Report for GSMA

# Assessment of economic impact of wireless broadband in Nigeria

## Final Report

*February 2011*

***Ref: 18059-64***

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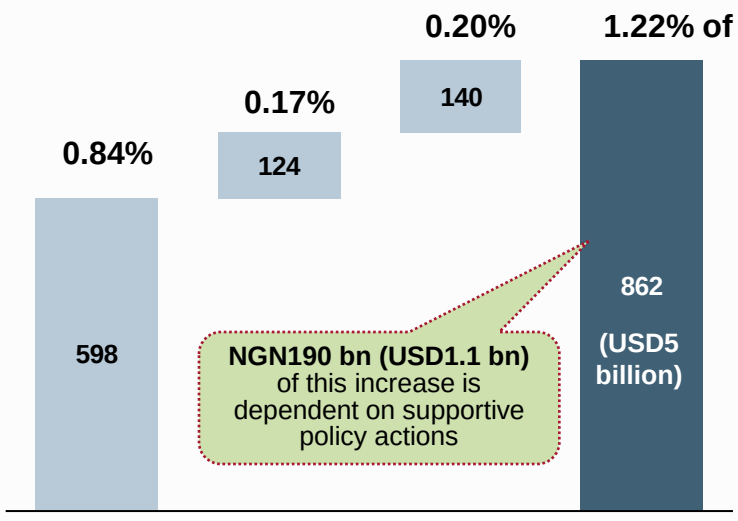
# Contents

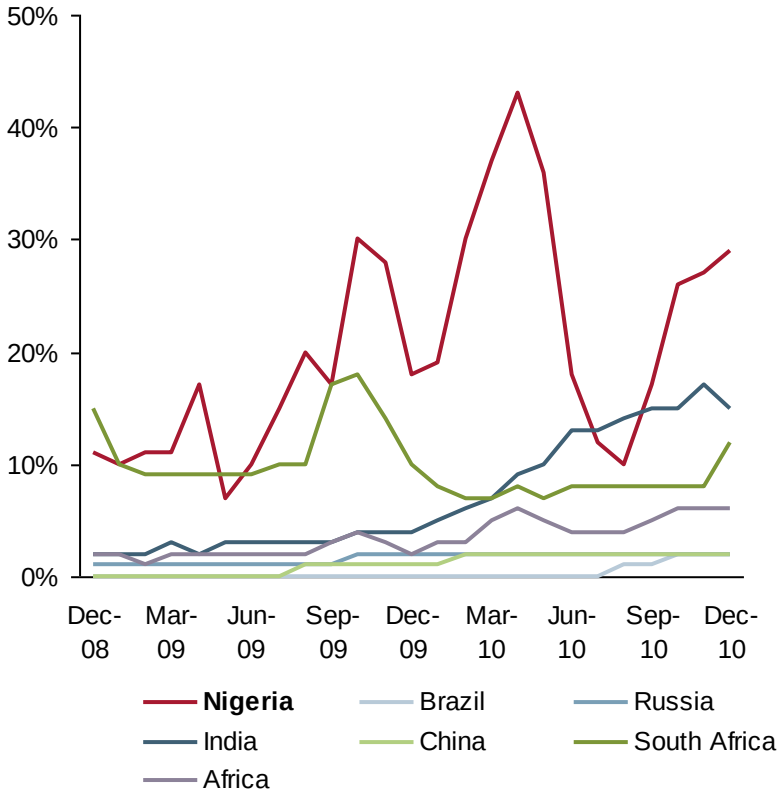
# Broadband in Nigeria is already mobile – and with positive policy action can enhance Nigeria's GDP by over 1% in 2015

## Potential impact on GDP of wireless broadband services (NGN bn, 2015)




| Spend on services and devices | Spend on ecosystem elements using wireless BB | Productivity and efficiency gains |
|---|---|---|

## Proportion of web hits from mobile devices




Source: Analysys Mason, StatCounter.com

# Nigerian consumers are ready for broadband – can policymakers and industry give them what they want?

- Analysys Mason has prepared this report for GSMA to assess the direct and indirect economic impact of wireless broadband in Nigeria
- At least 31 million Nigerians accessed the Internet in 2009
  - Data from a variety of sources suggests that Nigerian consumers are already using the Internet for socialising, entertainment, reading news and job hunting
  - Around 30% of website hits from Nigeria originate from phones – although many users get their first taste of the Internet from cybercafes before acquiring a personal mobile data subscription
- Given the poor state of wireline infrastructure, Nigeria will be relying heavily on mobile operators to supply broadband
- Three major supply side issues threaten broadband: access to terrestrial fibre; taxes and administrative burden; and electricity supply
- On the policy side, a converged media and telecommunications regulator is needed to support industry in delivering services to Nigerians by adopting a coherent framework
- Care must be taken with spectrum management to ensure that
  - 2.6GHz spectrum is made available quickly, using the internationally-accepted band plan, to support demand in urban areas
  - Digital Dividend spectrum should be released as soon as possible to extend broadband to suburban and rural areas
  - A single agency, familiar with the major uses of spectrum, should manage assignment of spectrum rather than having responsibility split between two or more agencies
- We find that mobile broadband can potentially contribute over 1% of GDP (and 1.7% of non-oil GDP) in 2015, supporting diversification of the economy
- Such economic gains, however, depend on a positive environment created by all stakeholders that addresses infrastructural problems, spectrum management, and access to the Internet for women and rural citizens

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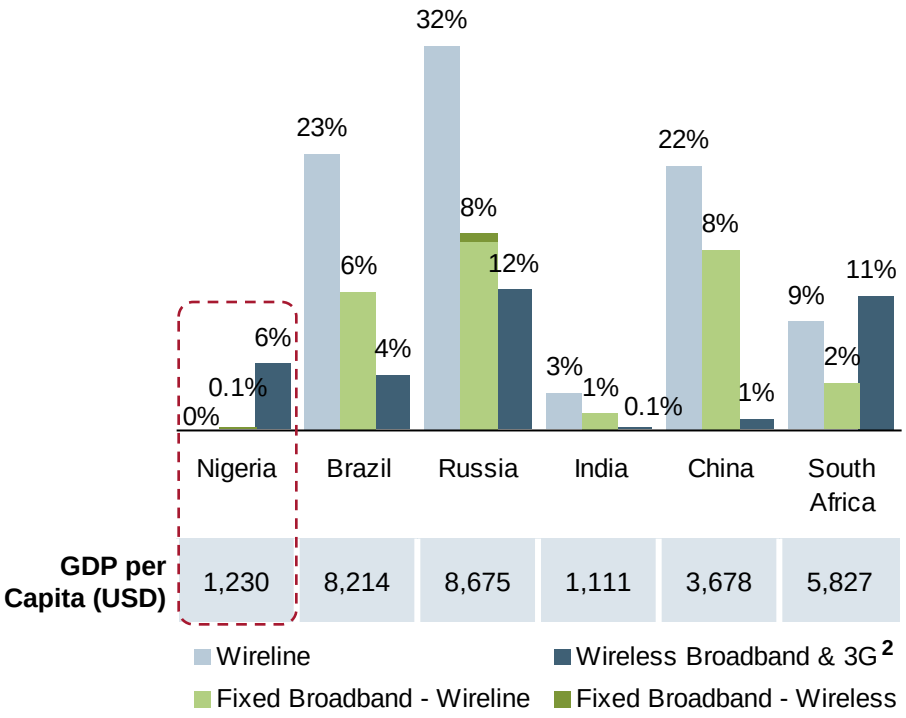
# With almost non-existent wireline services, broadband in Nigeria is driven by wireless access technologies

**BRICS countries & Nigeria: broadband and wireline penetration by access technology (2009)[1]**




- Fixed network infrastructure is very limited outside Lagos
  - State-owned incumbent Nitel has undergone turbulent privatisations, nationalisations and management changes in the last ten years
  - Subscribers to its fixed service, and to mobile division M-Tel's mobile service, have been in decline over this period despite huge market growth
- Wireless broadband (currently offered using UMTS, HSPA, WiMAX and EVDO networks) is critical to seizing the opportunity presented by Internet and data access in Nigeria

Note: 1. Penetration as % of population; 2. 'Wireless broadband & 3G' includes all WCDMA, HSPA, CDMA EV-DO and TD-SCDMA connections – the numbers also include voice users over these networks

Source: Analysys Mason, TeleGeography, Wireless Intelligence, EIU

# Wireless networks have shown their ability to overcome infrastructural challenges in Nigeria

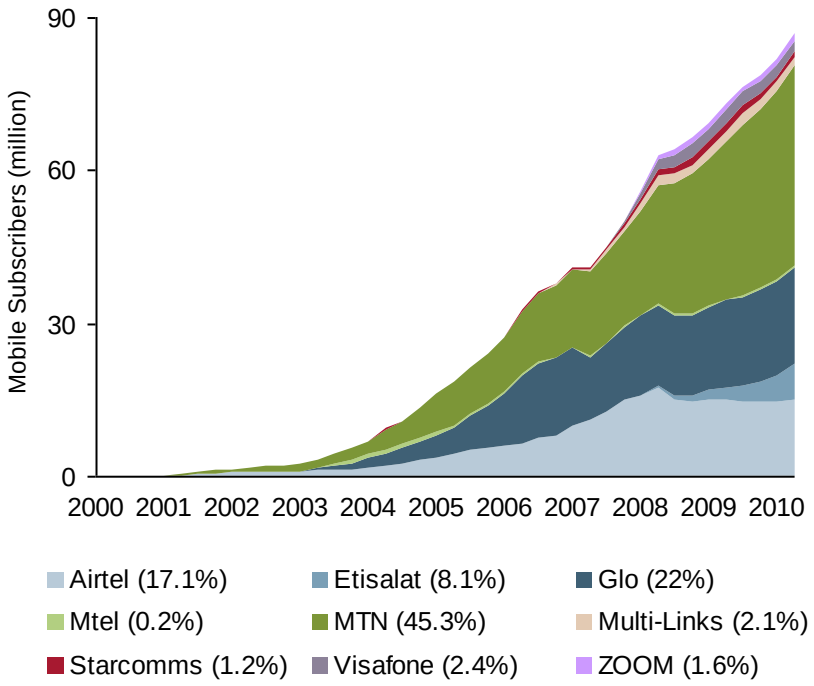
| | |
|---|---|
| **Mobile Operators** | • MTN, Glo, Zain and Etisalat are the four main GSM operators in Nigeria – all of which also hold 3G UMTS licences<br>• Together, these operators serve about 90% of Nigeria's 86 million subscribers<br>• The remainder of the market is largely accounted for by a number CDMA operators, including Visafone, Multi-Links and Starcomms |
| **Fixed Retail Operators** | • Growth in fixed line broadband has been hampered by the poor state of NITEL's PSTN[1]<br>• The number of fixed lines has grown steadily since 2001 (reaching 1.2 million lines in August 2010). The growth is largely due to the efforts of alternative fixed wireless operators such as Starcomms and Reltel ("ZOOM") that offer fixed terminals to connect to their CDMA networks<br>• Many services that would traditionally be served by wireline access (such as cybercafes) are in fact connected via wireless (whether fixed or mobile) |
| **Wholesale Operators** | • Although Glo was awarded a second national wireline licence in 2002, it only launched its fixed services for commercial and wholesale customers in 2008<br>• NITEL launched its wholesale internet service in April 2005, enabling ISPs and carriers with an IP carriage capacity to provide services over its network<br>• Several providers have also built out networks under National Long Distance licences |

Note: 1. In February 2010, the sale of a 75% stake in the incumbent; NITEL was agreed with for a reported USD 2.5 billion, although the deal is yet to be finalised as at February 2011

Source: Analysys Mason, NCC, TeleGeograpghy

# Although multiple wireless technologies are used, only GSM operators have national scale and coverage

**Nigerian historical quarterly data on mobile subscribers by operator**




**Key with market shares as of September 2010**

- The mobile market is currently led by GSM operators MTN, Glo and Airtel
- The market shares of MTN and Glo have remained relatively constant over the last three years, while Airtel's market share has been squeezed by Etisalat Nigeria
- With 85 million connections today and a population approaching 160 million, Nigeria's wireless telecoms market remains among the most promising in Africa and continues to attract new investment
- MTN, Glo and Airtel have proven their ability to tackle the infrastructure challenges by each reaching over 85% population coverage, while CDMA and WiMAX operators remain limited to major towns and cities

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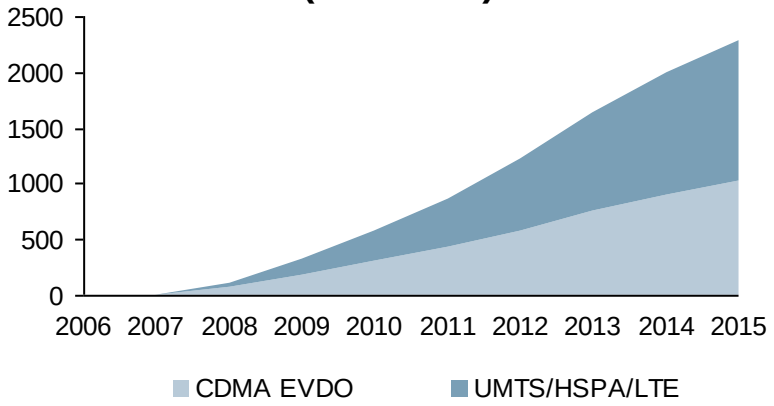
Note: 1. Starcomms, ZOOM, Visafone and Multi-Links subscriber numbers include fixed terminals connected to the CDMA network

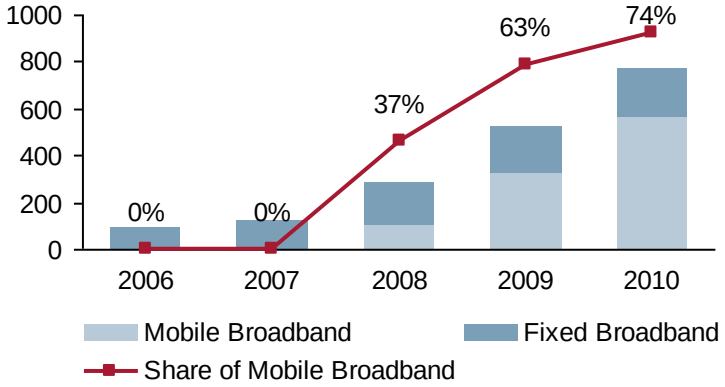
Source: Wireless Intelligence

# Mobile broadband services using HSPA and LTE are expected to continue to drive increased broadband reach

**Mobile broadband subscribers in Nigeria[2] (thousand)**




**Broadband market subscribers[2] (thousand)**




- CDMA mobile broadband networks (using EV-DO) were first to launch, while 3G (UMTS) licences were only awarded in April 2007
- The introduction of CDMA EVDO and HSPA networks have widened broadband access
  - Both Glo and MTN launched HSPA services In February 2008, with Airtel following on with the launch of its high speed network a year later.
  - Glo recently announced that it has launched Africa's first LTE network[1]
- Mobile broadband has created momentum in the broadband market, despite HSPA only being launched in 2008:
  - Mobile broadband subscribers now account for over half of all high speed internet service users
  - By Q4 2010, it was estimated that mobile broadband connections in Nigeria numbered just under 600 thousand
  - By the end of 2011, UMTS/HSPA/LTE share of subscribers is expected to be higher than CDMA, which is likely to remain confined to major towns

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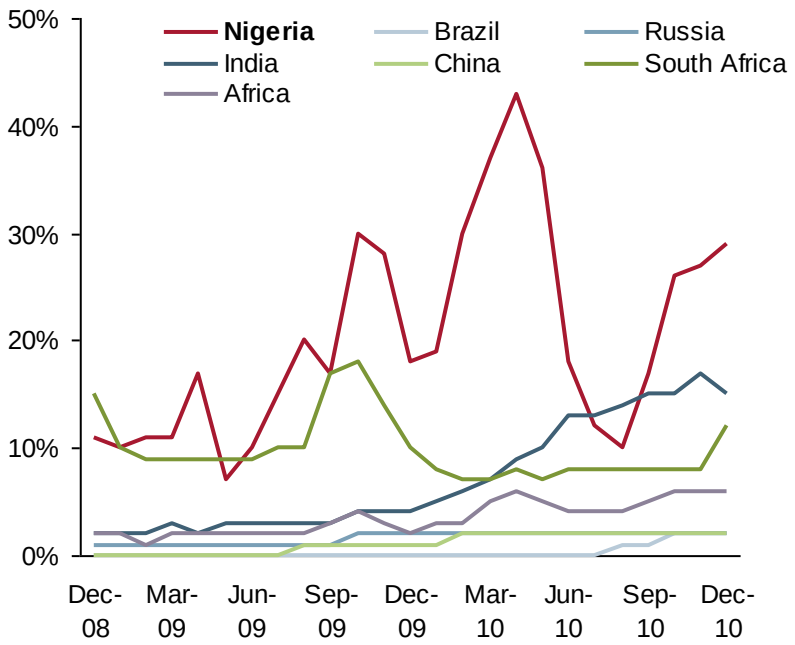
Note: 1. Glo January 2011 press release

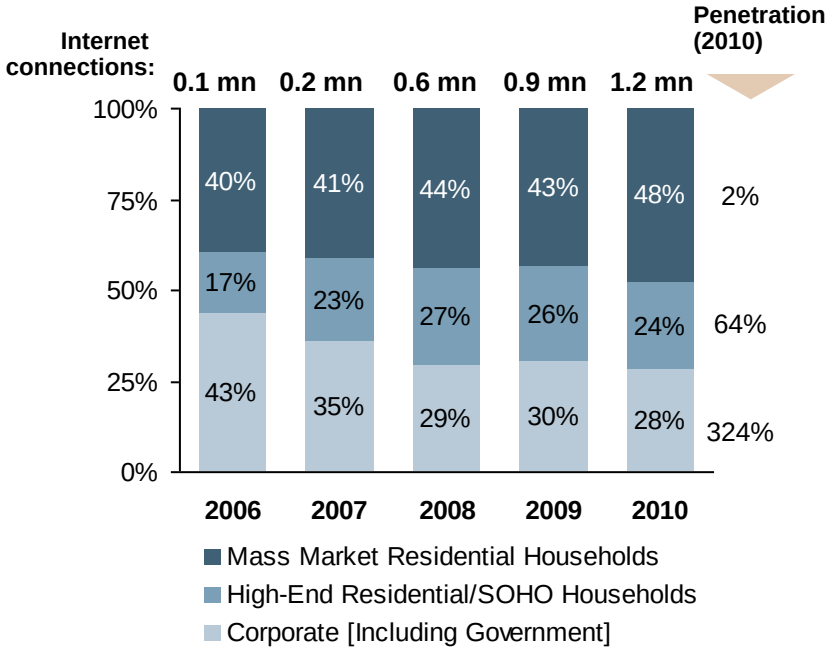
Source: Analysys Mason, TeleGeography, [2]AfricaNext

# With a lack of household PCs, Nigerians have been accessing the Internet through other devices

## Proportion of web hits from mobile devices[1]




## Internet connections mix across segments[2]

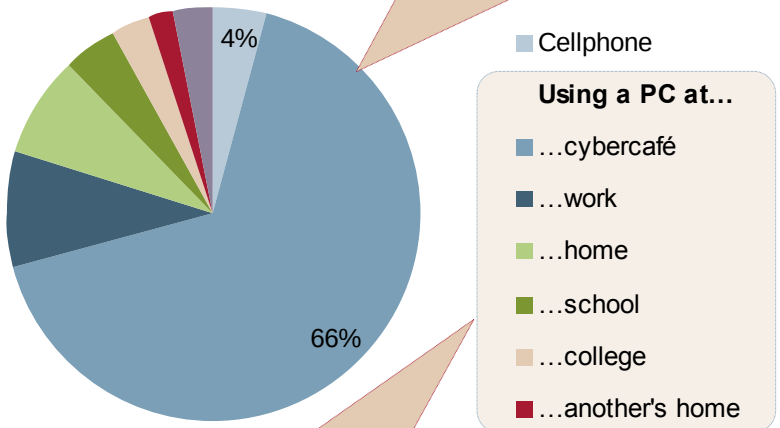



- Data from Opera (the mobile web browser) indicates that all of the ten most popular phones for browsing the Internet in Nigeria were manufactured by Nokia
- Opera browser accounts for 80% of mobile web browsing from Nigeria. Unique Opera users in Nigeria grew 315% in 2010, and data transfer grew 370%

Source: Analysys Mason, Opera State of the Mobile Web, [1]Statcounter, [2]AfricaNext

# Over 30 million Nigerians have used the Internet, increasingly choosing personal subscriptions over cybercafe access

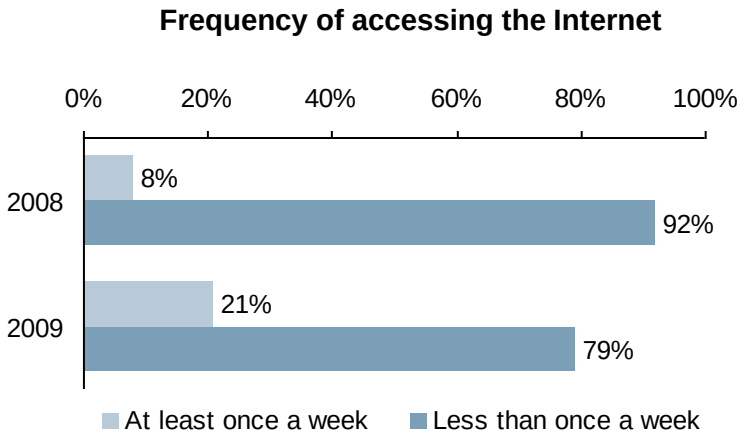
## Method for accessing the Internet (2009)

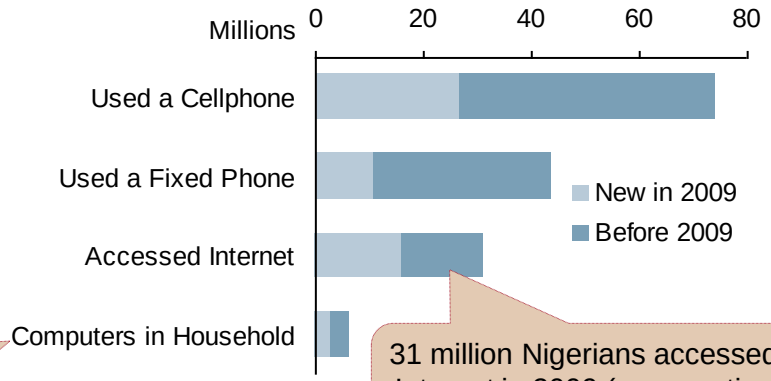



Cybercafe usage in 2009 was down from 82% of users in 2008

These access methods will most commonly be based on an underlying wireless connection

## Growth in ICT usage (2009)




PC ownership doubled, from 3m to 6m households, between 2008 and 2009

31 million Nigerians accessed the Internet in 2009 (some estimates put this as high as 43 million)

Source: NigAMPS/Analytix

# Rural citizens and women are under-represented among Nigerian Internet users

## Mobile Internet in Gitata

In January 2010, the BBC brought two smartphones to the village of Gitata, about 60km from Abuja, to find out how Internet access would affect rural Nigerians.

A gathering of men from the village decided to entrust the phones to a farmer and a teacher for the two month period of the experiment.

Gitata is a village with no electricity or running water, and the nearest Internet-connected computer was reported to be 35km away. Problems experienced included:

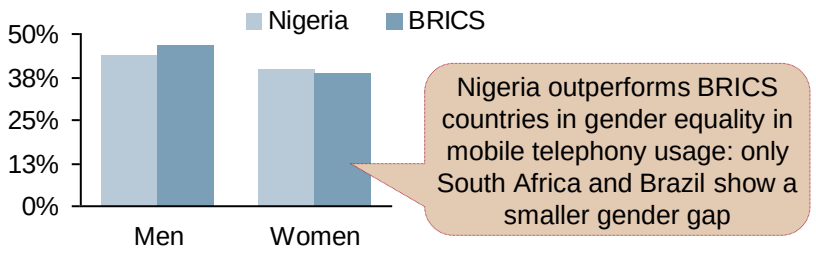
- Users had to have the phones recharged for a small fee by the local barber – for each day's worth of use
- Wireless signal was weak, and the connection slow
- The postpaid connection cost NGN500 (about USD3) per day, more than either man could afford

***"I can survive without the internet but I cannot live without it. Now that I know what it can do for me and for people in Gitata, I will always want to have this kind of access."* – Moses, Gitata**

Source: BBC (http://news.bbc.co.uk/2/hi/africa/8573346.stm)

- Mobile broadband coverage (and usage) in Nigeria does not extend beyond cities and major towns
  - CDMA operators have not extended coverage beyond towns, and GSM/UMTS operators are hampered by the poor propagation of 2.1GHz spectrum (used for 3G data services)
  - Digital Dividend spectrum, which propagates far better, will be crucial for increasing broadband reach
- A notable feature of Nigeria is the low proportion of female Internet users:
  - Data on Facebook users and web surfers indicates that men outnumber women 2 to 1
  - This gender disparity is not reflected in mobile service penetration, where Nigeria compares favourably with BRICS countries

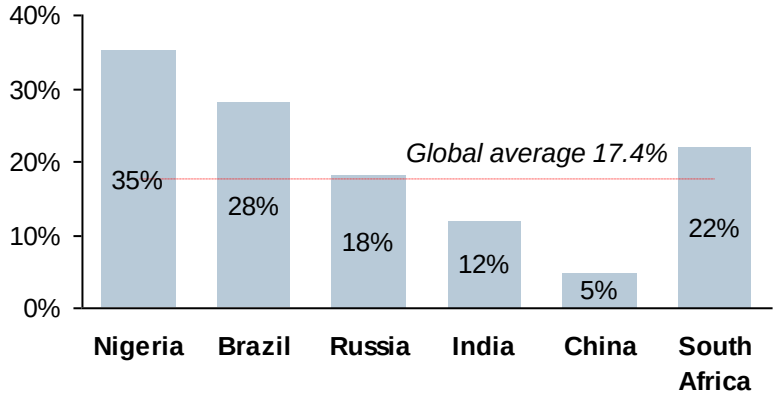
**Mobile service penetration by gender (2009)**




Source: Alexa.com, Alcatel Lucent Market Advantage, socialbakers, GSMA

# Taxation and administrative burden are also negatively impacting delivery of wireless services

### Proportion of operator revenue paid in various forms of tax (2005-7)




### Number of taxes, levies and duties at different levels of Nigerian government (2007)

| | Taxes | Levies | Duties |
|---|---|---|---|
| Federal | 7 | 6 | 6 |
| State | 2 | 6 | 0 |
| Local | 0 | 8 | 0 |
| *…35 distinct payment regimes to comply with* | | | |

| *Issue* | *Comments* |
|---|---|
| Taxes are high | • Approximately 90% of mobile operator taxes goes to Federal government<br>• Regarding telecommunications as a luxury (and a source of tax revenue) jeopardises the growth that the industry can generate |
| Ad hoc, multi-level taxes create administrative burden and additional costs | • Fiscal federalism creates multiple layers of taxes, many of which are low-yielding but burdensome for operators<br>• State and local government agencies should coordinate and simplify taxes to encourage greater investment in broadband |
| Environmental requirements are complex | • Procedures for environmental assessment of new infrastructure vary between regions and does not follow internationally-accepted standards |

Source: GSMA "Taxation and the growth of mobile in sub-Saharan Africa“, “Global mobile tax review 2006-2007”

# Backbone networks have also been a stumbling block to wider broadband access, but connectivity is improving

- Nigerian data networks have for years been constrained by expensive international bandwidth provided via satellite or the SAT-3 submarine cable system
- The landing of two **submarine cables** in Lagos in 2010, and two more in 2011, has the potential to dramatically increased download speeds – but only if access networks can keep up, which requires availability of suitable spectrum

| *Submarine Cable* | *Ready for Service Date* | *Ultimate Capacity (Gbit/s)* |
|---|---|---|
| Glo-1 (Lagos to Europe) | 2010 | ~2500 |
| MainOne (Lagos to Europe) | 2010 | 1920 |
| WACS (South Africa to Europe) | 2011 | 5120 |
| ACE (South Africa to Europe) | 2012 | 5120 |

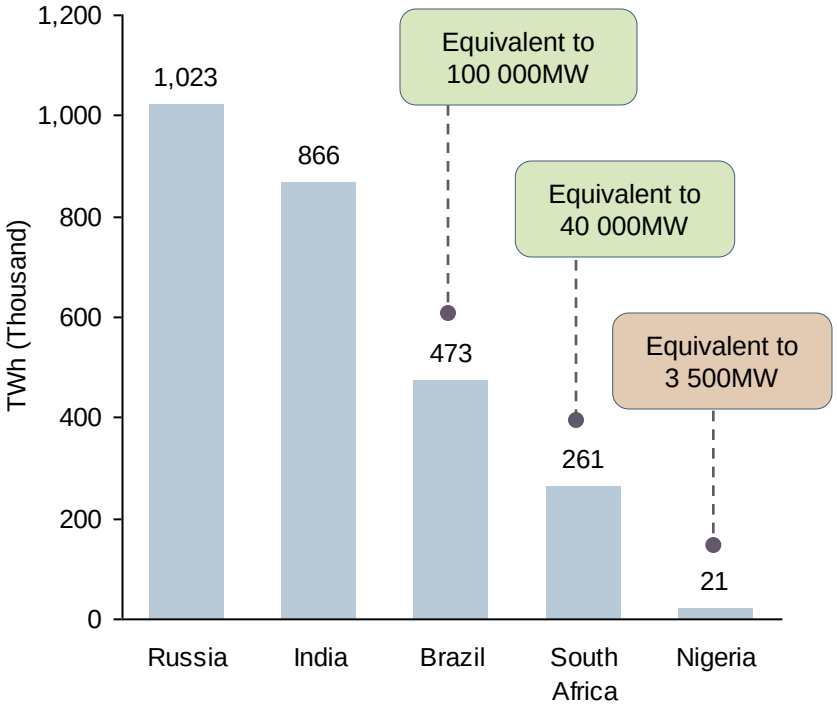
| *Operators* | *Fibre Backbone (km)* | *Microwave Backbone (km)* |
|---|---|---|
| **MTN** | 8 000 | 10 500 |
| **Glo** | 10 000 | >7 000 |
| **Airtel** | 4 600 | 3 000 |
| **Starcomms** | unknown | 2 800 |
| **Suburban** | 2 500 | unknown |

- **Terrestrial fibre backbone** networks are proving slower to bring benefits
  - Although several operators own fibre, reach is limited and there is much duplication
  - Operators are unwilling to share networks (or they charge very high prices), often for strategic reasons
- Connecting as many cell towers as possible to a fibre backbone (rather than using lower capacity microwave) is essential to increasing the capacity available to end users

Source: Analysys Mason, Telegeography, Manypossibilities.net

# A key barrier to widening broadband usage is the problematic power supply in Nigeria

**Electricity production (2009)**




| | Russia | India | Brazil | South Africa | Nigeria |
|---|---|---|---|---|---|
| **Population (million)** | **141** | **1,155** | **193** | **50** | **154** |

- A recent report suggests Nigeria produces only 10% of its daily power requirement[1]
  - Of that total production, only 40% of Nigerians are connected to the national grid and up to USD 13 billion is spent yearly on diesel generators[2]
- Operators are forced to explore alternative sources including the use of generators at every base station
  - In Nigeria, where generators work for up to 22 hours a day, two generators (costing in total USD40 000) are typically used per tower. In more energy reliable markets such as Ghana, Kenya and Tanzania, the cost is about half
  - Benchmarks show that OPEX spend on power per telecom tower in Nigeria are as high as USD2000 compared to USD429 in India[3]
- Current government plans to rectify power shortages include privatisation of power firm PHCN as well as initiatives that will see the country generating 35 000MW of power by 2020

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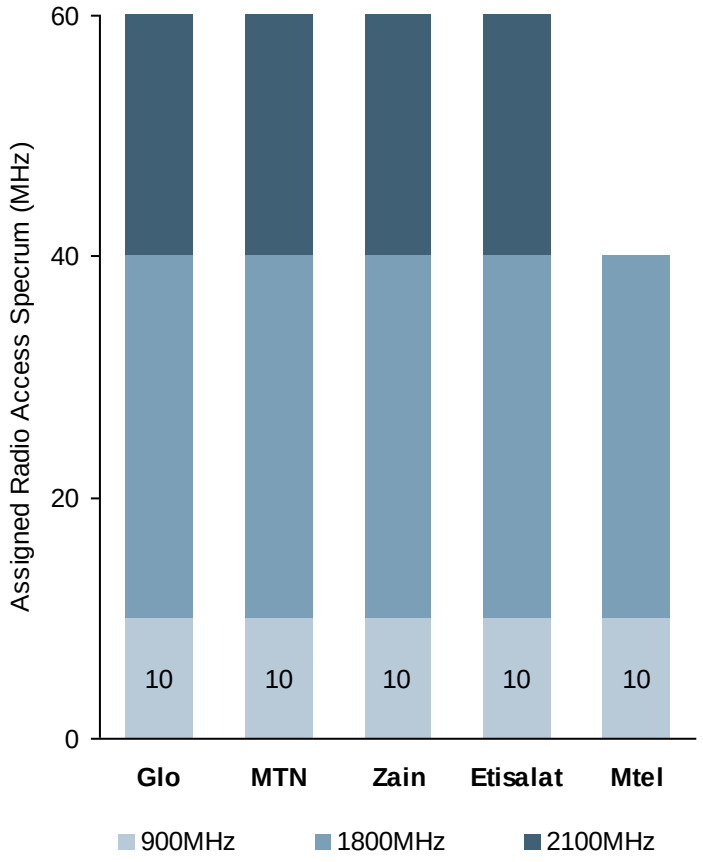
Source: Analysys Mason, Euromonitor, University World News[1], Green World Water Africa[2], Morgan Stanley[3]

# The Nigerian Communications Commission (NCC) has generally used effective, proportionate regulation




- While local loop unbundling is in place, the poor state of incumbent Nitel's infrastructure means that it is not used
- NCC has recognised the importance of facilitating market provision of broadband, particularly through access to spectrum
- NCC has used auctions to award GSM licences (2001), the second national operator licence (2002), 3G licences (2007) and CDMA and fixed wireless licences
- However there are spectrum issues emerging that could jeopardise mobile broadband growth:
  - The 2.3GHz award process has been mired in controversy for over a year
  - More than 2 years have passed since 2.5GHz was proposed to be offered by NCC and negotiations over its use are yet to be concluded
  - There is a lack of clarity over when the vital Digital Dividend spectrum will be passed to the NCC for use by mobile broadband, which could dramatically increase mobile broadband coverage
- NCC should endeavour to ensure that spectrum is made available quickly and with maximum transparency, using internationally harmonised band plans

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Source: Nigerian Communications Commission

# NCC administers several ICT initiatives, but some stakeholders have found them uncoordinated

| | *Wire Nigeria (WiN) Project* | *State Accelerated Broadband Initiative (SABI)* | *Universal Service Provision* | *The Digital Bridge Institute (DBI)* | *Digital Awareness Programme (DAP)* |
|---|---|---|---|---|---|
| **Aim** | To facilitate the **build out of fibre optic** cable infrastructure | To **stimulate demand** for internet services, and drive affordable home broadband | To provide ICT **access in unserved and underserved areas** | To increase the number of **skilled Nigerians in the telecoms** sector | To encourage the **use of ICT in primary, secondary and tertiary** institutions |
| **Mechanism** | Subsidies and incentives to encourage rapid deployment of fibre transmission cables | Subsidy to build broadband infrastructure in all 36 state capitals and urban and semi-urban centres | Subsidies to the private sector | ICT training for over 2000 local and international students. Intended to become privately-run | Computer and internet facilities, basic ICT training for teachers and students |

| *Community Communications Center (CCC)* | *Schools, Universities Access Programme (SUAP)* | *Rural Broadband Internet (RUBI) Access* | *Accelerated Mobile Phone Expansion (AMPE)* | *Backbone Transmission Infrastructures* |
|---|---|---|---|---|
| voice, internet and ICT services to unserved communities on **shared basis** | **connectivity to 360 schools, universities** and neighbouring communities | subsidies to private sector to provide **wholesale bandwidth** to CCCs, cybercafés, rural service providers | **network roll out in unserved towns/villages** in all 774 Local Government Areas by private sector | voice and data **access points in local government area headquarters** |

Government should consolidate initiatives so as to make maximum use of private sector input, and should aim to ensure that competition is enhanced through those initiatives

# State-owned Galaxy Backbone appears to have limited plans to make a difference in the wider market

- Galaxy Backbone was established in 2006 to set up and operate a unified ICT infrastructure platform for government ministries and departments
- Its current activities and projects are likely to have a limited contribution to the development of the broadband market:
  - Market forces and customer requirements may be ignored, which can happen if public sector networks are not well implemented and carefully monitored
  - There does not appear to be any indication that government procurement will support lower-cost access for commercial customers through demand aggregation
  - Much of Galaxy's focus to date has been on VSAT to connect rural areas, which is pragmatic but not a long-term solution

| ***Selected Galaxy Backbone projects and services*** | |
|---|---|
| *Broadband internet service* | Offering high capacity bandwidth at competitive prices |
| *Remote office connectivity* | Offering organisations nationwide network connectivity to their remote offices |
| *Data centre and hosted services* | Offering secure housing for mission critical systems, co-location service offerings |
| *National Information, Communication and Education Program* | NICEP is an ICT policy intervention program focusing on the realisation of Nigeria's e-governance and Millennium Development Goals objectives |

Note: 1. As a backbone owner, Galaxy still leases capacity from MTN's fibre network to provide services to its downstream customers

Source: Analysys Mason, Operator website

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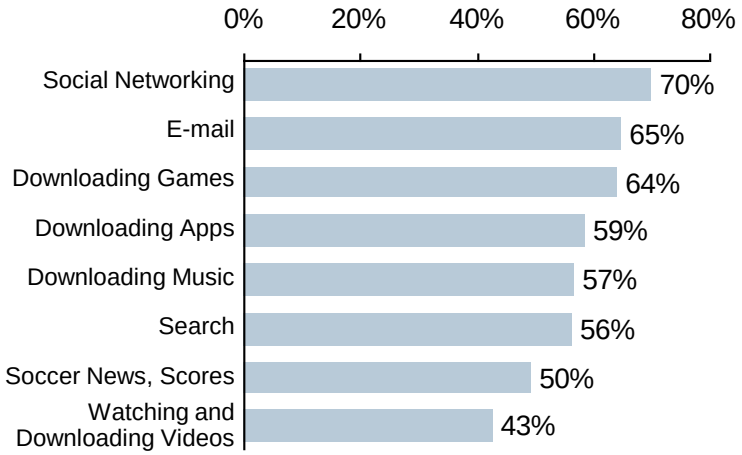
# Nigerian Internet users are considered a valuable market by e-commerce operators

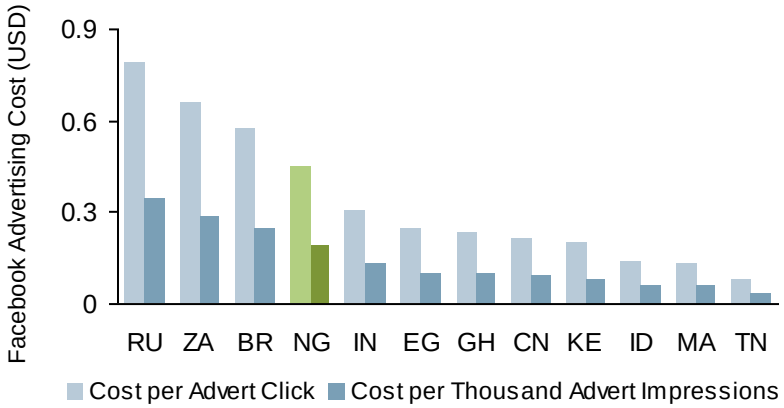
**Which types of mobile Internet sites do you visit on your mobile phone?**




- The sophistication of Internet users means that marketers are willing to pay a relatively high price for Internet marketing in Nigeria
- The Internet marketing industry is emerging in Nigeria; currently much of the value in this industry is generated abroad, with high transaction costs for those inside Nigeria due to poor financial services

- A survey by On Device Research found that two thirds of mobile Internet users polled surfed on their phones for more than 30 minutes each session – and for 70% of users, sessions were daily or more frequent
  - More than half download music, games and apps
  - 56% said they are likely to recommend using the mobile Internet to friends and family

**Cost of advertising to Nigerian users on Facebook**




Source: Opera, On Device Research, socialbakers

# Web browsing is growing in Nigeria with access to localised services contributing to growth

| | *Most popular sites in Nigeria[1]* |
|---|---|
| 1 | facebook.com |
| 2 | yahoo.com |
| 3 | google.com |
| 4 | blogger.com |
| 5 | youtube.com |
| 6 | twitter.com |
| 7 | wikipedia.org |
| 8 | nairaland.com |
| 9 | Windows Live |
| 10 | PunchNG |

| | *Most popular Nigerian sites[2]* | *Category* |
|---|---|---|
| 1 | nairaland.com | Forum |
| 2 | punchng.com | News |
| 3 | vanguardngr.com | News |
| 4 | gtbank.com | Banking |
| 5 | sunnewsonline.com | News |
| 6 | nigerianbestforum.com | Forum |
| 7 | 234next.com | News |
| 8 | nnpcgroup.com | Govt |
| 9 | naijahotjobs.com | Jobs |
| 10 | tribune.com.ng | News |

- **Social networking sites as well as free web-based email services dominate internet usage**
  - The globally recognised websites unsurprisingly top the list of popular sites
  - Facebook is reported to have over 2.7million users from Nigeria[3]
  - Nigerian based websites have however started to influence internet user habits

- **Nigerian entrepreneurs are seizing the opportunity of increased web usage to deliver localised services**
  - Productivity enhancing services are featuring more in the most visited Nigerian sites. These include
    - information portals
    - job adverts and
    - banking

Source: Alexa.com[1], Web Trends Nigeria[2], sociabakers[3]

# Mobile broadband will be of particular value in enhancing learning, knowledge transfer and employability of the workforce

- Nigeria's education system has suffered from a lack of investment in institutions
- As a consequence, a quarter of the population is considered illiterate. However; given the right tools, they are capable of improving their quality of life
  - Poorly educated and illiterate users have proved to be surprisingly adept at using mobile technology
- Ubiquitous broadband service is vital in supporting a number of 'e'-initiatives
  - Nokia introduced its Ovi Life Tools in November 2010 providing information on health, agriculture and education
  - Ericsson has also opened up one of its three African application development hubs in Nigeria, developing solutions targeted at health, education, agriculture and small business development
- The government has a role to play in making more of its own services available online

## Ovi Life Tools

- Ovi Life Tools is an information service, covering all 36 states in Nigeria, offering a wide range of information services including
  - **Healthcare**: Mother and childcare, health & fitness and disease information
  - **Agriculture**: Market prices for 25 crops/ commodities (at launch), news & advice, weather
  - **Education**: Learn English, acquire general knowledge and access exam results
  - **Entertainment**: Football results, music, news alerts, horoscopes and jokes
- Nokia's aim is for this service to address the needs of consumers and help improve their economic prosperity and quality of life
- It is currently offered via two basic Nokia handsets through the Airtel and Glo networks (with plans for wider availability), at affordable monthly prices[1]
- Services are available nationwide in three languages – English, Hausa and Pidgin English
- Ovi Life Tools already has over 6 million users worldwide

Note: 1. About NGN200 to 250 (USD1.30 to 1.50) per month for most subscriptions. More devices are expected to be added in the future

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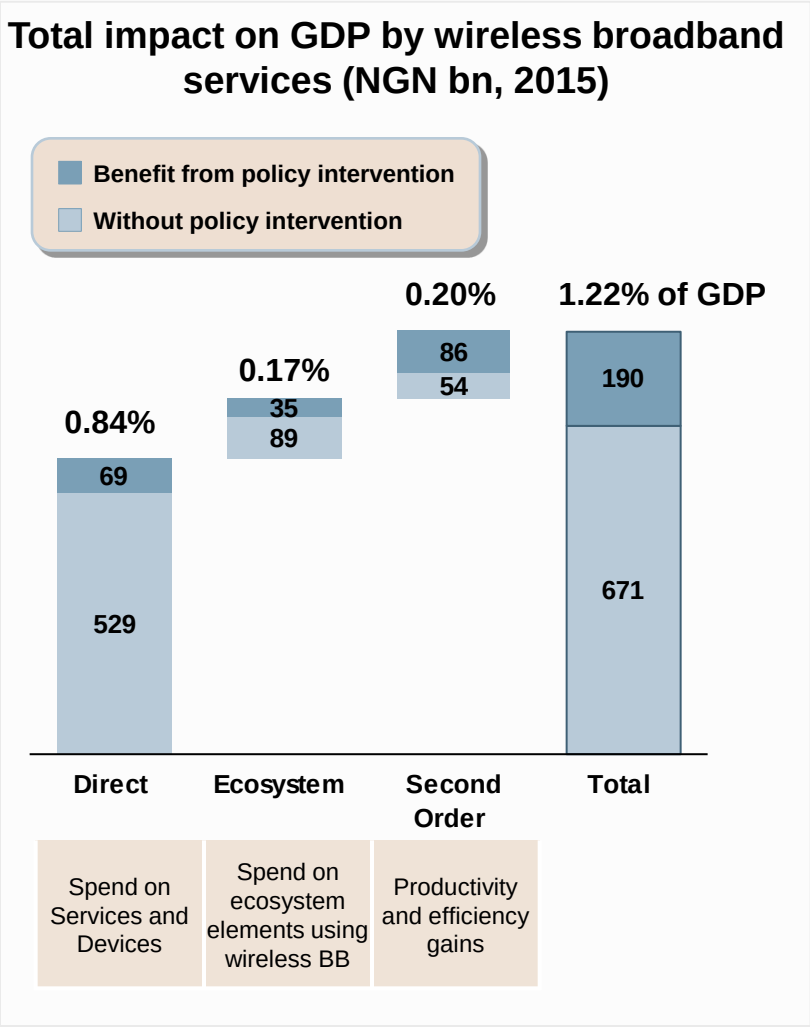
# Positive policy actions can contribute an additional NGN190 bn (USD1.1 bn) to GDP in 2015, helping to diversify the economy




- By differentially growing non-oil sectors more than the oil sector, broadband can support diversification of the Nigerian economy:
  - The 1.22% GDP increase (NGN 862 billion, or USD5 billion) in 2015 shown on the left translates into 1.7% growth for non-oil sectors
  - If positive policy actions are taken to remove barriers to broadband, the benefit to GDP in 2015 will be NGN190 billion (USD1.1 billion) or 0.27% of GDP
- Government support can take the form of:
  - removing barriers to wireless broadband, as outlined in the final section of this report
  - supporting development of local web content and applications
  - implementing e-government initiatives, including online transactions for licence and levy payment
  - committing to publishing state-owned datasets (e.g. population, geography, financial) so that entrepreneurs can leverage their benefits

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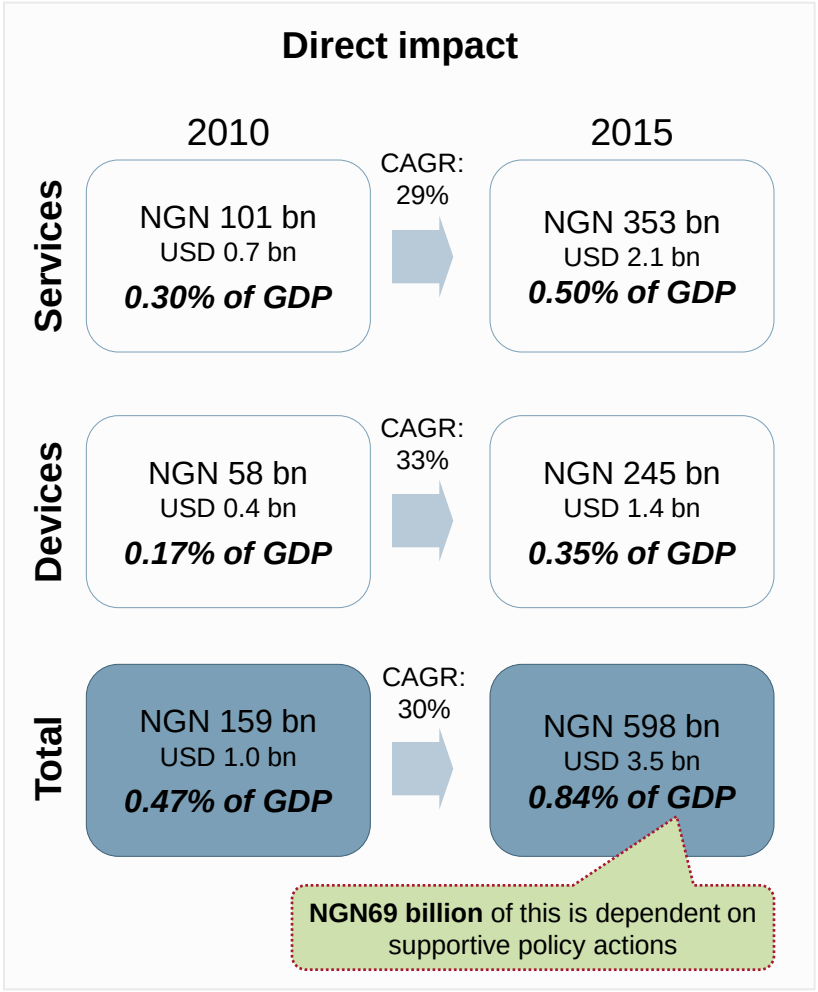
Source: Analysys Mason, UNCTAD Information Economy Report 2010

# Wireless broadband will have a direct revenue impact of NGN598 bn or USD3.5 bn (0.7% of GDP) in 2015




## Key metrics – direct impact of wireless broadband penetration

| Parameter | 2010 | 2015 |
|---|---|---|
| **Wireless broadband users (million)** | 1.3 | 13.9 |
| **Penetration of Population** | 1.0% | 9.4% |
| **ARPU** | NGN5,505 (USD36) | NGN1,877 (USD11) |
| **% HHs with wireless BB connection[1]** | 3.6% | 20% |
| **% businesses with wireless BB connection[1]** | 58% | 71% |

*The revenue calculated here is in addition to wireless telephony revenues, which in 2009 were USD6.2 billion (or 4% of GDP)[2].*

*By 2015, basic wireless telephony revenues are expected to reach over USD8.4 billion, but will have declined to only 2% of GDP.*

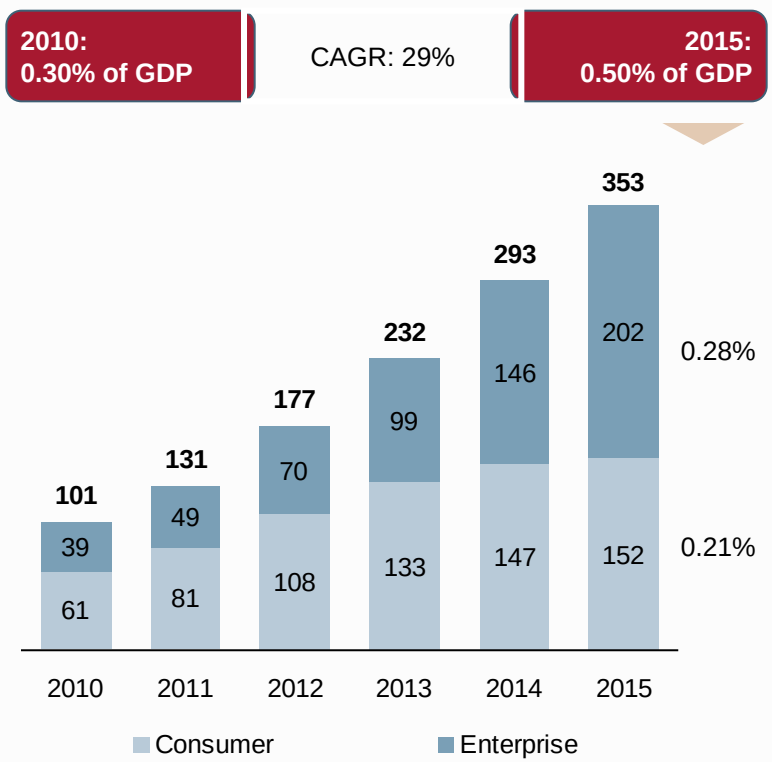
Note: 1. Multiple users per household / business

Source: Analysys Mason, [2]Pyramid Research

# Consumers will drive service uptake, as more cybercafe users opt for personal broadband access

1 Services

**Projections for consumer and enterprise spend on wireless broadband services (NGN billion)**



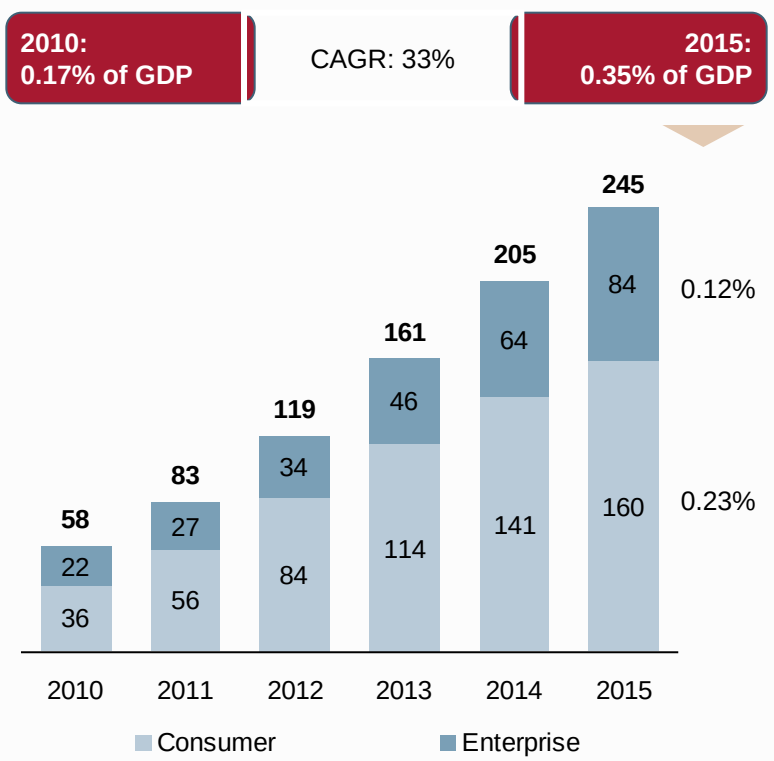

- Revenue from enterprises is not expected to exceed that from consumers until 2015 due to the relatively small formal enterprise sector in Nigeria
  - Total service revenue is expected to be NGN353 billion (USD2.1 billion)
- Cybercafe usage is declining in favour of individual subscriptions
  - Only 66% of users accessed the Internet from a cybercafe in 2009 (down from 82% the year before) as workplace, home and mobile usage increased
- Enterprise service revenue will be driven by demand for high quality connectivity, while consumers are likely to accept lower-cost, reduced quality packages

Source: Analysys Mason, NigAMPS

# Low-end smartphones and PCs will increasingly become the preferred consumer broadband devices

2 Devices

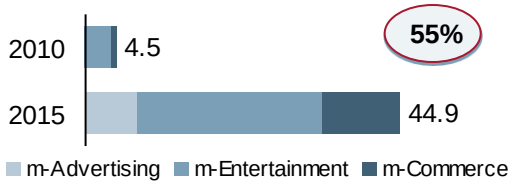
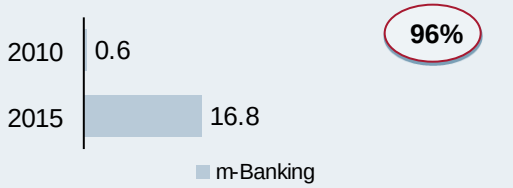
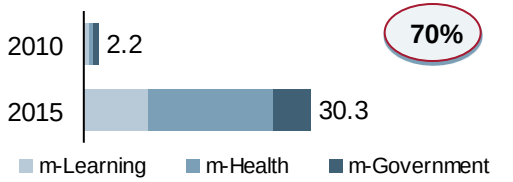
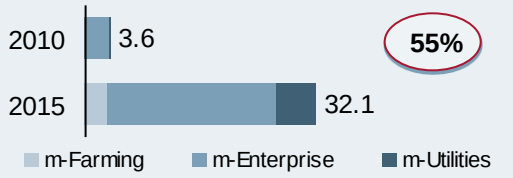
**Projections for consumer and enterprise spend on wireless broadband devices (NGN billion)**




- Consumer wireless broadband usage will be driven by
  - an increase in PC ownership, expected to rise[1] from 7% of households in 2009 to 13% in 2014
  - increasingly affordable and feature-rich smartphones
- We expect enterprises to make less use of tablets and other dedicated mobile devices than in other markets, although they may take advantage of smartphone and USSD or SMS based applications to interact with their workforce
- The total broadband device market size is expected to be NGN245 billion (USD1.4 billion)

Source: Analysys Mason, [1]Alcatel-Lucent Market Advantage

# Nigeria's digital economy is burgeoning and would benefit from government commitments to providing online services

| Wireless BB Ecosystem | Description[1] | Wireless Ecosystem Revenues (NGN bn) | CAGR |
|---|---|---|---|
| 1 Consumer / Retail | • Includes:<br>◆ M-Commerce<br>◆ M-Entertainment<br>– M-content<br>– M-gaming<br>– M-app<br>◆ M-Advertising |  | 55% |
| 2 Financial Service | • Consists of M-Banking and remittances using wireless BB |  | 96% |
| 3 Social Services | • Includes services such as learning, healthcare and governance accessed wirelessly |  | 70% |
| 4 Corporate / Verticals | • Use of wireless broadband for farming information, utilities such as M2M and for enterprise solutions |  | 55% |

Wireless ecosystem revenues

NGN 124 bn

USD 720mn

***0.17% of GDP***

**NGN35 billion** of this is dependent on supportive policy actions

Note: 1. 'm' refers to wireless broadband enabled services accessed through mobile handsets or data modems

Source: Analysys Mason

# Wireless broadband will create NGN410 bn (USD2.5 bn) of indirect value through 2015, mostly outside the oil industry

## Estimation of impact on productivity due to wireless broadband

***Working population with wireless broadband connectivity[1]***

2010: 0.3 mn → CAGR: 73% → 2015: 5.2 mn

**Increase in industry productivity in 2015**
NGN 140 bn
(USD 800 mn)
***0.2% of GDP***

**NGN86 billion** of this is dependent on supportive policy actions

## Industry-wise impact on productivity due to wireless broadband (2015)

| Industry Vertical | Industry Contribution to GDP in 2015 | Share of Increase in Productivity in 2015 |
|---|---|---|
| Manufacturing, Mining & Industry | 49% | 17% |
| Services | 24% | 67% |
| Agriculture | 27% | 15% |
| **Total** | **NGN 70,908 bn** | **NGN 140 bn** |

*Approximately 35% of GDP is expected to be derived from petroleum products, included in this category. Oil revenue is likely to be minimally affected by improved broadband access.*

Industrial productivity increases as workers increasingly use email and electronic file exchange, have quicker access to business critical information and can access more distant customers and suppliers. Improved broadband also increases the attractiveness of Nigeria to foreign investors.

Note: 1. Includes retail wireless broadband connections used for official / business purpose and corporate connections

Source: Analysys Mason, EIU, Euromonitor

# Wireless broadband can play a valuable role in diversifying the Nigerian economy away from petroleum products

| Industry vertical | Penetration of wireless broadband and user base (in parentheses) | Productivity gain in 2015 (NGN bn) |
|---|---|---|
| **Manufacturing, Mining & Industry** | 2010 1% *(0.04 mn users)*<br>2015 14% *(0.8 mn users)* | 2015 24<br>*(0.1% of industry revenues in 2015, 0.25% of non-oil industry revenues)* |
| **Services** | 2010 1% *(0.3 mn users)*<br>2015 19% *(4.3 mn users)* | 2015 94<br>*(0.5% of industry revenues in 2015)* |
| **Agriculture** | 2010 0% *(0.0 mn users)*<br>2015 2% *(0.7 mn users)* | 2015 21<br>*(0.1% of industry revenues in 2015)* |

- Enhanced growth in the services and non-oil industrial sectors will support the diversification of the economy
- Increased productivity in the agricultural sector can support rural economic development

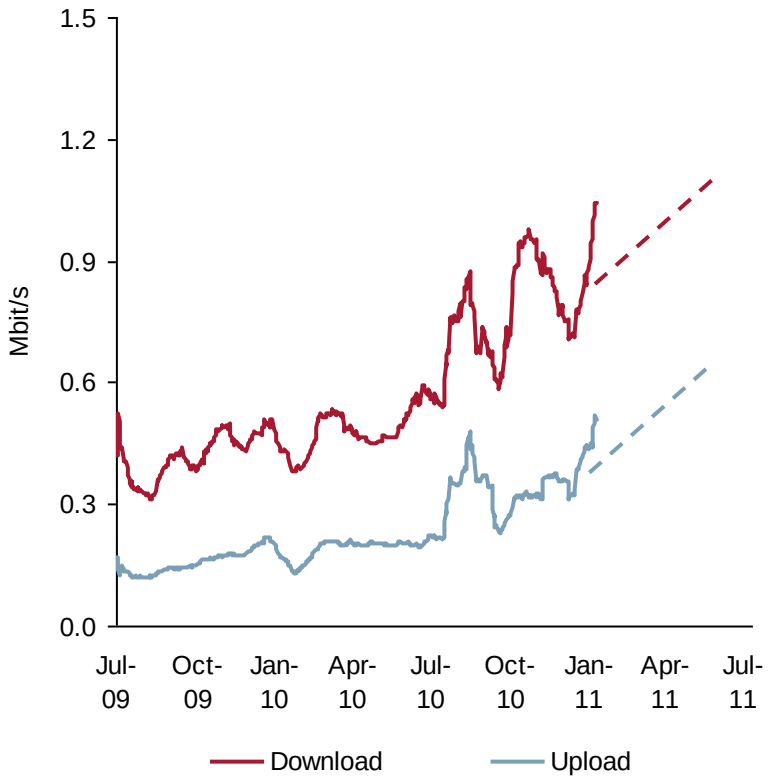
Source: Analysys Mason, EIU, Euromonitor

# Contents

# It is clear that there is demand for wireless broadband in Nigeria: can the market and policymakers keep up?

- The key challenges facing stakeholders in increasing access to and affordability of broadband are:
  - **Addressing avoidable cost obstacles.** Obstacles include federal tax rates, administrative burden of local taxes, non-standard site approval and environmental impact assessment processes, and poor electricity infrastructure. In several cases there are solutions that will not reduce government revenue but will improve broadband access
  - **Awarding spectrum for wireless broadband.** Additional spectrum allows operators to support greater demand and extend their network reach quickly and with little cost to government, operators or consumers
  - **Coordinating deployment of nationwide fibre networks.** Although there are apparently multiple fibre networks, the market for transmission is underdeveloped.
  - **Supporting Internet use by rural Nigerians and women.** Internet use in rural areas has the highest cost, but has the potential to yield great value in learning, health and social services. The gap between women and men in use of broadband should not be allowed to widen further.

**Actual and forecast connection speeds in Nigeria**




Source: Analysys Mason, Speedtest.net

# Tax harmonisation and spectrum management can make a major impact on cost and reach of broadband

| Policy imperative | Recommendation | Comments |
|---|---|---|
| Addressing avoidable cost obstacles | Federal government review the tax burden imposed on broadband operators | • Any additional taxes (on services or devices) serve to discourage wider takeup of personal broadband subscriptions |
| | Implement harmonised levies/taxes and environmental approvals processes at state and local levels of government | • Ongoing discussions between mobile operators and the Joint Tax Board, aimed at harmonisation, should continue to be supported<br>• Environmental Impact Assessment of mobile towers should be uniformly based on international best practice, and should not vary between states and local authorities in Nigeria |
| | Continue efforts to rehabilitate the mains electricity infrastructure | |
| Awarding spectrum for wireless broadband | Adopt best practice spectrum policy, with spectrum managed by one entity | • Policymakers should ensure that future spectrum awards run smoothly – and that 2.6GHz is brought into use quickly to support mobile broadband in urban areas<br>• There is currently confusion around when the 2.6GHz and Digital Dividend will be made available to the NCC for release to mobile operators. Uncertainty will add delay and cost to the deployment of broadband.<br>• Clarity is also required on whether 900MHz spectrum can be refarmed |
| | Quickly identify and assign spectrum suitable for wireless broadband | • Award of 2.5GHz spectrum should be a priority, and planning for Digital Dividend spectrum awards should be underway<br>• A spectrum band plan harmonised with that used in other countries will ensure Nigeria benefits from widely used technologies |

Continued…

analysys mason

Source: Analysys Mason

# Ubiquitous wireless broadband requires the support of a national fibre backbone network to link base stations

| Policy imperative | Recommendation | Comments |
|---|---|---|
| Encouraging deployment of backbone fibre networks | Support a competitive market for nationwide fibre backbone connectivity | • Numerous other countries' governments have developed plans[1] to improve fibre connectivity while harnessing private sector initiative<br>• Nigeria urgently needs to develop a detailed and realistic plan |
| Supporting Internet use by rural Nigerians and women | Support deployment of cybercafes and Internet kiosks in rural areas | • Cybercafes have proven their value in incubating demand for Internet services<br>• Urban areas are likely to be competitive and well-served by existing providers, and do not need coordinated support |
| | Identify reasons for low Internet use among women and implement actions to address | • Internet access can enhance empowerment of women by providing social, educational and economic opportunities |

Note: 1. For examples of fibre broadband plans, see the Analysys Mason report "Deployment models and required investments for developing rural broadband infrastructure in India".

http://www.analysysmason.com/about-us/offices/New-Delhi/CII_broadband_report/

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