



BACKGROUND PAPER

Enhancing Low Cost Access in Sub-Saharan Africa

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1. Introduction

The GSMA/ ITU recently signed a Memorandum of Understanding which calls for three areas of cooperation:

1. Supporting developing market projects:
2. Cooperation between industry & governments:
3. Global industry benchmarking

In Sub-Saharan Africa, both organisations plan to organise meetings between industry leaders and senior government representatives to agree an action plan that will establish an enabling policy and regulatory environment designed to encourage private investment aimed at expanding access to ICTs in rural and remote communities and deploying new advanced technologies.

This paper forms the basis for discussions amongst industry leaders. The output will be clear recommendations from industry to governments on key policy directions that will enable private enterprise to deliver a sustainable expansion of the mobile ICT franchise to millions more Africans.

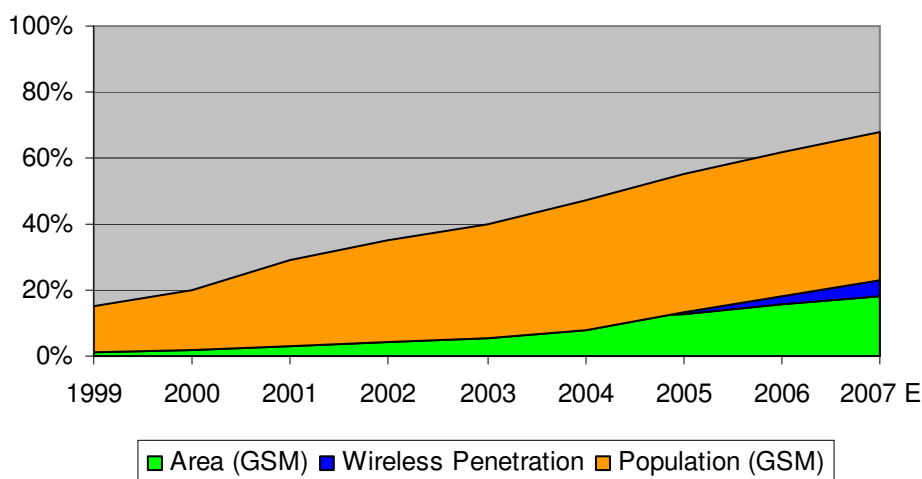
The industry recommendations will be presented to government representatives and regulators at the ITU Public & Private Sectors Partnership Forum in Nairobi on 4-5 June 2007, and will be positioned to form a central platform within the ITU Secretary General's recently announced "Marshall plan for Africa" and subsequent multilateral policy directives for the continent.

The policy recommendations will be presented at a high level meeting between industry leaders and governments in the autumn of 2007.

2. Universal Access

Mobile coverage in Sub-Saharan Africa is growing impressively, up from 20% population coverage in 2000 to over 60% in 2006.¹

Sub-Saharan Africa Population Coverage



Mobile operators continue to invest substantially in network roll out. In 2006, the Sub-Saharan mobile operators' CapEx to sales ratio was above 25%, ranking among the highest globally. Operators in the Middle East and Europe, for example, have a CapEx to sales ratio of around 10%. Given that this investment commitment will continue, many mobile operators expect to reach 90%+ population coverage by 2010.

Mobile penetration has increased dramatically in Sub-Saharan Africa, up from 1% in 2000 to 18% in 2006. This is due to the fact that mobile services are becoming more affordable:

- Handset prices are declining rapidly, for example the GSM Association's programme has delivered a sub \$30 GSM handset and a 3G handset at around \$100. A recent report by ABI Research suggests that more than 330 million handsets priced beneath \$20 will ship annually by 2011;
- Mobile tariffs are also on downward trend, in 2006 averaging around \$0.23 cents per minute in Sub-Saharan Africa versus \$0.42 in Europe;
- Average Revenue Per User has fallen from around \$30 in 2000 to \$14 in 2006; and
- Very low pre-pay top up denominations are making mobile services more available to poorer members of society and mobile payphones are bringing telecommunications services to those that are not directly connected.

Despite the increasing affordability of mobile services, in 2006 some 350 million Sub-Saharan Africans had access to mobile services but were not connected. One question regarding universal access is whether government policy should be directed

¹ "Universal access – how mobile can bring affordable communications to all" a 2006 GSMA report. <http://www.gsmworld.com/universalaccess>

more at connecting the 350 million people that already have access but are not connected to mobile services, rather than creating a universal service fund (USF) via the collection of a % of operator revenues, that seeks to extend access in underserved areas. There is evidence that suggest USFs are a relatively inefficient way to develop universal access because:

- Typically an extra overhead is added to the cost of provisioning services;
- Globally, only 30% of monies collected by USFs have been dispersed; and
- Often a USF will identify an area to target but by the time the USF is ready to disburse funds, the market will have already covered that area.

Nevertheless, USFs are increasingly being established in Sub-Saharan Africa, with the aim of targeting:

- Network expansion with public/shared access models;
- Internet POPs in rural district centres;
- Internet to leading schools & “vanguard” users;
- Commercially run telecentres/cyber cafés; and
- ICT Training

A best practice guide may make recommendations along the following themes:

- Low levies, small staff, managed under the regulator;
- Independent and transparent financial reporting;
- Seed finance from Government & donors to leverage funds taken from industry;
- Competitive tenders for subsidies devised in full collaboration with the industry; and
- Regular review of fund status and achievements

3. International Gateway Liberalisation

A recent report launched by the GSMA, “Gateway Liberalisation – stimulating economic growth”² showed that following liberalisations, international call prices can fall from 30% to 90% and volumes can increase from 30% to 100%. Moreover, liberalisation attracts significant investment into the sector. Other key findings include:

Liberalisation delivers substantial economic benefits to a nation:

- Sector revenues as a percentage of GDP are much higher for nations that have liberalised.³
- A one percent improvement of telecommunication sector performance can increase the ratio of manufactured export to GDP by 0.37 percent and increases FDI by 0.75 percent.⁴
- Call prices can fall by up to 90% following liberalisation and call volumes can double.
- Conversely, ongoing IGW monopoly provision holds markets back:
 - In Bangladesh, telecoms investment as a percentage GDP, is 70% lower and call prices are 2 to 3 times higher than the average.⁵

Illegal by-pass, which typically grows within IGW monopoly or partially liberalised market environment, is the worst scenario for all parties:

- In countries that attempt to maintain IGW monopolies, illegal bypass can account for 30-60% or more of traffic.⁶
- Governments are faced with significant regulatory and law enforcement costs in seeking to prevent bypass and, at the same time, forgo tax revenue that could be generated by legal services.
- Consumers suffer from poor service quality and no customer service facilities.

The use of high international prices to cross subsidise the domestic fixed network is not appropriate in a mobile centric world. The old argument of gradual tariff rebalancing, supported by high international prices is no longer valid because:

- Mobile networks are delivering universal access, covering 60% of Africa’s population – three times the coverage rate in 2000.
- By 2010 mobile communications will reach up to 85% of people living in Sub-Saharan Africa.⁷
- In Africa the number of mobile phone subscribers overtook the number of fixed lines in 2001. In Kenya, mobile connections now outnumber fixed lines by 18 to 1 and in Tanzania by 32 to 1.

² <http://www.gsmworld.com/gateway>

³ Bressie K., Kende M., & Williams H., *Telecommunications trade liberalization and the WTO*, September 2004.

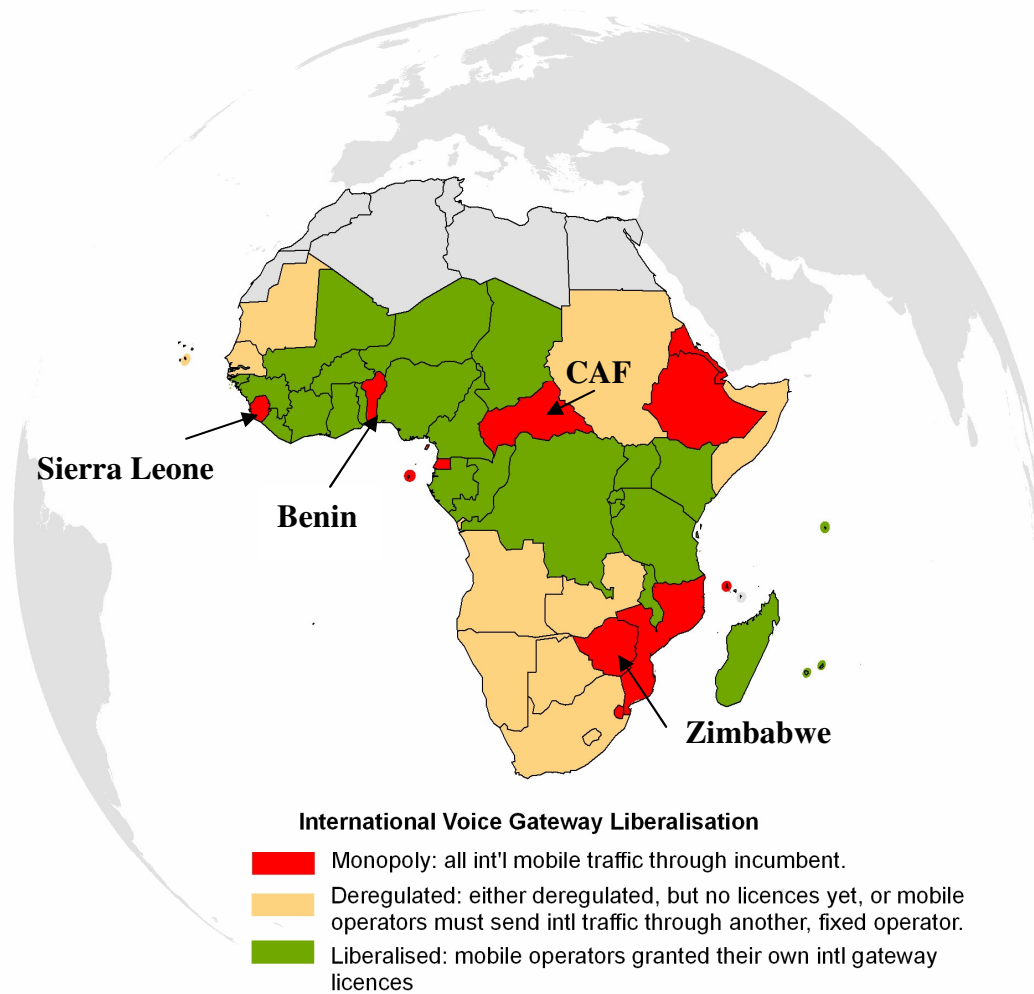
⁴ Rossotto, C. M., K. Sekkat and A. Varoudakis, *Opening up Telecommunications to Competition and MENA Integration in the World Economy*, World Bank, 2003.

⁵ Average calculated from the case study sample: Kenya, Malta, Morocco, Nigeria, Sri Lanka, Indonesia, Egypt, Bangladesh

⁶ Operator interviews suggest that bypass traffic accounted for the following proportions of total incoming and outgoing international traffic: Bangladesh 55%; Egypt 45%; Pakistan and Indonesia 40%; and Chad and the Democratic Republic of Congo 30%

⁷ GSM Association, *Universal Access, How Mobile Can Bring Communications to all*, 2006.

IGW Status, 2007



Out of 49 countries in SSA, the number of countries with a monopoly dropped from 47 in 1996 to 14 in 2006. However, Sierra Leone, Benin, Central African Republic and Zimbabwe are attempting to reassert IGW monopolies.

4. Interconnection Regimes

The ability for mobile networks to interconnect is a key enabler for market growth. The regime under which networks interconnect needs to be carefully designed to promote competition and ensure that appropriate investment incentives exist for all market players. Accordingly, interconnection and retail price regulation are viewed as two of the most important regulatory levers in a liberalised environment and the commercial terms governing interconnection are increasingly being regulated.

Regulators are conforming to a standard “best practice” in setting interconnection charges that includes:

- The use of cost based rather than retail price based methods;
- The use of incremental cost methodologies; and
- Putting the information in the public domain.

In Sub-Saharan Africa the ITU’s COSITU model is often referred to by incumbents as the de facto model for interconnection. However COSITU may artificially inflate the cost structure of mobile operator and is unlikely to conform to the European Commission’s specifications that cost orientated prices should be:

- Based on forward looking Long Run Average Incremental Costs;
- Consistent with concepts of current cost accounting and the costs of an efficient operator; and
- Inclusive of a mark-up to cover a portion of the joint and common costs of an efficient operator.

There are a number of key modelling and price-setting issues, such as:

- What type of model (bottom-up, top-down, hybrid)?
- How many years should the model include (single-year, multi-year, historic data)?
- What depreciation method should be used (straight-line, CCA, annuity, cash)?
- What standard of efficiency should be used (actual, most, least, average)?
- Which technologies should be modelled (GSM only, UMTS only, both)?
- Which services should be modelled (voice only, voice and 2.5G data, all services)?
- How should the cost of capital be estimated (country risks, technology risk)?
- How should retail costs be treated (S&M, customer care, general overheads)?
- How should fixed and common costs be estimated (coverage network, NMC, licence) and recovered (EPMU, Ramsay pricing)?

Moreover, other factors and analysis exogenous to a LRIC model need to be taken into consideration, such as:

- Symmetrical or asymmetrical MTRs?
- Glide path or one-off cuts?
- The inclusion of a network externality
- The use of above-cost mobile termination rates to fund network expansion

The last two points are particularly relevant to Sub-Saharan Africa mobile operators.

Several regulatory authorities have recognised that termination rates can have a direct impact on spreading services, given the significant weight termination rates have in operator revenues. The World Bank has also published supporting evidence.⁸

Malaysia, for example, uses termination rates as a means to compensate operators for rolling out mobile services in rural areas. The regulator sees that the majority of roll out costs in rural areas are external to operators' immediate control and hence should be regarded as an unavoidable cost and should be included in the LRIC calculation. Accordingly, mobile termination rates have increased in consecutive years.

In Brazil, the regulator has decided not to reduce the interconnection charges in order to accelerate the development of the mobile market. Termination charges have increased by more than 11% between 2002-2006. The interconnection between fixed and mobile networks has played a major role in the growth of prepaid mobile services. Very few calls are originated on prepaid lines – they are principally used to receive calls – and hence generate very low ARPU, but these very low ARPU customers become viable via the interconnect revenues they generate. Prepaid customers account for around 80% of total mobile lines in Brazil. Thus the capacity for investment by mobile operators in network upgrades and coverage expansion is highly dependent on the interconnection regulation policy.

In Chile and Columbia, the regulators allow operators to charge asymmetric interconnection rates for rural telephone. Rural termination rates are several times higher than urban rates; the largest Chilean rural operators derives 60% of its total revenues from its positive interconnect balance with urban operators.

⁸ “*Report on Regulating Competition, Interconnection and Prices*” 23 December, 2005, World Bank (InfoDev Division)

5. Licensing Best Practice

Many GSM licenses across Sub-Saharan Africa are approaching their full term. New licenses are also being issued for 3G services and other wireless broadband technologies and there is a trend to evolve legacy licenses into converged, technology neutral licenses.

The uncertainty of future license conditions and ambiguity surrounding evolving market structures increases investment risk and the cost of capital for operators today.

License evolution raises some critical regulatory issues including:

- Criteria for spectrum renewal/ reattribution;
- Review of licence fees;
- License obligations and conditions;
- Spectrum refarming; and
- Trading

Criteria for spectrum renewal/ reattribution

Licence renewal creates a decision for regulators as to the criteria that should govern when spectrum should be re-assigned to existing licence-holders or alternatively re-allocated between operators. Particular players may see licence renewal as a means by which to level the playing field between operators or as a means to enter the market for the first time. While re-allocation can lead to spectrum being used more efficiently and promote competition in some circumstances, the potential for spectrum re-allocation carries a serious risk of freezing new investment until the completion of the licensing process has established the future rights to spectrum use. This risk is exacerbated where regulators do not follow a clear set of criteria or do not provide sufficient timeframes for the re-allocation process.

In setting out a framework in which to consider spectrum renewal, the first step will be to examine the policy objectives that can be advanced by approaches to licence renewal. This will include examining to what extent spectrum renewal should be targeted at achieving objectives beyond promoting efficient spectrum use.

The next step will be to relate these objectives to different approaches to determining when existing spectrum licences should be renewed or re-allocated between operators. Ultimately, this is aimed at ensuring that spectrum is in the hands of the operator that can deliver the greatest value from its use including that spectrum is not left unused or underutilised. For instance, while Bangladeshi mobile operators have limited spectrum allocations, certain spectrum that could be used for GSM is currently being left idle because it has been allocated to some wireless local loop operators that have not established businesses.

In addition, the process by which spectrum re-allocation decisions are made can also significantly impact market outcomes:

- Outcomes can differ significantly depending on whether spectrum re-allocation is determined by administrative decisions based on particular criteria or by market mechanisms such as overlay auctions or spectrum trading.

- Mobile investments can have very long pay-back periods and thus uncertainty over the future assignment of spectrum can affect investment well in advance of the date of spectrum re-allocation. Regulatory approaches that provide insufficient notice periods risk deterring network investment.
- Where spectrum is to be re-allocated despite reasonable expectations of spectrum licences being renewed, a commitment to compensation can be important.

Review of Licence Fees

The charges for spectrum use, including upfront sums determined at auctions or annual spectrum charges can play a role in ensuring efficient spectrum use. Where operators are prevented from trading spectrum directly between each other, the regulator can set charges to encourage underutilised spectrum being returned so that it can then be re-allocated (potentially by auction) to higher value uses. For instance, the New Zealand Ministry of Economic Development permitted licence renewal subject to existing licence holders being prepared to pay a price calculated to reflect the market value of the spectrum. However, if charges are set too high they may harm efficiency. Nor should spectrum charges levied at the time of spectrum renewal be used to extract excessive payments from operators that have already made substantial commitments in the market. If spectrum charges do not change spectrum use then they simply represent a transfer from operators (and their customers) to the regulator without improving the efficiency of spectrum use.

Obligations and conditions

Spectrum licences can contain a range of obligations and conditions in addition to the general right to use that particular spectrum. These include conditions which are integral to the licence such as the term of the licence as well as, potentially, obligations relating to more general policy objects such as universal service and industrial development goals.

Regulators are gradually moving towards accepting that conditions associated with spectrum licences should be limited to those that are directly related to efficient spectrum use. Additional obligations which were once seen as a way to effectively force operators to cross-subsidise non-commercial objectives are being recognised as a costly means of achieving those objectives. For instance, rollout obligations may require substantial network investment even when the investment is not warranted by the current state of technology or demand factors. If market circumstances do not turn out as favourably as first envisaged, regulators are faced with relaxing the initial obligations (potentially creating legal challenges by other stakeholders) or operators being forced to exit the market.

Refarming

Licence renewal can also provide the opportunity for changes to restrictions on the use of that spectrum. Of key significance to mobile operators is the ability to use current '2G spectrum' for 3G services so as to take advantage of the superior propagation properties of lower frequency spectrum. Spectrum refarming can thereby reduce the cost of mobile services to customers.

While there is a strong case for spectrum liberalisation and refarming, it may be delayed by the need to resolve associated transitional issues. For instance, some

regulators may perceive that operators might receive windfall gains by the change unless they are required to pay an additional licence fee. 3G-only operators may be concerned that they will be disadvantaged unless they also receive access to previous 2G spectrum. In addition, change of use in relation to other spectrum (such as removing mobility restrictions on wireless local loop spectrum) may run the risk of new mobile competitors entering without necessarily facing the same costs and conditions as the existing players.

Trading

Spectrum trading can promote efficient spectrum use by enabling spectrum to be acquired by the operator who can generate the greatest value from the use of that spectrum. There are a number of aspects of the relationship between spectrum trading and licence renewal including:

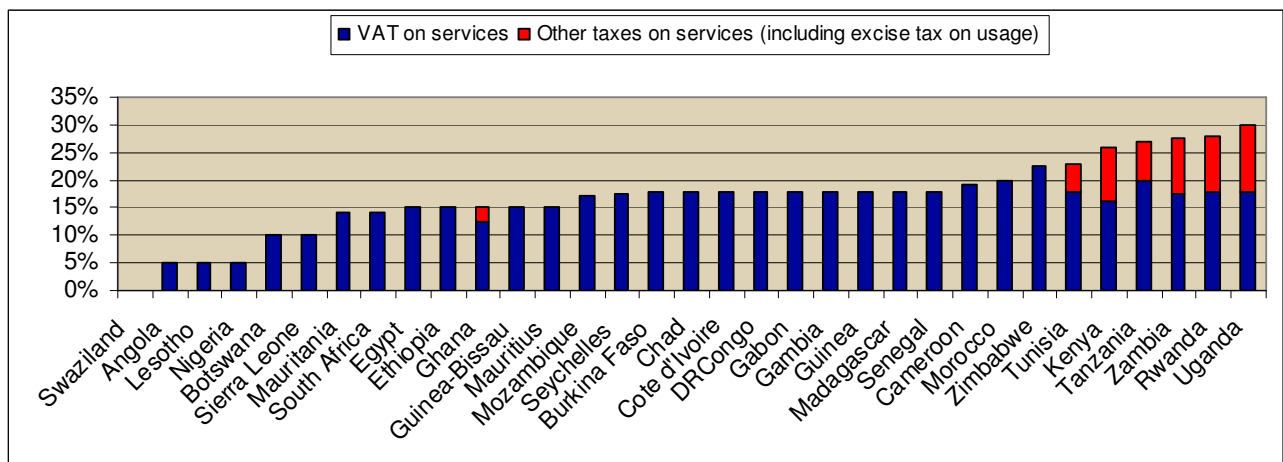
- The time of licence renewal can provide the opportunity to introduce the right to trade spectrum between users;
- The introduction of spectrum trading, in turn, can remove the rationale for regulators to determine whether spectrum licences should be renewed or re-allocated between users and the rationale for administrative pricing of spectrum; and
- Spectrum trading nonetheless is likely to be hindered where future rights to spectrum are uncertain and hence spectrum renewal can be as important to efficient spectrum trading.

6. Consumer Taxes

The impact that mobile communications is having on economic and social development in East Africa is akin to that of other major enabling infrastructure like roads, ports and railways. All stimulate trade, create jobs, generate wealth and enhance social welfare. Mobile communications, in particular, is making a profound impact by:

- Delivering universal access, mobile networks cover the vast majority of East African citizens, and operators are investing substantial amounts in further network roll out;
- Delivering universal services, mobile phones account for around 95% of all telecoms connections in East Africa; and
- Boosting GDP, recent analysis by Deloitte shows that a 10% increase in mobile penetration leads to a 1.2% increase in annual GDP.⁹
- Despite the positive impact of mobile communications, East African community member states impose a sector specific tax on mobile usage that is regressive, hitting poorer consumers harder. The excise duty also restricts the affordability of mobile services for many millions of East Africans.

Globally only a small minority of countries, 16 in total, impose mobile specific taxes. In Africa 7 countries do so and as the graph below shows, the East African community is at the top of the mobile tax table.



Source: Deloitte Analysis

Key Findings

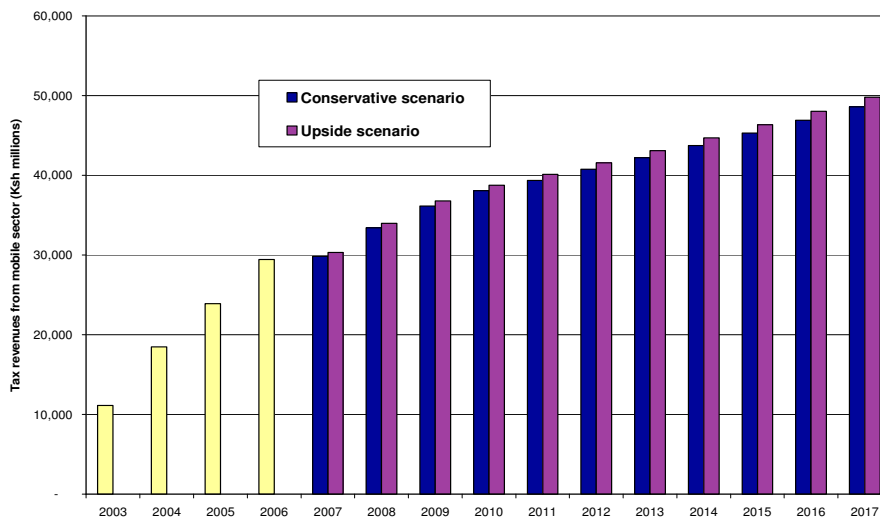
The report “Taxation and the Growth of Mobile in East Africa”, available to download on www.gsmworld.com/eastafrica demonstrates that by lowering and removing mobile specific taxes many millions more consumers will connect, not only boosting economic growth, but also increasing total government tax receipts.

⁹ “Global Mobile Tax Review” 2006-2007, GSM Association & Deloitte

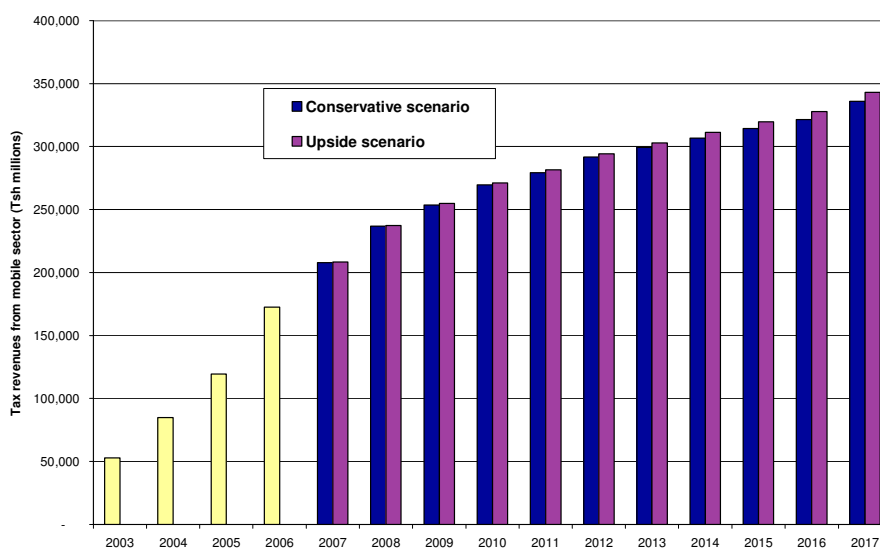
The key findings are:

- Total tax receipts from the mobile industry will continue to rise year on year if excise duty on mobile services is removed,
- In 2006, the mobile industry's GDP contribution in East Africa ranged between 4% to 5% and it employed around 500,000 people
- In Kenya, Tanzania and Uganda, lowering excise duty will be revenue positive for governments and 0% will also be revenue positive
- In Rwanda, if a 5% excise duty is imposed in 2007, by 2017 government receipts are likely to be 3% less
- About one third of industry revenues go to the governments of East Africa
- 70% of East African's have access to mobile networks but only 12% are connected. There are close to 100,000 mobile payphones
- Mobile, as a percentage of total connections, ranged between 93% and 96%

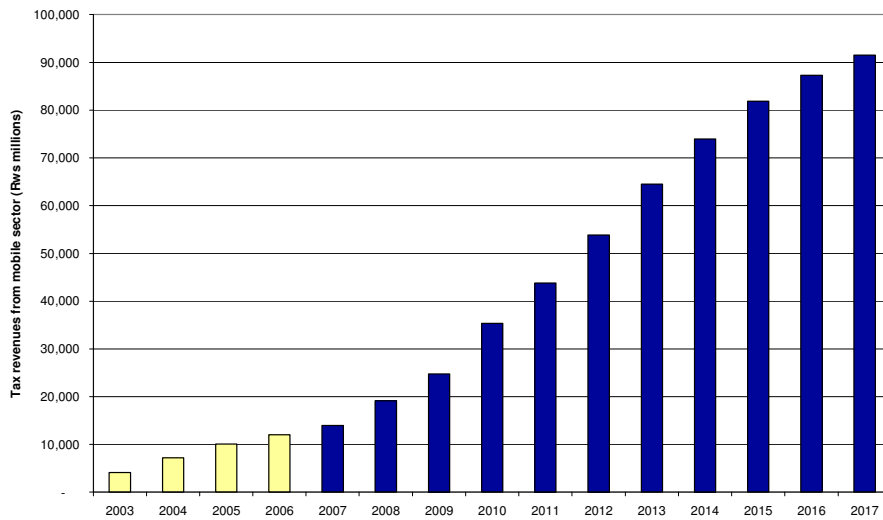
Kenya: Mobile tax receipts if 10% excise duty is removed



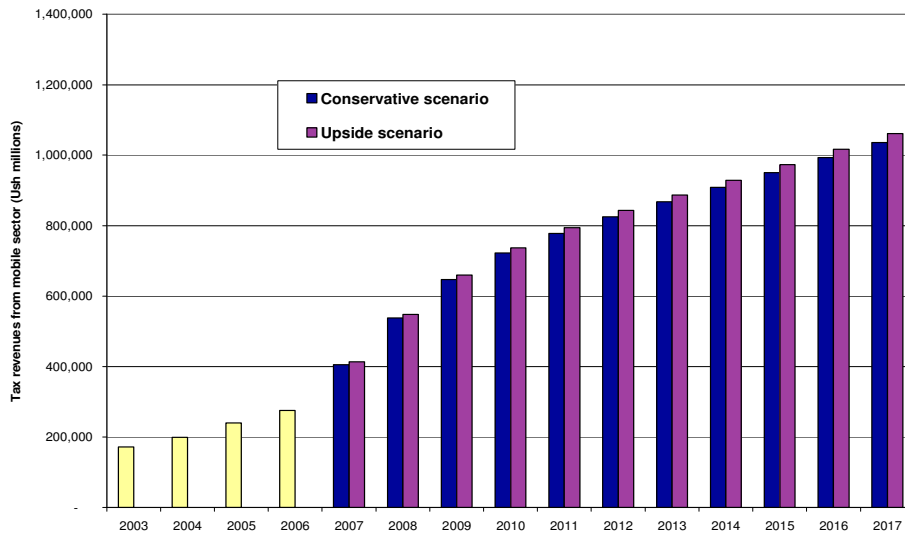
Tanzania: Mobile tax receipts if 7% excise duty is removed



Rwanda: Mobile tax receipts if no excise duty levied



Uganda: Mobile tax receipts if 12% excise duty is removed



7. Industry Recommendations

Universal Access

Recommendations:

- UFS's should be postponed until market has reached a plateau or there is clear evidence of market failure
- Define a formula that relates universal service cost to coverage expansion over a period, say 5 years
- Industry to state coverage goals for the period
- Review governance of USF and recommend the best approach to achieve ITU objectives (and operators objectives)
- Focus objective of funds on population, not geographic coverage

Actions:

- Prepare a pragmatic guide and approach to:
 - Defining scope & capping cost (fixed fee v % of revenue)
 - Managing fund – transparency & governance
 - Refund mechanism
- ITU, World Bank et al to communicate messages to governments

Liberalisation of Gateways

Recommendations

- Trade & FDI grow as a result of gateway liberalisation within an Africa specific context
- The benefits of cross border interconnection resulting from liberalisation are significant
- Multinational businesses are more likely to work with countries that have liberalised IGW

Actions

- Produce an Africa specific white paper on liberalisation that achieves the points above
- Ensure that public stakeholders are aware that the private sector is on the cusp of delivering what the public shared infrastructure concepts may achieve
- Look to align messages with the IMF, ITU and World Bank to pressure governments to fully liberalise and to resist temptation to re-nationalise

Interconnection regimes

Recommendations

- Need to have a common approach to understanding cost models
- Review COSITU/World Bank models and show strengths and weaknesses of models versus LRIC
- Need to get common messaging from World Bank and ITU when communicating to governments

Actions:

- Look at developing a best practice guide on cost modelling
- Develop common approach to quantifying externalities

Licensing best practice

Recommendations

- Define a clear economic framework to assess the various elements of license renewal (fees, obligations, etc) with case studies e.g. Gabon
- Need to highlight and demonstrate the importance of long term licensing certainty to stimulate investment
- Need to align process with WSIS directives and MDGs

Actions:

- Develop a white paper reviewing key aspects of licensing and licence renewal
- Demonstrate linkage between licensing policy and meeting universal service targets / social goals

Consumer Taxes

Recommendations:

- Mobile specific taxes, levied in addition to VAT, discourage the take up and usage of mobile communications and constrain the positive social-economic contribution of the industry. Such taxes should be lowered and removed
- East African telecoms and finance policy makers, in collaboration with the mobile industry, should examine in detail the effect of taxation in their respective jurisdictions. Key considerations should include whether mobile should be taxed in a different manner from the remainder of the economy, i.e. treating mobile communications as a basic need not as a luxury.
- In the case of mobile specific taxes, analysis should focus on the impact of lowering as well as restructuring tax regimes to increase the affordability of mobile services. Doing so can create net positive effects for government, industry and consumers.

Actions:

- Review approach and consider broadening the scope to include regulatory fees, other taxes across the majority of Sub-Saharan Countries