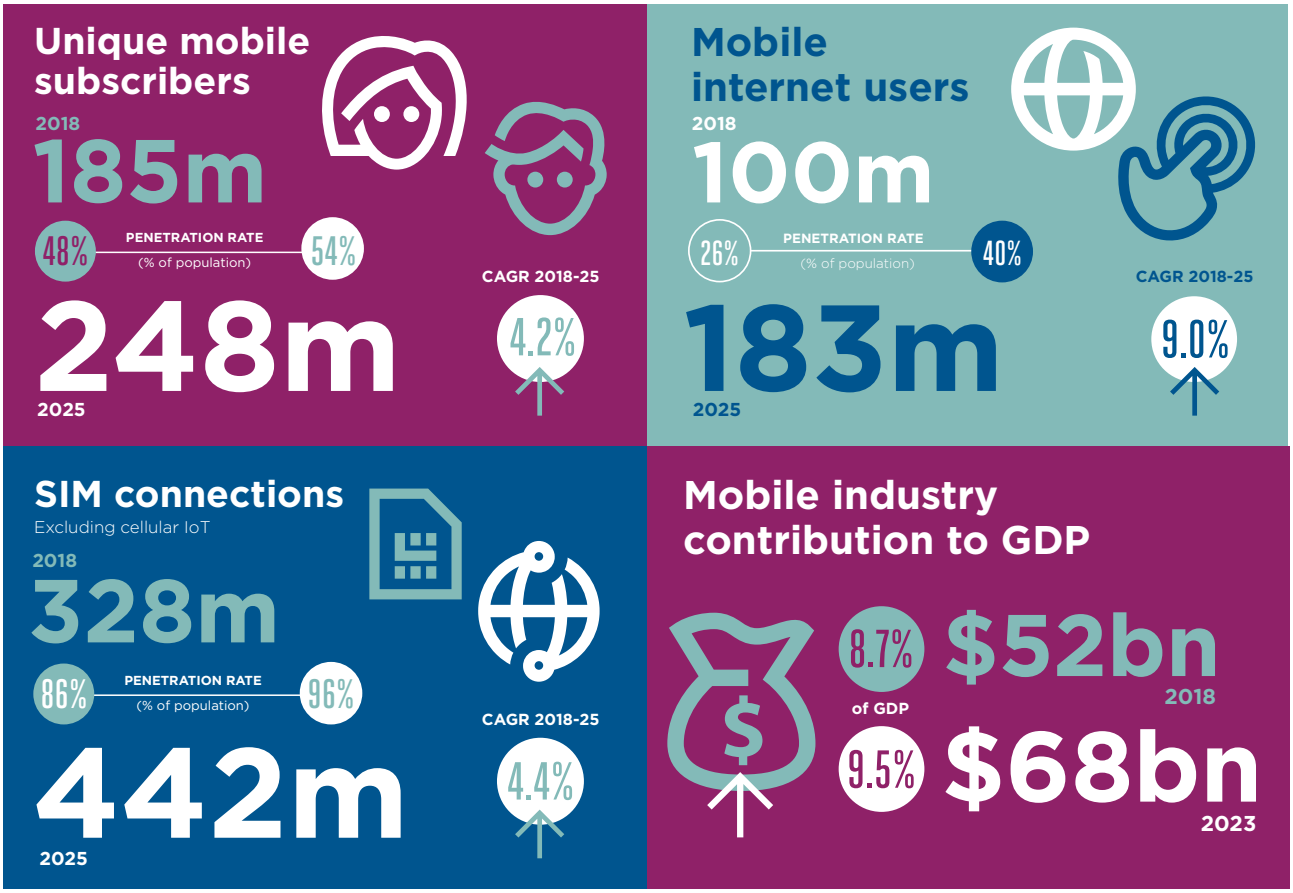
Percentage of population, 2018

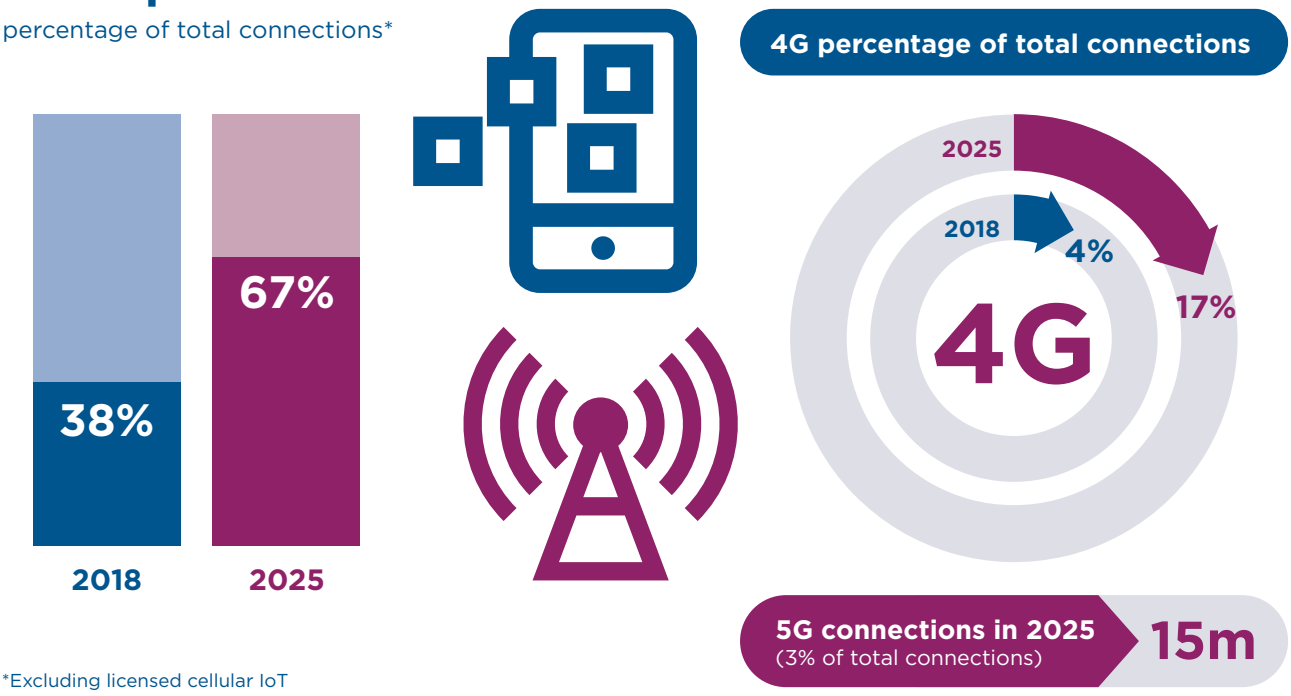


2. Source: The GSMA Mobile Economy West Africa 2019 report

Figure 2

West Africa mobile industry statistics 2018[3]





*Excluding licensed cellular IoT

3. Source: The GSMA Mobile Economy West Africa 2019 report

The number of mobile internet subscribers increased by 19 million in the last year to reach 100 million in 2018. However, this represents just 26% of the population, leaving more than 280 million people digitally excluded. Evidence suggests that people who are digitally excluded are likely to fall further and further behind. The later they become included, the longer it takes to catch up.

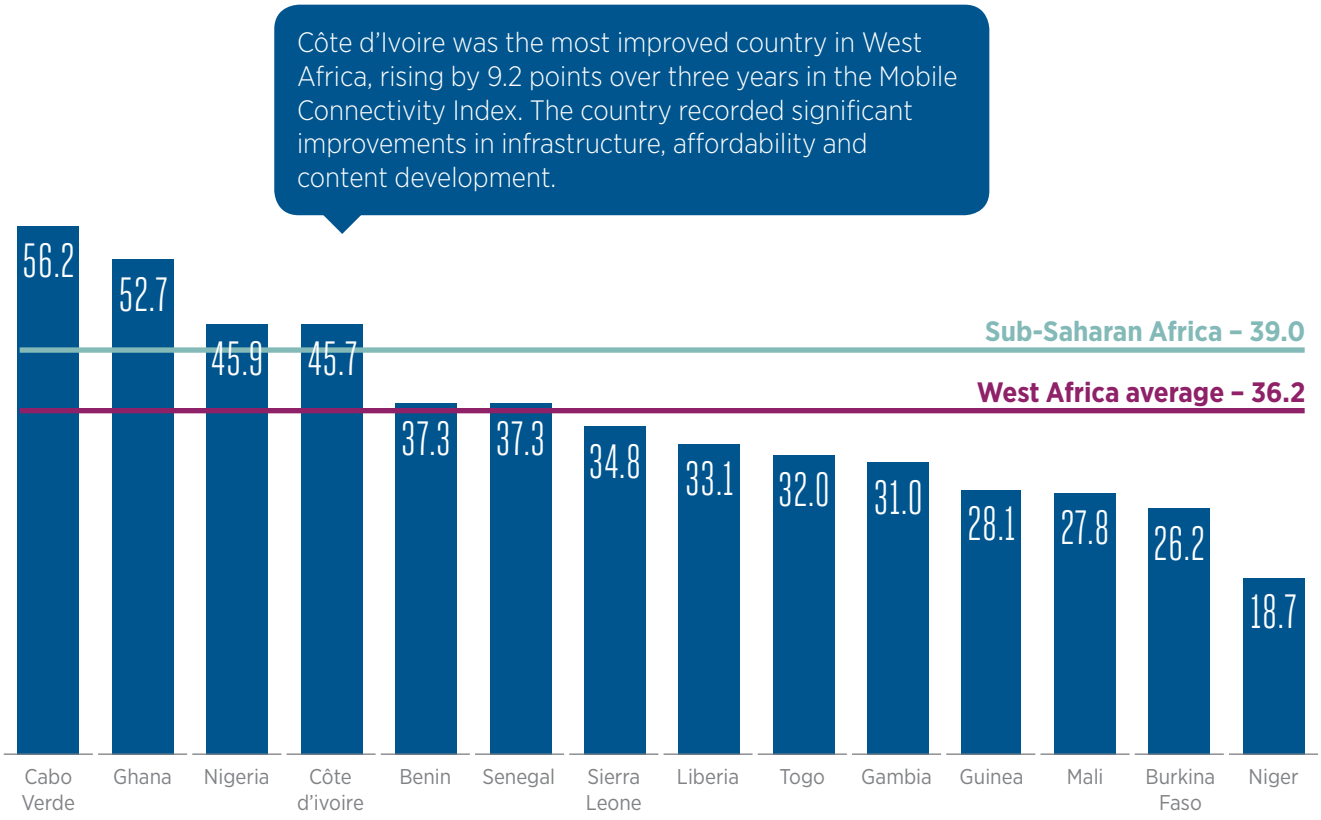
The GSMA Mobile Economy West Africa 2019 report highlights the importance of mobile telecommunications in economic development and in digital inclusion.

The GSMA's Mobile Connectivity Index supports the mobile industry's commitment to connect everyone and everything to a better future. It measures the performance of 163 countries – representing 99% of the global population – against the key enablers of mobile internet adoption: infrastructure, affordability, consumer readiness and content. This data can help the mobile industry and other stakeholders understand where to focus action to drive increased mobile internet adoption.

Figure 3

In 2018, only four countries in West Africa scored higher than the Sub-Saharan Africa average index score[4]

Index score out of 100



4. Source: The GSMA Mobile Economy West Africa 2019 report

2.2 Status of ECOWAS Member States

2.2.1 Existing framework: ECOWAS Supplementary Acts

The process of "domesticating" and implementing the ECOWAS Supplementary Acts of 2007 and 2010, related to the Telecoms & IT sector, has had varied fortunes within ECOWAS Member States. The WAEMU Member States have made more significant progress. Indeed, WAEMU has already adopted a bold sectoral policy and guidelines that accompany this policy.

The current situation

In a 2017 Detecon study, commissioned by the GSMA[5], 14 Member States were assessed.

Six Member States have fully implemented the Supplementary Acts of 2007 and 2010. Four Member States have partly domesticated and three Member States are in progress. One Member State has the provisions of the Supplementary Acts incorporated into its national framework but no formal action has been taken by the parliament to adopt them.

The challenges and pain points

The identified challenges for this mixed picture are mainly:

- Language problem (Cape Verde and Guinea Bissau)
- Challenges to update the existing national provisions to align with the Supplementary Acts (Nigeria, Cape Verde, Ghana, Niger)
- Gaps in the ECOWAS Supplementary Acts (e.g. the Data Protection Act)

In addition, the Supplementary Acts are now over a decade old and would benefit from a refresh, given the technological advancements during that period of time.

The necessary corrective measures to accelerate the domestication of the Supplementary Acts[6]

The following measures could help to improve the quality of the national legislation and to speed up the domestication:

- Translate the Supplementary Acts in Portuguese
- Organise workshops for the stakeholders at national level (with the participation of ECOWAS Commission representatives to share experience of other Member States)
- Organise, at regional level, capacity building sessions for the focal points and regional Telecoms & IT experts once a year (by ECOWAS and partners)

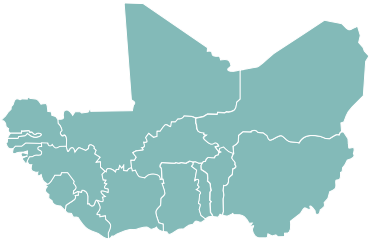
5. Evaluation of the ICT Regulatory Framework in ECOWAS (Creating an enabling environment for development and promotion of a digital economy in ECOWAS)
6. Before investing resources into a domestication exercise, it would be appropriate to evaluate a potential review exercise of the Supplementary Acts.

2.2.2 Implementation of the Supplementary Acts

The figure below indicates the current state of the implementation of the ECOWAS Supplementary Acts.

Figure 4

Table showing status of implementation of ECOWAS Supplementary Acts



MEMBER STATES	Supplementary Acts						
	Harmonisation of policies	Access & interconnection	Legal regime	Numbering plan	Radio-frequency spectrum	Personal data protection	Electronic transaction
Benin	✓	✓	✓	✓	✓	✓	✓
Burkina Faso	✓	✓	✓	✓	✓	✓	✓
Bissau Guinea							
Capo Verde	✓	✓	✓	✓	✓	✓	✓
Gambia				✓	✓	✓	✓
Ghana	✓	✓	✓	✓	✓	✓	✓
Guinea	✓	✓	✓	✓	✓	✓	✓
Côte d'Ivoire	✓	✓	✓	✓	✓	✓	✓
Liberia	✓	✓	✓	✓	✓	✓	✓
Mali	✓	✓	✓	✓	✓	✓	✓
Niger	✓	✓	✓	✓	✓	✓	✗
Nigeria	✓	✓	✓	✓	✓	✗	✓
Senegal	✓	✓	✓	✓	✓	✓	✓
Sierra Leone	✓	✓	✓	✓	✓	✓	✓
Togo	✓	✓	✓	✓	✓	✓	✓

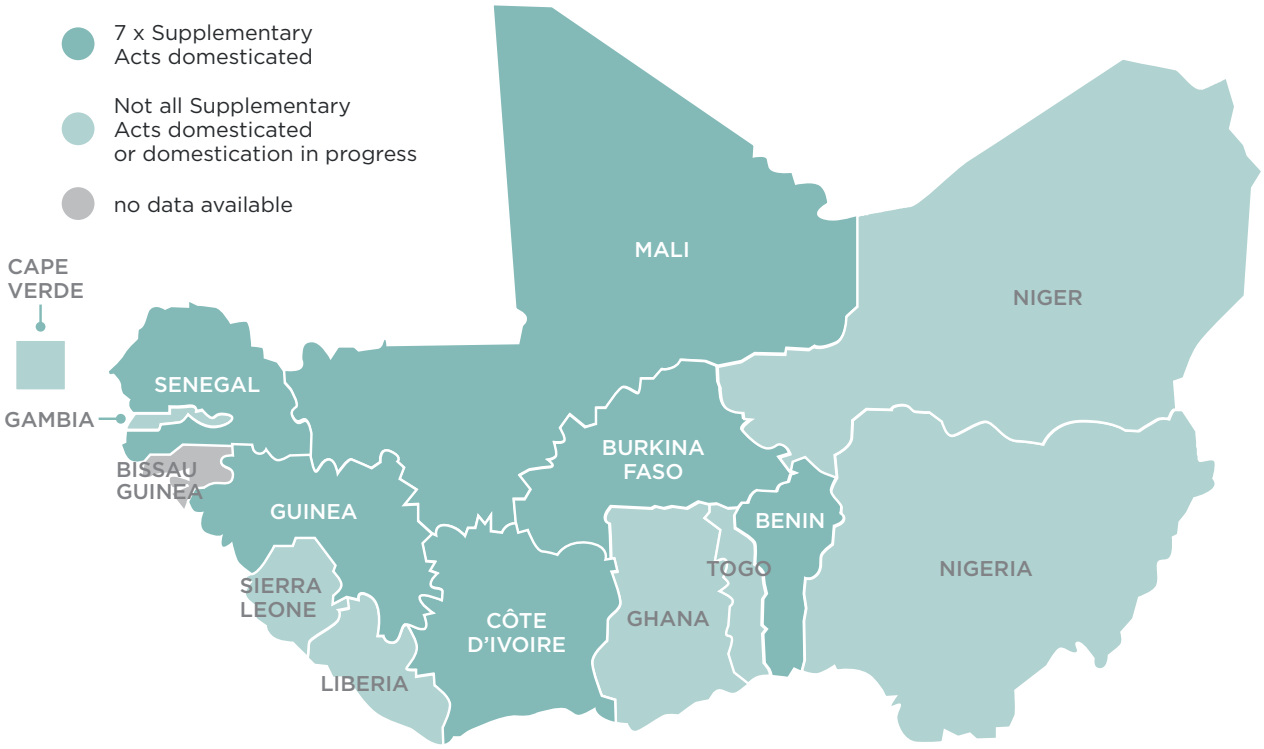
Previous or existing laws/decree or order ECOWAS Supplementary Acts Domestication in progress

Source: 2017 Detecon report for the GSMA

The status of implementation is indicated in the map below:

Figure 5

Map showing status of implementation of ECOWAS Supplementary Acts



Source: 2017 Detecon report for the GSMA

2.2.3 ECOWAS and Universal Access and Service

A **Universal Service strategy** is intended to provide the vision for digital inclusion in the country and guides the sector to prioritise and sequence developments according to context, gaps, resources and goals.

A **Universal Service Fund** is a mechanism to reallocate funds to spur ICT development and use in underserved areas and among unconnected population groups.

Research performed by the A4AI[7] supporting the ECOWAS Universal Access & Service Supplementary Act in October 2017 found that the **Universal Service and Access Fund (USAF) challenges included:**

- The operation and management of Universal Service Funds
- The effectiveness of Universal Service Funds
- Oversight of Universal Service Funds
- Monitoring and evaluation

The survey carried out for the report indicated that:

- Most funds are not independent.
- The majority reported that funds were underutilised.

The conclusions regarding the path forward are that:

- It is important to build enough flexibility in the legislation.
- It is necessary to take a multi-stakeholder approach towards building a capacity building framework.
- It is essential to put a monitoring and evaluation system in place, with frequent reviews and open reporting.

The status of Member State reporting on USAF activities is shown in Figure 6.

Figure 6

Member States that publish reports on USAF activities

Publish reports	Don't publish reports	No information available
Benin	Mali	The Gambia
Cote d'Ivoire	Sierra Leone	Liberia
Ghana	Burkina Faso	Guinea Bissau
Republic of Guinea	Niger	Cape Verde
Nigeria		Togo
		Senegal

In October 2017, a revised Supplementary Act (SA) on Universal Access and Service was introduced by ECOWAS. A useful exercise would be to periodically assess the impact of this SA. A similar recommendation would also be applicable to the other SAs.

7. Alliance for Affordable Internet

2.2.4 Recommendations regarding implementation of a digital ecosystem

ECOWAS is making progress regarding the 2017 recommendations for creating an effective digital ecosystem in Member States and has been undertaking substantial steps toward a solid harmonised regulatory framework. The 2017 study[8] made the following recommendations that could help bridge the regulatory gaps within the region and create and harness an effective ECOWAS digital ecosystem:

- Complete the domestication of the current Supplementary Acts[9]
- Reinforce the role of WATRA
- Review ECOWAS regulatory framework
- Undertake capacity building
- Establish an annual regional conference with all stakeholders of the digital economy
- Harmonise regional network and information security requirements

The following recommendations have been actioned by the GSMA as follows:

- Establish an annual regional conference with all stakeholders of the digital economy
  - Annual Regional Conference (ARC) held in Abidjan, Côte d'Ivoire in April 2018 with ECOWAS Member States and many stakeholders of the digital economy
- Review ECOWAS regulatory framework
  - Review of the ECOWAS regulatory framework, as it pertains to encouraging investment, innovation and digital inclusion (this report)
- Undertake capacity building
  - Capacity building courses, free of charge, have been offered to ECOWAS Member States through the ECOWAS Commission. Two taster courses were given at the ARC, although no courses have been requested yet.

8. Detecon study, commissioned by the GSMA: Evaluation of the ICT Regulatory Framework in ECOWAS (Creating an enabling environment for development and promotion of a digital economy in ECOWAS)
9. Before investing resources into a domestication exercise, it would be appropriate to evaluate a potential review exercise of the Supplementary Acts.

3. Encouraging investment, innovation and digital inclusion

3.1 Methodological approach regarding survey and recommendations

The methodological approach taken to produce this paper consisted of an information and opinion gathering phase followed by an analysis of the results, a review of best practice and the development of recommendations based on the findings.

The first phase involved posing a range of questions to the appropriate authorities in the ECOWAS Member States. The questions were about the existing situation regarding the legal and regulatory frameworks, and what the respondents considered to be the main obstacles to investment, innovation and digital inclusion (both regulatory and non-regulatory).

Information gathering and analysis

Steps in the approach

- Letter sent from the ECOWAS Commission to the responsible minister in each country
- Questionnaire prepared and sent to the focal point in each country
- Engagement with some of the countries at the ARC in Abidjan; reminder letters at periodic intervals

Analysis of responses

- Of the 14 Member States investigated, the following completed questionnaires were received: English speaking: two received, Portuguese speaking: one received, French speaking: two received.
- The responses were analysed and enumerated (i.e. noting how many countries have indicated a particular issue as being an obstacle).
- The responses were summarised and categorised. When French or Portuguese quotes were referenced in this study, they have been translated into English.

Best practice approach to mitigating obstacles

- The cited obstacles to investment, innovation and digital inclusion were then categorised according to availability, affordability, relevance and readiness.[10]
- Best practice snapshots and the GSMA position have been given for each key obstacle.

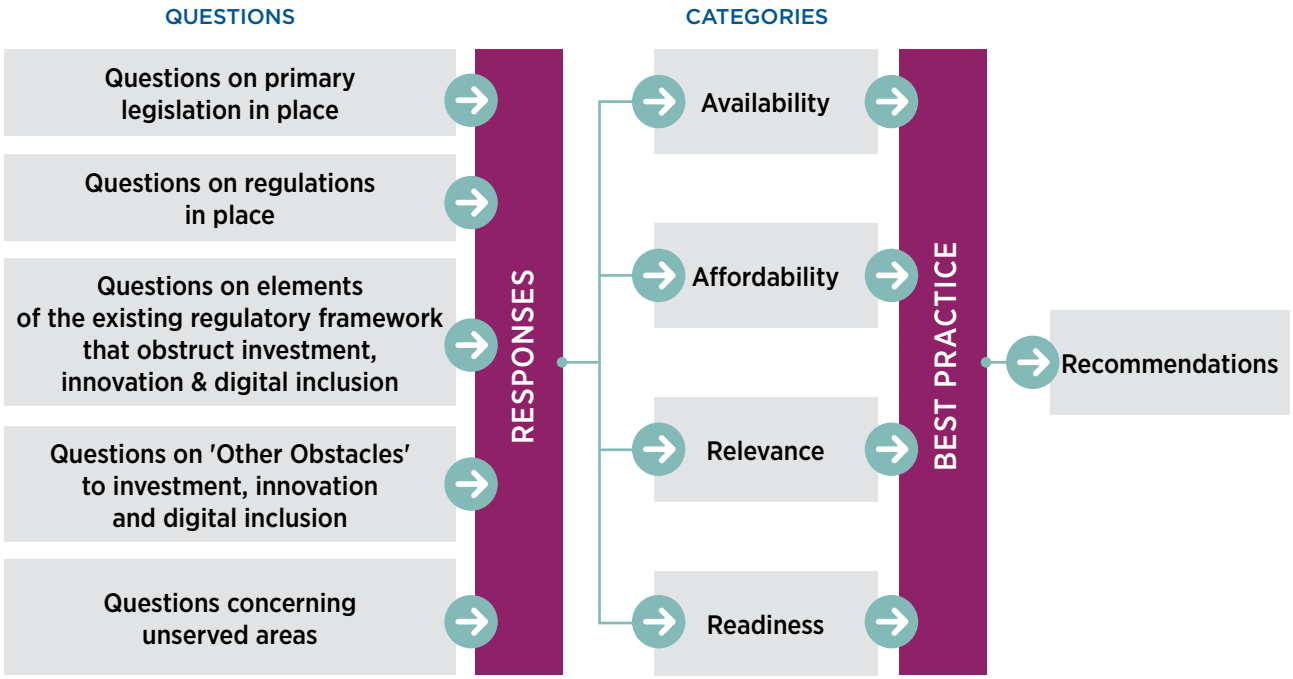
Recommendations

- Recommendations have been provided regarding measures to overcome or mitigate obstacles.

10. Based on the approach adopted in the Inclusive Internet Index published by The Economist Intelligence Unit

Figure 7

Methodological approach

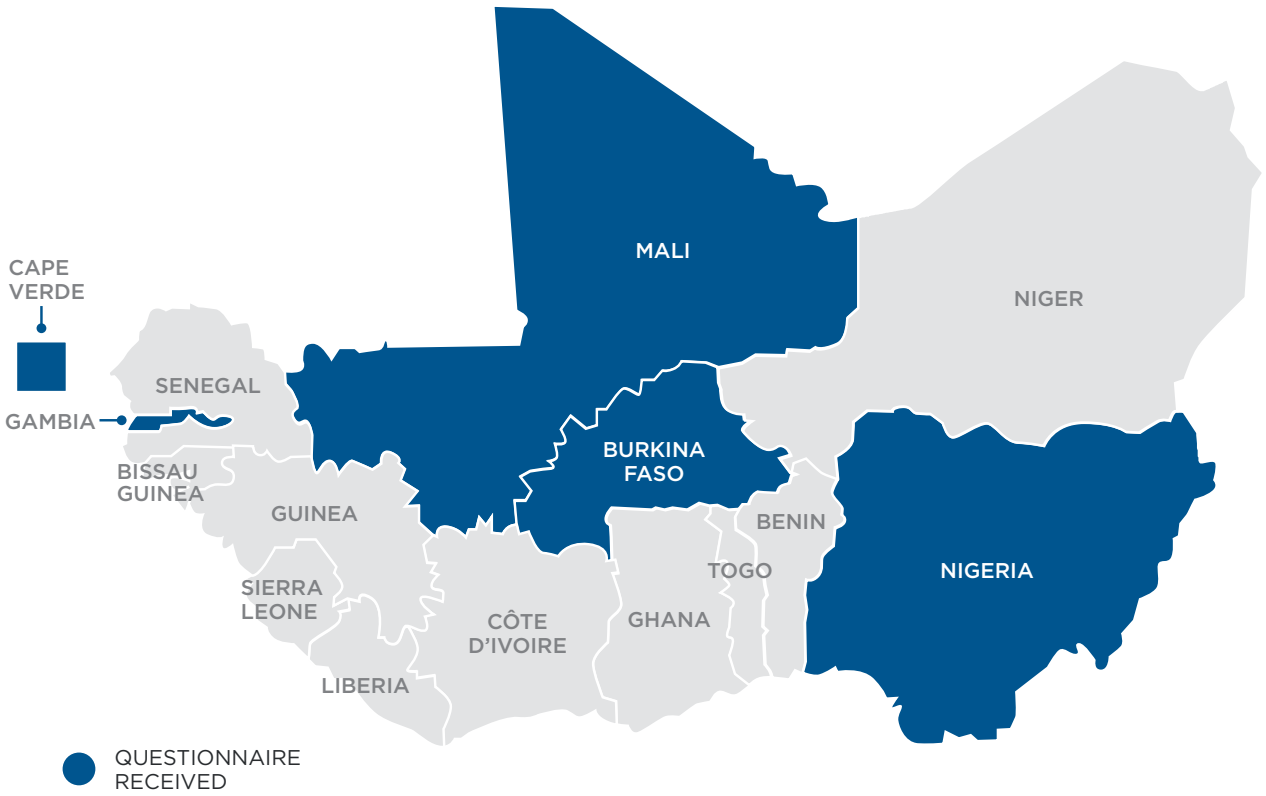


3.2 Questions and responses

3.2.1 Respondents

Figure 8

Overall responses – Countries that have answered questionnaire

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3.2.2 Responses – Questions on primary legislation in place

The questions on the primary legislation in place and the number of responses, together with comments and quotes, are summarised below.

Figure 9

Responses to questions on primary legislation in place

Questions on primary legislation	Yes/No	Comments and *"quotes"*
Does the primary legislation have clauses relating to universal service or universal service funding?	5/0	*"ineffectiveness of universal service measures"*
Does the primary legislation impose infrastructure sharing and co-location, as encouraged by A/SA.2/01/07– does it mandate it as an obligation?	5/0	*"Encouraged, not mandated as an obligation"* *"Infrastructure sharing is an obligation imposed on operators in accordance with the law"*
Does the primary legislation impose any limits on foreign ownership of telecommunications operators?	1/4	*"Primary legislation imposes no limit on the foreign ownership of telecommunications operators in accordance with OHADA law."*
Does the primary legislation permit spectrum trading?	1+1/3 pending	*"No, there is nothing like spectrum trading and there is no specific clause indicating it as an obligation"* *"Not (yet)–considered in the legislation update to be submitted to parliament"*
Does the primary legislation mandate licensed operators' access to rights of way?	4/0	*"Licensed operators access rights of way in accordance with the principles of property law."*

3.2.3 Responses – Questions on regulations in place

The questions on regulations in place and the number of responses, together with comments and quotes, are summarised below.

Figure 10

Responses to questions on regulations in place

Areas of regulation	Status	Comments and "*quotes*"
Universal Service and Universal Access and Universal Service Fund regulations	4 adopted 1 formulated	
Licensing regulations – for the provision of service	5 yes	*"According to our legislation there's no need for licences. It's just an authorisation. In case of use of spectrum a Right of Use is needed"*
Radio frequency regulations covering the right of use for using a radio frequency	1/4	
Infrastructure sharing including tower sharing, facility sharing and co-location regulations	5 indicated	*"... definition of conditions of usage of the public road system by the operators of public electronic communications networks"*
Quality of service regulations	4 adopted 1 being formulated	*"None – The provisions relating to the specifications are contained in the operators' licences"*

3.2.4 Responses – Questions on elements of the existing regulatory framework that obstruct investment, innovation and digital inclusion

The questions on elements of the existing regulatory framework that obstruct investment, innovation and digital inclusion and the number of responses are summarised below.

Figure 11

Responses to questions on obstructive elements of the existing regulatory framework

	Issue with regulatory framework	Yes
a	Lack of universal service subsidies / ineffectiveness of universal service measures	3
b	Limits on foreign ownership	0
c	Absence / ineffectiveness of infrastructure sharing regulations	3
d	Absence / ineffectiveness of QoS regulations	1
e	Duration of service / spectrum licence	1
f	High spectrum fees	1
g	Availability of MT Spectrum	0
h	Suboptimal assignments (too much spectrum assigned to small service providers with low coverage)	0

	Issue with regulatory framework	Yes
i	Inability to do spectrum trading	0
j	Frequency licences are specific to technology (2G, 3G) and limit freedom to innovate	2
k	Lack of centralised process for enabling rights of way and permission to build towers	1
l	High import duties on telecoms network equipment	2
m	High import duties on smartphones / feature phones	3
n	Restrictions on zero rating schemes such as Facebook free basics	0
o	Restrictions on service providers subsidising phones	0
p	OTHER	

3.2.5 Responses – Quotes and comments on regulatory obstacles

The quotes and associated comments on elements of the existing regulatory framework that obstruct investment, innovation and digital inclusion are summarised below.

Figure 12

Quotes by respondents and comments on regulatory obstacles

Quotes from respondents	Comments
Other issues raised include: • *"Absence of domestic voluntary / regulated roaming mechanisms"* • *"Extremely high right of way charges applied by countries bordering Mali with access to submarine cables"* Some responses emphasised: • *"Ineffectiveness of universal service measures"* Other responses emphasised import duties and tax: • *"Operators complain about the cost to import network equipment and smartphones which they find expensive."* • *"Tax on users end devices"* • *"Tax on Mobile Network Operators and Internet Service Providers"*	The questions on regulatory obstacles were designed to elicit comment on regulatory measures that are either not effective or may be perceived to be an obstacle to investment. • The ineffectiveness of universal service mechanisms and also infrastructure sharing was cited by three of five. – What should be tested is whether this reflects the general usefulness of traditional universal service measures or specific problems at national level. • High import duties and tax on equipment and terminals, often a complaint of service providers was given significant mention by regulators. • One regulator specifically mentioned general taxes on operators and ISPs. • Technology specific spectrum licences was a factor mentioned by two regulators. • Rights of Way issues were only cited by one regulator.

3.2.6 Responses – Questions on 'other obstacles' to investment, innovation and digital inclusion

The questions on 'other obstacles' to investment, innovation and digital inclusion and the number of responses, together with comments and quotes, are summarised below.

Figure 13

Responses to questions on other obstacles to investment, innovation and digital inclusion

	Other obstacles to innovation & digital inclusion	Yes	Comments and "*quotes*"
a	Low income level	5	***Quotes*** *"Lack of sensitisation and awareness raising"* **Comments** These questions concern the other obstacles to digital inclusion that are generally not a function of regulation. Low income is an obvious constraint that can only be solved by lowering the cost to communicate. Lack of internet content in the local language has been cited as a constraint; this can be overcome by lowering the barriers to providing value added services in the relevant countries at local level. Literacy is cited as a constraint – an issue that can be overcome by designing web pages and apps to cater for levels of illiteracy. The entry price was cited by 2 of 5 respondents. Problems of distribution channels were cited by 1 of 5 respondents suggesting it is not a major obstacle at this stage.
b	Level of literacy	4	
c	Lack of internet content in local language	5	
d	High entry-level internet package price	2	
e	Lack of a retail distribution network for getting smartphones or feature phones in rural areas	1	

3.2.7 Responses – Questions concerning unserved areas

The questions concerning unserved areas and the number of responses, together with comments and quotes, are summarised below.

Figure 14

Responses to questions concerning unserved areas

	Questions concerning unserved areas	Yes	Comments and "*quotes*"
2	Has the administration formally identified unserved areas?	3	*"Through studies, areas unserved or underserved by mobile communications have been identified."* *"Currently the Authority doesn't impose any coverage obligations on the operators since all the operators' covers about 95% of the area; but they are obliged to have at least one (1) base station in all the underserved areas in which they agree upon. The Authority on its mandate to ensure quality of service by all the license utilities do a monthly Quality of Service (QoS) monitoring on all the operators to enable them improve network on the areas they have poor coverage on".* *"There is a roll-out obligation clause in all licensing condition but is seldom enforced".* *"Targets are not imposed, but government has implemented projects that target schools, hospital and others such as the connect-a-school-connect-a-community project and the regional community information center (RCIC) project and the government 4G-LTE network".* (Targets for schools and hospitals are) *"not an imposition, it was negotiated as a compensation for the spectrum rights of use".*
3	Are coverage obligations imposed?	3	
4	Are other targets imposed such as connection to schools, hospitals etc.?	3	


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3.2.8 Conclusions from survey

The main obstacles arising out of the questionnaire responses are summarised as follows:

Ineffectiveness of universal service measures

Universal service measures are typically designed to provide individuals, communities and institutions with connectivity where this cannot be performed by the market.

Universal service measures are typically performed through universal service funds involving a levy on the service providers. Since this means creating a separate organisation to dispense the funds, there is the danger that the cost efficiency of a universal service funding mechanism is lower than simply leaving the funds with service providers to make the investments themselves.

Ineffectiveness may result in stranded funds or the funding mechanism not making any substantial difference thus effectively wasting the opportunity.

This implies two alternatives:

- to make the funds more efficient by introducing mechanisms to allocate universal service funds in a competitive and technology neutral manner, for example, pay or play mechanisms (discussed in 'Best practice' section); or
- to consider phasing out the funds and discontinue collecting levies.

In order to achieve universal service, the alternatives to merely collecting universal service levies could include, for example, increasing incentives to service providers to expand coverage.

Ineffectiveness of infrastructure sharing frameworks

Many countries allow infrastructure sharing in principle; however, regulator driven initiatives to mandate infrastructure sharing have not been widely adopted thus far. What has worked has been infrastructure sharing via tower companies which has been purely driven by the market. It is suggested that the goals of infrastructure sharing will be best achieved by allowing the market to operate efficiently and create the conditions to make infrastructure sharing on a commercial basis an attractive proposition.

High import duties and taxes

Many governments suffer from a small tax base, with the service providers often being the largest entities that can be taxed and mobile services the largest sector that can be efficiently taxed. Therefore, is it not surprising that governments feel compelled to tax mobile communications. However, mobile communication is critical to digital inclusion, which in turn is an enabler for economic inclusion and thus becoming a contributor to the tax base.

Lack of local content

In most countries, the unconnected are likely to be those individuals and communities who will be drawn primarily to local content and services. Therefore, one mechanism for widening inclusion is to create the conditions for wider participation in the telecoms services industry, including the development of local language content services at a small scale and local level, thereby increasing relevance and demand as well as creating employment opportunities.

Cost of access to mobile for those on low income

Cost of access is always a difficult issue to address because the service provider needs to be self-financing and those with low incomes have only a limited amount they can spend. Access to mobile services for those on a low income can be enabled by reducing the total costs to communicate through removing sector-specific taxation or facilitating shared infrastructure costs.

3.3 Best practice – Identification of an appropriate framework

The approach adopted to measure the level of internet inclusivity was to use the framework of the Inclusive Internet Index.[11]

The index consists of four factors affecting digital inclusion:

Availability	Affordability	Relevance	Readiness
Mechanisms to extend coverage	Reducing the total cost of ownership	Incentivising people to become digitally included	Awareness and digital literacy

The value of using these four factors for measurement of internet inclusivity is that they classify the key obstacles to digital inclusion into groupings that are appropriate for both policy formulations and eventual measurement. Some obstacles may fall under more than one factor category, but all can be included.

3.4 Availability

3.4.1 Key issues in availability

Obstacles identified by more than one respondent

- Traditional universal service mechanisms have not been effective
- Spectrum licences that are technology specific restrict the operator's flexibility to meet evolving user requirements

Obstacles identified by just one respondent

- Absence or ineffectiveness of QoS regulations
- Lack of process for enabling rights of way
- Lack of a retail distribution network for smartphones or feature phones in rural areas

Solutions

- New approaches to Universal Service Obligations – reflecting the need for broadband
  - Pay or Play mechanism being utilised in Morocco
  - The UK approach of establishing a right to broadband and designating USO operators
- Spectrum licences that are technology neutral

11. https://theinclusiveinternet.eiu.com

3.4.2 Best practice examples

3.4.2.1 Pay or Play mechanism, Morocco[12]

In Morocco, operators have a number of options regarding the manner in which they can fulfil their Universal Service Fund (USF) obligations. These include:

- Take the 'traditional' USF route and pay 2% of gross revenues per annum
- Respond to tenders issued by the Universal Telecommunications Services Management Committee (CGUST)
- Develop and propose their own Universal Service projects

All operators are free to respond to tenders issued by the CGSUT and to participate in a competitive bidding process. Any operator that would like to develop and execute its own universal service projects may submit a proposal to the CGSUT for review and approval at which time the CGUST will:

- Dictate the terms and conditions
- Prepare a term sheet in the form of an authorisation or licence (i.e. cahier des charges)

For those operators that elect to participate in the 'play' approach, at the end of each financial year, the operators pay the difference (if any) between the full USF amount that would have been collected from them (i.e. the two percent levy) versus the amount expended by them in fulfilling the USF projects. Although this approach may not be perfect, the Pay or Play concept does achieve several desirable goals:

- Operators have the opportunity to actively participate in the design of universal service projects;
- There is an opportunity to actually see the projects to which the funds are being directed; and
- There is the ability to reduce a levy that indirectly gets allocated to other operators and to make sure that the operator that contributes is able to benefit directly from that contribution.

3.4.2.2 UK universal service obligation for broadband[13]

The UK Government issued a Universal Service Directive in March 2018 setting the requirements for a universal service obligation (USO). The USO will give consumers and businesses the right to request a broadband connection capable of delivering download speeds of at least 10 Mbit/s and upload speeds of at least 1 Mbit/s.

The Universal Services Directive establishes the following key funding principles:

- Only the net cost of providing the USO can be compensated.
- For a net cost to be compensated, Ofcom must decide that it is an unfair burden on the Universal Service Provider(s).
- If an unfair net cost burden exists, Ofcom is required to set up an industry fund to compensate the Universal Service Provider(s) for that unfair burden.
- Compensation from an industry fund *occurs retrospectively* and may only cover the unfair burden which has been incurred i.e. the Universal Service Provider(s) must bear the upfront costs of delivering the USO and cannot be provided with funds in advance of network infrastructure deployment.

Although this is a developed country case, the concept of obligations and retrospective compensation can be relevant for developing country cases.

12. Source: The GSMA Sub-Saharan Africa Universal Service Fund study, September 2014.
13. Source: Ofcom Implementing the Broadband Universal Service Obligation, June 2018.

3.4.2.3 Technology neutrality in spectrum licensing

Problems of technology specific licences

Technology specific licences are usually the result of legacy licensing regimes and may be motivated by the desire of governments to get revenue from LTE licences and auctions.

The main problems with technology specificity in licences are that:

- It prevents service providers re-farming spectrum to cater for mobile broadband.
- It may delay the introduction of LTE. Many countries in Africa are still without LTE.

Advantages of technology neutrality

South Africa experienced delays in the assignment of 700/800/2600 MHz bands and thus relied primarily on the 900/1800/2100 MHz bands.

South Africa has a policy of technology neutrality towards spectrum that has allowed the main service providers to host over 20 million LTE users (over 21% of the mobile total).

This has been achieved by re-farming (mainly) the 1800 and 900 MHz with area differentiation according to demand; this ensures that customers with 2G only handsets have connectivity.

In Nigeria, some service providers have been permitted to use the 1800 MHz band for LTE, even though some licences are still technology specific.

Allowing technology neutrality, at least in the bands identified for IMT, increases connectivity opportunities.

3.4.2.4 France – Frequency reallocation procedure and new obligations[14]

French regulator ARCEP issued a decision detailing the procedure agreed with the government for attributing 900/1800/2100 MHz spectrum once the current licences expire.

The licences covered by the new award procedure are set to expire between 2021 and 2024. ARCEP's decision details the rules governing the call for applications for the new licences, which will be issued for a duration of ten years. The procedure is expected to be completed during the fourth quarter, when the licences will be issued maintaining the current level of annual licence fees. The government has recently published a consultation on the charges payable by the MNOs under the new authorisation regime, specifically to define the fixed and variable elements for the 2100 MHz band.

In detail, the call for applications covers 900 and 1800 MHz spectrum, originally allocated to Orange, SFR and Bouygues Telecom in 2006 and 2009 for fifteen years, as well as the 2100 MHz spectrum allocated to these three operators in 2001 and 2002 for 20 years. It sets out the conditions for a possible redistribution of spectrum resources among the country's four licence holders, notably in the 900 and 2100 MHz bands where Orange, SFR and Bouygues Telecom currently have two to three times more spectrum than Free Mobile.

As part of the terms sanctioned by the new authorisations, the principle of technology neutrality will apply to the frequency licences in all three bands.

14. Source: ARCEP

3.4.2.5 Collaborative approaches to quality of service

A collaborative approach to quality of service (QoS) measurement will allow for a shared approach to the common challenges the industry is facing so that they can be handled effectively. An example of this is allowing QoS exemptions in certain areas to help and encourage service providers to extend coverage towards universal service.

A good example of this collaborative approach is the use of crowdsourcing big data gathering by means of an app on smartphones that can provide credible QoS data that can be used by regulators and service providers.

3.4.3 GSMA positions

3.4.3.1 GSMA position on universal service[15]

Governments should phase out USFs and discontinue collecting USF levies. Existing USF monies should be returned to operators and used to extend mobile services to remote areas.

Liberalised markets and private sector investment have delivered telecommunication services to the majority of the world's population, a trend that the industry considers will continue.

Few USFs have successfully expanded access to telecommunication services, as is their objective, yet they continue to accumulate large sums of money.

There is little evidence that USFs are an effective way to achieve universal service goals and many have, in fact, been counterproductive, because they tax communications customers, including those in rural areas, and therefore raise the barrier to rural investment.

USFs that already exist should be targeted, time-bound and managed transparently. The funds should be allocated in a competitive and technically neutral way, in consultation with the industry.

Governments should consider incentives that facilitate market-based solutions. They can help by removing sector-specific taxes, stimulating demand and developing the supporting infrastructure. Alternative solutions (e.g., public-private partnerships) should be explored in preference to USFs for the extension of communications to rural and remote areas.

Despite the admirable goals that led to the creation of USFs during the early stages of telecoms liberalisation, there is now considerable doubt about their practicality and efficacy. A large proportion of USF monies collected remain undisbursed, and the structure of many USFs is too rigid to respond to rapid technological changes and societal requirements.

3.4.3.2 GSMA position on technology neutrality[16]

We support a licensing approach that allows any compatible, non-interfering technology to be used in mobile frequency bands.

Adopting harmonised regional band plans for mobile ensures that interference between services can be managed. Governments should allow operators to deploy any mobile technology that can technically coexist within the international band plan.

Technology neutrality encourages innovation and promotes competition, allowing markets to determine which technologies succeed, to the benefit of consumers and society.

Governments should amend technology specific licences to allow new technologies to be deployed, enabling operators to serve more subscribers and provide each subscriber with better, more innovative services per unit of bandwidth.

Enabling spectrum licence holders to change the underlying technology of their service, known as re-farming, generates positive economic and social outcomes and should be allowed.

3.4.3.3 GSMA position on quality of service[17]

Competitive markets with minimal regulatory intervention are best able to deliver the quality of mobile service customers expect. Regulation that sets a minimum quality of service is

15. Source: GSMA Mobile Policy Handbook
16. Source: GSMA Mobile Policy Handbook
17. Source: GSMA Mobile Policy Handbook

disproportionate and unnecessary. The quality of service experienced by mobile consumers is affected by many factors, some of which are beyond the control of operators, such as the device type, application and propagation environment. Defining specific quality targets is neither proportionate nor practical.

Mobile networks are technically different from fixed networks; they make use of shared resources to a greater extent and are more traffic-sensitive. Mobile operators need to deal with continually changing traffic patterns and congestion, within the limits imposed by finite network capacity, where one user's traffic can have a significant effect on overall network performance.

The commercial, operational and technological environment in which mobile services are offered is continuing to develop. Mobile operators must have the freedom to manage and prioritise traffic on their networks. Regulation which rigidly defines a particular service quality level is unnecessary and is likely to impact the development of these services.

Competitive markets with differentiated commercial offers and information that allows consumers to make an informed choice deliver the best outcomes. If regulatory authorities are concerned about quality of service, they should engage in dialogue with the industry to find solutions that strike the right balance on transparency of quality of service.

3.5 Affordability

3.5.1 Key issues in affordability

Obstacles identified by more than one respondent

- Low income level
- Ineffectiveness of infrastructure sharing measures
- High import duties on telecoms network equipment
- High import duties on smartphones

Obstacles identified by one respondent

- High spectrum fees
- Tax on Mobile Network Operators and Internet Service Providers
- High entry-level internet package price

Solutions

- Remove any sector-specific import duties on telecommunications equipment.
- Remove any sector-specific taxes on telecommunications operations; allow telecommunications to strengthen economic growth and widen the tax base. Telecommunications will still be taxed in the same manner as any other industry.
- Allow the market players to negotiate infrastructure sharing on a mutual basis and on commercial terms.

3.5.2 Best practice examples

3.5.2.1 **Best practice snapshot – Taxation**

The IMF[18] has conducted a study on *Taxing Telecommunications in Developing Countries*. The study understands that such taxes may be a necessary evil, but notes the following:

- Governments have conflicting objectives regarding the tax treatment of the cellular telecoms industry. On the one hand, they know that telecoms services are an important input into productivity and growth, in parts because of possible externality and social inclusion effects, as well as consumer welfare.
- On the other hand, governments – particularly in developing countries – also regard telecommunication companies as a good source of revenues, given their formal sector status and large and growing turnover.

The IMF paper attempts to identify taxes that are the least damaging and the conclusions can be summarised as follows:

- Where there is limited competition, the implied 'rents' may justify a higher level of taxation. However, many of the fiscal instruments applied to telecoms do not target rents well and moreover distort product and output markets, impeding efficiency, affordability and growth.
- A corporate income tax surcharge applied to telecoms applies to normal profits as well as rent; it raises the cost of capital, which reduces investment and could increase output prices.
- Taxes on consumption of telecoms services (i.e. service excises) are an imperfect instrument to capture economic rents, and they raise prices and therefore restrict network access, reducing consumer welfare and production efficiency.
- Understanding how different tax instruments affect the mobile phone industry should help governments better structure their approach and curb the current proliferation of telecoms taxes and fees.

In conclusion – reduce or phase out additional taxes or duties on telecommunications.

18. Source: IMF Working Paper – Taxing Telecommunications in Developing Countries, November 2017.

3.5.2.2 DRC – Calculated benefits of tax reforms[19]

The GSMA estimates that currently in the DRC, the mobile sector contributes approximately 20% of total tax revenue, despite accounting for just 3.6% of GDP. This means the total tax contribution of the mobile sector is almost six times the size of the sector. The GSMA has calculated the socio-economic benefits of tax reforms and has come to the conclusions in the table below, indicating the benefits of not imposing sector-specific taxes and duties.

Figure 15

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

Indicator	Reducing excise duty on mobile services from 10% to 3%	Reducing the numbering tax from $0.45 per number to $0.225 per number	Eliminating the 3% tax on mobile money turnover
New unique subscribers	+2.8m	+0.8m	+53,000
Sector revenue	+$62m	+$18m	+$0.2m
GDP increase	+$276m	+$79m	+$15m
Wider investment	+$119m	+$34m	+$5m
Annual gain in tax revenue	+$21m	+$6m	+$2.7m

3.5.2.3 Reduction in custom duties and excise duty – Madagascar

The elimination of mobile-specific taxation will improve affordability of mobile services and allow the economy to benefit fully from the mobile sector positive externalities. The cost reductions that ensue will allow more people to participate in the digital economy and this will broaden the tax base.

A good example of a country improving digital inclusion through a tax reform is Madagascar. In December 2018, the Malagasy government voted to reduce custom duties on handsets from 10% to 5% as well as excise duty on mobile services from 10% to 8%, effective from 1 January 2019. By reducing these two taxes, Madagascar encourages access to smartphones while improving the affordability of mobile services. This should lead to increased productivity across the economy given the positive externalities of the mobile sector.

3.5.2.4 Best practice in infrastructure sharing – Côte d'Ivoire[20]

In Cote d'Ivoire the regulatory framework creates a conducive environment for infrastructure sharing by enabling:

- Passive site sharing
- Active sharing
- National roaming

In line with what has already been achieved to support and encourage passive infrastructure sharing in the region, the priority should now be to create an environment that will foster active sharing.

19. Source: GSMA Reforming mobile sector taxation in the Democratic Republic of the Congo, March 2018.
20. Reference: Ordonnance 2012, article 35

3.5.2.5 Best practice in infrastructure sharing – GSMA programme in Tanzania[21]

In July 2016, Airtel, Tigo and Vodacom agreed to implement mobile broadband enabled pilot sites and test for the first time a tripartite national roaming agreement in Tanzania – the first of its kind in Africa. The three operators agreed to trial a network shared 3G light cost solution on six pilot sites (two per operator) spread across the country. The GSMA supported the drafting of the agreement and coordinated the operational effort to implement the pilot sites commissioning and to ensure efficient dissemination of information between all parties.

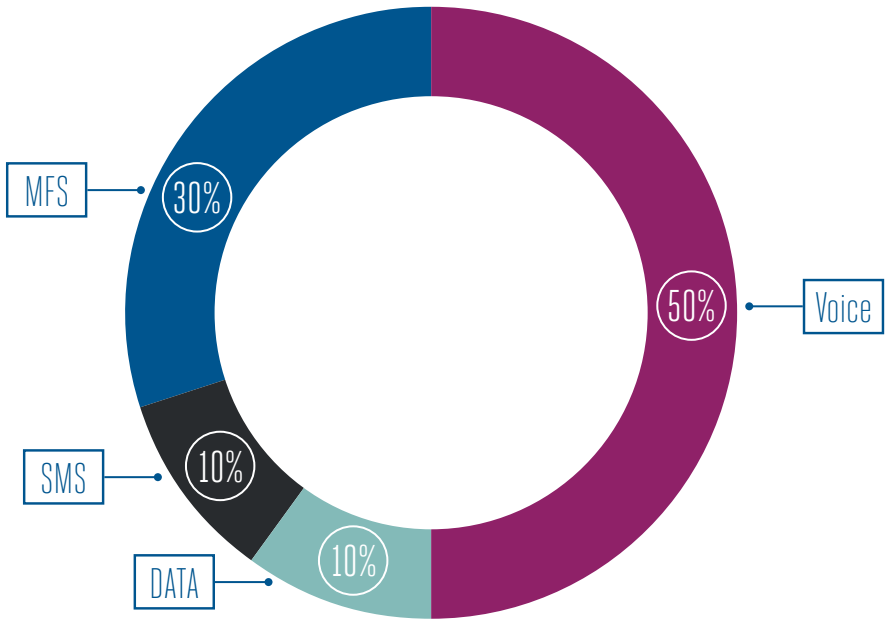
The GSMA developed an economic and financial model in order to assess and identify the most viable infra-sharing solution to deploy economically viable solutions for mobile broadband access provisioning in rural areas.

Revenue result

After seven months of operation, all six sites reported healthy revenue levels validating the sustainability of the roaming model chosen for the pilots. At the end of month seven, each site generated on average $5,200 in revenues per month excluding wholesale revenues generated from the roaming itself. On average, each subscriber spent $0.90 per month by the end of the period split per service as per the diagram.

Figure 16

Tanzania – revenue split per service



21. Source: GSMA Tanzania rural coverage pilots performance report

3.5.2.6 Best practice in infrastructure sharing – India[22]

The Telecom Regulatory Authority of India (TRAI) has recommended infrastructure sharing as a method for increasing mobile telephony coverage. Rather than regulating infrastructure sharing agreements, the TRAI opted to take a safeguard regulatory approach and stated that "the process of sharing infrastructure should be transparent and non-discriminatory."

The Government and mobile operators launched a joint initiative called "Project Most" aimed at encouraging infrastructure sharing. This has led to positive outcomes, for example:

- The mobile operators have all entered into commercial agreements to site share.
- Vodafone estimates that approximately 30% to 40% of sites are now shared. Given that, for example, Vodafone is estimated to roll out roughly 2,000 towers per month and Bharti around 3,000 per month, this significantly reduces the level of capex expenditure. Sites are shared on a one-for-one basis.
- There are examples of some towers, particularly in Delhi, being shared by as many as six or seven operators. Given tight planning regulations in major Indian cities, this has helped all operators to provide sufficient capacity and coverage in major cities.
- Population and geographic coverage levels in India were stabilising due to falling ARPUs making it unprofitable to roll out into more rural areas. The cost savings from infrastructure sharing are encouraging mobile operators to step up their coverage plans.

Vodafone has stated it expects cost savings of $1bn over the first five years of infrastructure sharing and has indicated the main benefit will be accelerated expansion of coverage, particularly in rural areas.

3.5.3 GSMA positions

3.5.3.1 GSMA position on taxation[23]

Governments should reduce or remove mobile-specific taxes because the resulting social impact and long-term positive impact on gross domestic product, and hence tax revenues, will outweigh any short-term reduction in contributions to governments' budgets. Taxes should align with internationally recognised principles of effective tax systems.

Discriminatory, sector-specific taxes deter the take-up of mobile services and can slow the adoption of ICT. Lowering such taxes benefits consumers and businesses and boosts socio-economic development.

Governments often levy special taxes to finance spending in sectors where private investment is lacking, however this approach is inefficient. Fiscal policy that applies a special tax to the telecommunications sector causes distortions that deter private spending and, in the end, diminish welfare by preventing the realisation of the positive spill-overs that mobile provides throughout the economy.

Emerging economies need to align their approach to taxing mobile broadband with national ICT objectives. If broadband connectivity is a key social and economic objective, taxes must not create an obstacle to investment in broadband networks or adoption and usage of mobile broadband by consumers. Lowering the taxation burden on the sector increases mobile take-up and use, creating a multiplier effect in the wider economy.

3.5.3.2 GSMA position on infrastructure sharing[24]

Governments should have a regulatory framework that allows voluntary sharing of infrastructure among mobile operators.

While it may at times be advantageous for mobile operators to share infrastructure, network deployment remains an important element of competitive advantage in mobile markets. Any sharing should therefore be the result of commercial negotiation, not mandated or subject to additional regulatory constraints or fees.

22. Source: GSMA – Mobile Infrastructure Sharing
23. Source: GSMA Mobile Policy Handbook
24. Source: GSMA Mobile Policy Handbook

The regulatory framework of a country should facilitate all types of infrastructure sharing arrangements, which can involve the sharing of various components of mobile networks, including both so-called passive and active sharing.

In some cases, site sharing increases competition by giving operators access to key sites necessary to compete on quality of service and coverage. Infrastructure sharing agreements should be governed under commercial law and, as such, subject to assessment under general competition law.

Access to government-owned trunk assets should be available on non-discriminatory commercial terms, at a reasonable market rate.

3.5.3.3 GSMA position on spectrum fees / auctions[25]

Efficient allocation of spectrum is necessary to realise the full economic and societal value of mobile.

There is no 'one size fits all' design for spectrum auctions. Each auction needs to be designed to meet the market circumstances and to achieve the specific objectives set by government. As with most auction design elements, the appropriateness of simultaneous auctions (multiple bands being auctioned together) versus sequential auctions (bands being auctioned one after the other) is dependent on specific market conditions. The effectiveness of either approach will be dependent on a clear spectrum roadmap with well-defined rights and conditions understood in advance. Regulators should work with stakeholders to ensure the auction design is fair, transparent and appropriate for the specific market circumstances. Auctions are not the only option available to governments to manage spectrum allocation and should only be used in appropriate circumstances.

Auctions should be designed to maximise the long-term economic and social benefits from use of the spectrum. They should not be designed to maximise short-term revenue for governments. The following key principles can help guide licensing authorities:

- Auctions can deliver strong social benefits as long as they are properly designed.
- High spectrum prices jeopardise the effective delivery of wireless services.
- Spectrum licences should be technology and service neutral.
- Licence conditions should be used with caution.
- Licence duration should be at least 20 years to incentivise network investment.
- Competition can be supported by licensing as much spectrum as possible and limiting charges and other barriers to services.
- Voluntary spectrum trading should be encouraged to promote efficient spectrum use.

25. Source: GSMA Mobile Policy Handbook

3.6 Relevance

3.6.1 Key issues in relevance

Obstacles identified

- Lack of content in the local language

Solutions

- Create the conditions for wider participation in the telecoms services industry by local entrepreneurs, including the development of local language content services at a small scale and local level. This increases relevance and also creates employment.
- Create services, especially in the domain of eGovernment, which encourage people to become digitally engaged.

3.6.2 Best practice examples

3.6.2.1 Best practice snapshot – Mobile agriculture in Mali[26]

With regard to the production of local content and to enable access to this content in local languages or for illiterate people, Orange is taking two approaches: local language and vocalisation of service.

In Mali, for example, with its local partners, Orange Mali has developed two apps to help small farmers:

Sénèkela is a mobile agricultural value-added service (Agri VAS) provided by Orange Mali and offering a range of information on agricultural topics and market prices, via a helpline or a USSD channel.

Sandji is a decision-making tool that was developed to help small farmers plan their agricultural activities. At 7am every morning, the farmer receives an SMS in French or Bambara (Bamanankan) providing a 48-hour forecast of the predicted volume and intensity of rainfall on their land, as well as the likelihood of rain in each timeslot. They also receive monthly and seasonal forecasts.

These highly accurate forecasts and knowledge of the prices of agricultural products enable farmers to reduce risk and costs, increase yields and optimise their use of expensive resources. This means that they can make well-informed decisions throughout the agricultural cycle.

3.6.2.2 Best practice snapshot – Local content / iCow[27]

iCow is an SMS-based phone application for small-scale dairy farmers in Kenya, developed by local farmer Su Kahumb, who wished to address the problems of her neighbours herding cattle, despite the fact that she had no previous experience developing apps.

The app helps farmers by giving them tips on issues such as breeding, nutrition and milk production, which can help increase revenues. The messages with these tips cost about 10 Kenyan shillings each, which is approximately US$0.10. Although the app started using SMS, the service is migrating to mobile apps.

Apps such as these create immediate relevance for users in places where the relevance of internet services was previously perhaps not always apparent. They also migrate users to smartphones, opening up other potential channels for relevant content.

Conclusion: Facilitate conditions where simple effective locally relevant content can be developed.[28]

26. Source: https://www.orangemali.com/particuliers/1018/1056/senekela-15422.html
27. Source: Internet Society – Promoting Content In Africa
28. Further case studies can be found in the GSMA report: Mobile Internet of Things Case Study – Greater China, March 2018.

3.6.3 GSMA position

3.6.3.1 **GSMA position on local content[29]**

Access to relevant local content has a massive potential to revolutionise the mobile industry in emerging markets. Relevant local content raises awareness and drives uptake of the mobile internet, attracting developers, increasing innovation, creating more value for stakeholders and increasing interest in generating more relevant content.

This continuously increases user engagement and pushes the uptake of the mobile internet further, thus creating a win-win situation for players across the entire ecosystem. Additionally, by providing more locally relevant services to their customers, operators can benefit from an increase in subscriptions, customer loyalty, and revenue through data services, and the potential of generating new revenue streams in an industry facing increasing competition and pressure on revenue margins in emerging markets.

3.7 Readiness

3.7.1 Key issues in readiness

Obstacles identified

- Illiteracy
- General low levels of digital skills
- Lack of awareness of the benefits of mobile internet use

Solutions

- Training and education to get people digitally engaged, and help build the confidence and digital skills of consumers
- Design products, services, and marketing with a less digitally literate user in mind
- Participation of government and the service providers in this process, for example:
  - Orange Foundation "Digital Schools" programme
  - Government in Kenya fostering digital skills
  - Government and mobile operators in India fostering digital skills

3.7.2 Best practice examples

3.7.2.1 **The Orange Foundation "Digital Schools" programme[30]**

At the Orange Foundation, school means digital tablets that are distributed to schools, in Africa, that often have no books and no internet connection. At these schools, more than 160,000 children are now accessing essential educational content using tablets. Beginning with a handful of initiatives in 2014, this project has become a fully-fledged digital education drive: the "Digital Schools" programme.

The "Digital Schools" programme is in 14 countries, including Niger and Senegal from ECOWAS Member States.

This is a very similar concept to the Kenya DigiSchool concept, but is operator led rather than government led.

3.7.2.2 **Best practice snapshots – Kenya's DigiSchool**

DigiSchool is the brand name for the Digital Literacy Programme (DLP). The programme introduces primary school children, beginning with those in lower primary, to the use of digital technology and communications in learning. DLP is targeted at learners in all public primary schools in Kenya.

29. Source: Local world — content for the next wave of growth, GSMA Intelligence.
30. Source: https://www.fondationorange.com/The-Digital-Schools-programme-actively-supporting-education-for-the-poorest

DigiSchool is led by the Ministry of Information, Communications and Technology (ICT) and is executed through a multi-stakeholder approach with the ICT Authority as the implementing body.

Key components of the Digital Learning Programme:

- Provision of digital devices for both learners and teachers
- Capacity development for teacher and implementers
- Broadband connectivity devices
- Provision of content for digital learning
- Establishment of local assembly for digital devices and related accessories

The programme benefits are seen as developing skills for a knowledge economy, promoting research and development, promoting locally assembled/ manufactured goods and services, enhancing job creation through digital content creation, e-waste management of worn devices, local assembly of devices, enhanced connectivity to electricity and the internet for the community at large, and opening up participation in the education system to the community through school websites, emails and blogs.

3.7.2.3 **Best practice snapshots – India**

Initiatives of mobile operators in India to promote digital literacy:

- Idea Cellular launched the Idea Internet Network (IIN) campaign that aims to demonstrate that a person can actively learn the skills they choose, better themselves and achieve success through the internet. The IIN advertisements show people learning topics such as engineering, algebra, foreign languages and business skills, solely through Idea internet.
- Uninor launched the "Internet on Wheels" initiative to educate people about the benefits of the internet and increase adoption of the mobile internet in rural areas in India. A branded van travels across rural areas to teach customers about the mobile internet, how to access it on feature phones, how to navigate on a smartphone and how data packages work.
- Uninor opened customer education hubs to train customers on mobile services. These centres will act as knowledge and awareness centres where customers can get information on voice and internet services.
- The Indian government has launched a digital literacy campaign in partnership with Intel as part of Digital India. Three million individuals have been trained as part of the initiative. The aim is to facilitate "technology-driven inclusive growth" and to achieve 100% digital literacy. Mobile operators have an opportunity to partner with the government on initiatives like this to promote digital literacy training focussed more on mobile phones, rather than desktops.

3.7.3 GSMA position

3.7.3.1 **GSMA position on raising awareness and digital literacy**

Mobile network operators (as well as other stakeholders) have a key role to play in overcoming the barriers that exist for both existing and new mobile internet subscribers. Establishing education programmes to improve skills and awareness can help people access relevant content. Working with local entrepreneurs can help to create the relevant content and ensure it is accessible to all users rather than focused solely on smartphone and 3G users.

4. Recommendations

4.1 Recommendations on availability

Achieving the widest possible coverage

The chosen mechanism for increasing coverage has usually been the application of a universal service funding scheme, but these have generally been unsuccessful because the funds have often not been used and so they have become another de facto tax.

The recommendation, therefore, is to move away from universal service funding mechanisms and move towards universal service obligations linked to low frequency spectrum. The 700 MHz and 800 MHz digital dividend spectrum will become available for assignment in African countries over the next few years. It is recommended that this spectrum be assigned to service providers with a focus on obligations to further improve mobile broadband coverage, and a de-prioritisation of motivation to assign this spectrum for high fees.

The roadmap regarding the assignment of the IMT spectrum and the roll out of coverage should be planned in consultation with all stakeholders.

As part of this process, the licences for all spectrum should be technology neutral to allow the service providers to maximise on mobile broadband capacity while still catering for 2G (and 3G) customers.

Spectrum roadmap

One of the key parameters for effective coverage is the availability of spectrum.

IMT access radio frequencies is the key resource in extending coverage and enabling sufficient capacity. Lack of spectrum in general pushes up costs because of the need to densify networks to provide capacity, and lack of coverage spectrum (i.e. below 1 GHz) is an obstacle to extending coverage economically.

The general lack of spectrum and the uncertainty about when spectrum will become available increases the **risk for investors**, network costs rise in the absence of adequate spectrum and auction prices inflate due to the perception of scarcity.

For the purposes of managing the global radio spectrum, the International Telecommunications Union (ITU) divides the world into three regions. A whole range of bands that are suitable for cellular access have been identified for IMT in ITU Region 1, of which Africa is a part. These bands have typically ranged from 450 MHz to 3.5 GHz and include the digital dividend bands (700 MHZ and 800 MHz).

Beyond the general need to extend coverage and capacity there is the need to cater for the adoption of LTE, the high spectrum requirements of 5G and the need to continue to accommodate 2G and 3G. Furthermore, M2M applications and public security and disaster relief require specific consideration.

In view of all this, to ensure that networks are rolled out at minimum cost it is necessary to have a clear view of the spectrum that will come available, when and for what purpose. It is also necessary to have long term planning to ensure that the bands are cleared and existing legacy users migrated at minimum cost.

For this purpose, the appropriate mechanism is an IMT roadmap that undertakes the above and creates a clear view of the spectrum that will be released.

It is proposed that the ECOWAS Member States, in consultation with the wider group of stakeholders that use spectrum, facilitate the production of such a roadmap. This will also serve as a positive example for other countries and regions in Africa.

4.2 Recommendations on affordability

Lowering the cost to communicate

Cost of access to mobile for those on low income has been identified by questionnaire respondents as a major constraint to take up of mobile broadband. Lowering the cost of operations will allow cost savings to be transferred into lower pricing and therefore, a lower cost of ownership.

The first recommendation is to eliminate sector-specific taxation to improve affordability of mobile services and allow the economy to benefit fully from the mobile sector positive externalities. The cost reductions that ensue will allow more people to participate in the digital economy and this will broaden the tax base.

The second recommendation is to avoid 'over-priced' spectrum. Spectrum auctions should be designed to ensure that the spectrum price is determined based on a rigorous analysis to investigate its market value, and does not impose costs that have to be passed on to consumers. Administrative spectrum fees should be based on covering the costs of spectrum administration and not on raising revenue.

The third recommendation is to lower the costs of telecommunications through the facilitation of infrastructure sharing. Experience has shown that this is most effective when it is left to the market to negotiate on a commercial basis rather than trying to mandate terms and conditions. Allowing the service providers to undertake passive and active infrastructure sharing (and voluntary national roaming), together with equitable coverage obligations (see 'availability' section), will achieve the twin aims of availability and affordability.

4.3 Recommendations on relevance and readiness

Incentivising digital inclusion

4.3.1 Relevance

The objective is to provide incentives to the unconnected to connect to the internet. These are not global multi-linguists but people, often in rural areas, who want content in the local language with local relevance.

While there is already a lot of activity in this domain, the recommendation is to support service providers in encouraging and fostering local digital ecosystems, enabling local entrepreneurs to set up websites in the local language that meet local needs. This may take different forms in different places, but the service providers can fulfil a key role as follows:

- Provide training in basic programming or support in programming
- Provide low cost hosting for such websites and applications
- Facilitate payments by leveraging mobile money applications

4.3.2 Readiness

Many people do not get connected because they do not know how.

It is recommended that service providers should be incentivised to provide training in simple digital skills to use smartphones or feature phones. For the totally illiterate, apps should be developed with intuitive visual aids or vocalisation of service.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