

*Evidence for ICT Policy Action*

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# Understanding what is happening in ICT in South Africa

A supply- and demand-  
side analysis of the  
ICT sector

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and Christoph Stork*



## Research ICT Africa

Research ICT Africa (RIA) is an information and communication technology (ICT) policy and regulation research network based in Cape Town, South Africa, under the directorship of Dr. Alison Gillwald. As a public interest think tank, RIA fills a strategic gap in the development of a sustainable information society and knowledge economy. The network builds the ICT policy and regulatory research capacity needed to inform effective ICT governance in Africa. RIA was launched ten years ago and has extended its activities through national, regional and continental partnerships. The network emanates from the growing demand for data and analysis necessary for appropriate but visionary policy required to catapult the continent into the information age. Through development of its research network, RIA seeks to build an African knowledge base in support of sound ICT policy and regulatory design, transparent implementation processes, and monitoring and review of policy and regulatory developments on the continent. The research, arising from a public interest agenda, is made available in the public domain, and individuals and entities from the public sector, private sector and civil society are encouraged to use it for purposes of teaching and further research or to enable them to participate more effectively in national, regional and global ICT policymaking and governance.

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## Executive summary

While the South African information and communication technology (ICT) sector continues to demonstrate dynamic growth, particularly as driven by the mobile sector, the growth has not met the national objective of affordable access to the full range of communication services. Access to mobile services continues to grow, however, broadband access (particularly access to fixed broadband) remains very low in comparison to other lower-middle-income countries, and the prices of all communication services remain high by both African and global standards.

Sector growth continues to rise at (at least) double the national growth rate, and is now contributing around 6% to national GDP. This growth is largely despite the sector's policy, however, than because of it. The policy environment has not created an environment conducive to investment, nor institutional arrangements likely to result in effective competition - resulting in a number of regulatory bottlenecks that constrain sector expansion.

Fixed-line access continued to decline, to 18% of households, in 2012, with only 24% of households in urban areas, and 5.8% of households in rural areas, having a working fixed line. Fixed-to-mobile substitution has been extensive, with over 86% of respondents to the RIA South Africa 2012 Household and Individual ICT Access and Use Survey indicating that they use mobile phones instead of fixed. Over 42% stated that fixed lines are not available where they live, and 51.5% stated that they cannot afford one.

Ownership of mobile phones continues to grow. Claims by mobile operators of penetration rates of over 100% reflect the number of SIMs in the market, a significant portion of which are duplicates, in addition to the SIMs used for non-human activities such as satellite tracking. Individual mobile phone ownership stands at 86% of the adult population (15 years or older). There are now few differences, in use of basic voice and SMS services, between mobile phone users in urban and rural areas, or between those at the top of the pyramid (ToP) and those at the base of the pyramid (BoP).

The continued uptake and increased use of mobile phones have been stimulated by the availability of smarter devices at lower cost and by reductions in the cost of services. Mobile prices have dropped via a mobile termination rate (MTR) reduction glide path established by the regulator, the Independent Communications Authority of South Africa (ICASA), with the final MTR reduction taking place in March 2013. However, the MTR is still far from cost, and the cheapest mobile prices in South Africa still lag behind countries where the regulator has enabled competitive pricing pressure by enforcing a cost-based MTR.

The two small mobile players, Cell C and Telkom Mobile, have finally been able to put pressure on incumbents Vodacom and MTN, forcing down prices and stimulating innovative product and price offerings. However, while South Africa's ranking on the RIA Pricing Transparency Index: Prepaid Mobile improved from 30<sup>th</sup> in 2012 to 22<sup>nd</sup> in 2013 (out of 46 African countries indexed), the cheapest mobile prepaid product in South Africa is still nearly 7.5 times more expensive than the African continent's cheapest similar product, and still three times more expensive than the cheapest product available from a dominant operator in Africa.

Although South African voice prices are finally coming down (largely via the MTR reductions), a declining use of voice services and growth in data use are having a significant impact on the development of the mobile market. The competitiveness of the ICT market can no longer be understood in terms of distinct voice and data segments. Voice and data services need to be understood in relation to each other if one is to understand the changing nature of business and impacts on consumer welfare. It is becoming increasingly difficult to distinguish between voice and data subscribers: airtime is increasingly converted for data use; data services are increasingly used to make voice calls, through voice over IP (VoIP); and paid-for SMSs are giving way almost entirely to free instant-messaging services.

*Regulatory bottlenecks hamper market expansion in South Africa*

*The mobile termination rate glide path led to a decline in voice tariffs*

*As voice revenue declines, data services become a priority for operators*

*South Africa's low user uncapped mobile prepaid broadband pricing is higher than in other countries*

There is evidence of dynamism and pricing pressure in the mobile broadband market segment. Unlike in more mature markets where fixed-line broadband is the dominant and least expensive form of broadband access, in South Africa it is wireless mobile broadband that is predominant and cheapest. Comparisons between South African price baskets for fixed-line broadband (ADSL) and mobile broadband reveal that fixed-line packages are far more expensive than comparable mobile packages. And within the mobile broadband market segment, postpaid prices are more favourable than prepaid, as mobile operators compete for the lucrative postpaid broadband market.

When compared to other African countries, South African prices for prepaid and postpaid mobile 5GB baskets, and postpaid 1GB baskets, rated well for affordability in April 2013, while prepaid 1GB baskets rated less favourably, coming fourth in affordability behind Ghana, Kenya and Tanzania – as per the RIA Africa Broadband Pricing Index (see RIA, 2013).

*Broadband penetration in South Africa is sub-optimal in comparison to other middle-income countries*

While South African consumers with access to broadband services are benefitting from stiff price competition between mobile operators seeking to attract and retain data customers, it should not be assumed that the uptake of mobile broadband services – and the price competitiveness of these services in this more liberalised segment of the market – means that issues of affordable access have been fully addressed. Despite the take-off of mobile broadband, South Africa's broadband penetration remains poor compared to that of other lower-middle-income countries, including some such countries in Africa (e.g. North African and African island states). Fixed-broadband penetration is particularly low in South Africa, and South African enterprises dependent on stable, high-speed broadband frequently identify broadband as a major input cost in their businesses. And the total number of internet users in South Africa is still only around 34% of the adult population, according to the results of the 2012 RIA ICT Survey. Affordability and quality will be critical factors in generating faster diffusion of internet.

The high price of broadband in South Africa remains a serious challenge. High broadband pricing is a barrier to the exponential growth in broadband required for South Africa to catch up to the rest of the world and, for enterprises which must make use of it regardless of its price (because of the need for stable connectivity), broadband represents a high input cost with negative consequences for growth, development and global competitiveness of these enterprises. International bandwidth prices (once the major factor in South African data prices) have plummeted, and it is now domestic terrestrial and IP transit prices which are the major cost drivers.

*Affordability is critical to accelerating diffusion of the Internet*

The impact of the current broadband realities on the cost of communications in South Africa requires regulatory assessment. Policy and regulatory bottlenecks that constrain operators and potential players from responding dynamically to the changing nature of communication require policy and regulatory attention. Major policy challenges thus remain for South Africa if it is to create the conditions for large-scale investment (in backbone and backhaul networks) to deal with demand for stable, high-speed broadband. Such investments will require more capital than government alone can be expected to provide. The South African Government needs to create an environment conducive to investment, through credible commitments and a predictable regulatory environment. And it is not only capital that is required. The creation of an integrated information infrastructure requires a clear delivery strategy, including, *inter alia*: demand-stimulation strategies in the areas of education and e-literacy; discounted entry-level prices for devices and services; and removal of taxes, or tax deductions, for internet-enabled devices (e.g. when part of education initiatives).

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## Acronyms and abbreviations

<b>ADSL</b>	asymmetric digital subscriber line	<b>MUX</b>	multiplex
<b>ARPU</b>	average revenue per user	<b>MTR</b>	mobile termination rate
<b>BoP</b>	base of the pyramid	<b>MVNO</b>	mobile virtual network operator
<b>BBBEE</b>	Broad-Based Black Economic Empowerment	<b>NGN</b>	next-generation networking
<b>BTS</b>	base transceiver station	<b>NPC</b>	National Planning Commission
<b>CA</b>	conditional access	<b>NRI</b>	Network Readiness Index
<b>CAPEX</b>	capital expenditure	<b>OECD</b>	Organisation for Economic Co-operation and Development
<b>CCC</b>	Complaints and Compliance Committee	<b>PICC</b>	Presidential Infrastructure Coordinating Commission
<b>DBAB</b>	Digital Broadcasting Advisory Body	<b>PSTN</b>	public switched telephone network
<b>DoC</b>	Department of Communications	<b>QoS</b>	quality of service
<b>DTT</b>	digital terrestrial television	<b>RIA</b>	Research ICT Africa
<b>EBIDTA</b>	earnings before interest, depreciation, taxes and amortisation	<b>SACF</b>	South African Communications Forum
<b>ECA</b>	Electronic Communications Act	<b>SADC</b>	Southern African Development Community
<b>ECNS</b>	electronic communications network service	<b>SIP</b>	Strategic Integrated Project
<b>ECS</b>	electronic communications service	<b>SMEs</b>	small and medium enterprises
<b>EPG</b>	electronic programme guide	<b>Stats SA</b>	Statistics South Africa
<b>GDP</b>	gross domestic product	<b>STB</b>	set-top box
<b>GSMA</b>	GSM Association	<b>ToP</b>	top of the pyramid
<b>ICASA</b>	Independent Communications Authority of South Africa	<b>TRE</b>	Telecom Regulatory Environment
<b>ICT</b>	information and communication technology	<b>USA</b>	Universal Service Agency
<b>IP</b>	internet protocol	<b>USAASA</b>	Universal Service and Access Agency of South Africa
<b>ISP</b>	internet service provider	<b>USAF</b>	Universal Service and Access Fund
<b>ITU</b>	International Telecommunication Union	<b>USF</b>	Universal Service Fund
<b>LLU</b>	local loop unbundling	<b>VANS</b>	value-added network service providers
<b>LTE</b>	long-term evolution	<b>WEF</b>	World Economic Forum
<b>MDDA</b>	Media Development and Diversity Agency	<b>WiMAX</b>	a technical standard for fixed wireless
<b>MLCS</b>	mobile land communications systems		
<b>MOU</b>	minutes of use		



## Part one

### Introduction

South Africa has characteristics of both an advanced and a developing economy. It has access to technology, it has sophisticated institutions including research bodies and universities, and it has a strong private sector and fiscal resources. At the same time, half of the 50million people in South Africa live below the poverty line, and a large proportion of South Africans have weak educational qualifications. These apparent anomalies play themselves out in the ICT sector. South Africa is characterised by early adoption of leading-edge technologies by high-income users (both individuals and corporations) that were in parallel with developed economies; while at the same time the majority of the population, the public sector, and most small and micro enterprises reflect the slower adoption patterns typical of developing countries.

The levels of economic and social development in South Africa make it significantly different from other sub-Saharan African countries. Electrification is widespread, even into informal settlements and rural areas, and the basic education and health systems are extensive. The economy is relatively industrialised, with a sophisticated financial system. Levels of urbanisation are high at over 50% and increasing (Stats SA, 2011). With a population of 50million and a GDP of US\$357billion (Wikipedia, n.d.), South Africa has, by most measures, the largest and most advanced market on the continent. Despite the economic inequalities that persist in the country (it has amongst the highest Gini coefficients in the world), there is an extensive social grant system in place – providing poor households with some cash income which enables, *inter alia*, some low-use access to communications services.

These combined factors make for a different context for ICT development in South Africa than in most other African countries with which it is compared in this report. Comparisons are thus often made between South Africa and other lower-middle-income countries or other emerging economies. That being said, and despite South Africa's apparent advantages over other African nations, in a number of areas which impact on the key policy objective of affordable access to communication services, South Africa is not the top performer on the continent.

A relatively sophisticated ICT sector has emerged in South Africa over two decades of telecommunications reform since the mid-1990s, with there currently being two national fixed-line operators (Telkom and Neotel), five mobile operators (Vodacom, MTN, Cell C, Telkom Mobile and mobile virtual network operator [MVNO] Virgin Mobile), and hundreds of internet service providers (ISPs) and value-added network service providers (VANS). In its first ICT Satellite Account, as drawn from the National Accounts, Statistics South Africa reports that in 2005, the ICT total output was valued at more than ZAR153billion, and calculates the value of the ICT sector's contribution to GDP (i.e. the ICT gross value-add to GDP) at 4.3% (Stats SA, 2013). Because the ICT sector has grown significantly since the year 2005 on which the Stats SA ICT Satellite Account data are currently based (while other major sectors have slowed), it is believed that the figure for the ICT sector's contribution to South African GDP is now closer to 6%. The Department of Communications (DoC) reported in 2010 that the total South African telecommunications market had grown from ZAR131billion in 2007 to ZAR179billion in 2010 (DoC, 2010, p. 18).

Growth in South Africa's ICT sector has not, however, been accompanied by a realisation of the primary policy objective of affordable access, for all, to the full range of communications services that characterise modern economies. South Africa has lost its status as continental leader in internet and voice connectivity, and its place on global ICT indices has been usurped by former comparator countries such as Malaysia, Turkey and South Korea. Where South Korea and South Africa were comparatively placed on International Telecommunication Union (ITU) ratings 20 years ago, South Korea is now a top global performer (Gillwald, 2011), while South Africa's ranking on the ITU ICT Development Index

*Despite having a sophisticated ICT market, South Africa lags behind comparator countries*

*Affordable internet access has still not been achieved*

*South Africa ranks poorly in global ICT indices*



has slipped from 72nd in 2002 to 90 in 2010 (ITU, 2002, 2012). South Africa has also fallen steadily down other global indices (WEF, 2013). In Africa, South Africa ranks fifth after Mauritius (69), Seychelles (71), Tunisia (84), Morocco (90), and Egypt (91) in the ITU Index (ITU, 2012). In terms of the World Economic Forum (WEF) 2013 Network Readiness Index (NRI), South Africa ranks 70th in the world (see Table 1).

**Table 1: Comparative table - World Economic Forum data**

	NRI ranking	Environment	Readiness	Use			
				Overall	Government	Business	Individual
Argentina	99	126	97	74	117	90	60
Botswana	96	56	107	99	91	96	98
Brazil	60	107	74	44	48	34	58
Cameroon	124	119	131	119	101	98	130
China	58	71	66	58	38	35	83
Chile	34	30	49	40	29	44	53
Ethiopia	128	104	140	130	83	140	143
Ghana	95	64	101	102	89	103	102
India	68	85	68	81	40	45	121
Kenya	93	98	110	84	44	53	115
Korea	11	32	23	4	3	11	7
Malaysia	30	18	57	29	7	26	46
Mozambique	133	120	143	128	106	125	141
Namibia	111	58	115	101	116	76	99
Nigeria	113	94	123	108	113	68	111
Poland	49	55	37	50	107	74	33
Russia	54	102	32	56	74	95	45
Rwanda	88	29	116	107	59	67	139
South Africa	70	33	95	72	102	33	81
Tanzania	127	108	135	120	99	102	127
Turkey	45	46	36	62	60	48	68
Uganda	110	88	104	117	84	106	131

Source: WEF (2013)

The WEF NRI measures countries' propensity for exploitation of the opportunities offered by ICT, and the impact of ICT on the competitiveness of nations. South Africa's 2013 NRI ranking of 70th globally was up from 72 in 2012, but South Africa continues to trail other comparator countries with similarly-sized economies and similar levels of sector development, such as Turkey, Poland and Chile. South Africa also lags behind its fellow BRICS countries, with India (68<sup>th</sup>), Brazil (60<sup>th</sup>), China (58<sup>th</sup>), and Russia (54<sup>th</sup>) outstripping it. Although 70<sup>th</sup> position is higher than the WEF NRI rankings given to the other 11 African countries studied by RIA in 2012, it is still low in terms of global rankings and in terms of some other African states not covered by the latest RIA country reports, for example the African island state of Mauritius, which ranks 55th in the WEF NRI (WEF, 2013).

Despite South Africa's sub-optimal ICT policy and regulatory environment, its ICT sector continues to grow year-on-year. In the aforementioned landmark ICT Satellite Account generated off the National Accounts by Stats SA in 2013, Stats SA established that ICT capital formation as a portion of total capital formation in the country was 7% in 2005 (Stats SA, 2013) (see Table 2).

**Table 2: ICT Satellite Account base year 2005**

	ZAR(m)	%
ICT share of gross domestic product	153 691	4.3
ICT capital formation as a proportion of total	18 530	7
Percentage of ICT exports against total exports	2 179	3
Percentage of ICT imports against total imports	47 575	10.9
Household final consumption expenditure of ICT	42 918	4.3

Source: Stats SA (2013)

## Market overview

Characterised by duopoly and effective duopoly, the South African fixed and mobile markets have in recent years featured price-matching, poor service quality, and anti-competitive behaviour, making competitive pressure from new entrants in both the fixed and mobile markets very difficult to exert. Although a horizontal licensing regime was introduced through the Electronic Communications Act (ECA) of 2005 in order to deal with convergence within the ICT sector, the market remains structured around a number of vertically integrated operators. In terms of the ECA, old public switched telephone network (PSTN), mobile land communications systems (MLCS), VANS and broadcasting signal distribution licences, and public, commercial, and community broadcast licences, were converted into network, service, and content licences. However, the incumbents have tended to simply acquire multiple licences, thus preserving the vertically integrated entities they operated before the ECA of 2005.

There is a duopoly in the fixed-line market with incumbent Telkom claiming the lion's share of the market over Neotel. Telkom maintains dominance over the backbone and competes downstream with its competitors (formerly licensed as VANS and ISPs) in the electronic communications service (ECS) and electronic communications network service (ECNS) licence categories. The services market includes both managed data network providers and first-tier internet access providers such as Internet Solutions, MTN Business Solutions, MWEB, and Telkom. This market also includes hundreds of smaller ISPs who hold class licences only.

*The market continues to be structured around vertically integrated entities*

*Incumbent operator Telkom's dominance remains unchallenged*

Neotel, the second PSTN operator, only became operational in 2006, following licensing delays. The company, which primarily offers fixed-wireless solutions, has targeted corporates, and has won over some large clients and small and medium enterprises (SMEs) from Telkom. But Neotel has made few inroads into the residential market. The fibre optic networks of the parastatal railway network run by Transnet, and the parastatal power network run by Eskom – which were originally set aside for the second network operator (the eventual Neotel) – were reclaimed by the state (as the Neotel licence was being finalised) and were subsequently transferred into a state-owned broadband company, Broadband Infraco.

Initially, there was some concern that Infraco would squeeze out private sector investment, but having fallen victim to the lack of coordination between its shareholder the Department of Public Enterprises and the DoC – which was responsible for locating Infraco's licence in the liberalised competitive market into which it was being inserted – Infraco's entry was delayed and it could not keep the interest of its target clients, the network operators. These delays in the entry of an Infraco low-cost-access carrier network resulted in MTN, Neotel, and Vodacom co-building an alternative national infrastructure network, undermining the viability of the Infraco business model. Neotel also faces competition from unlicensed Dark Fibre Africa, which, starting in 2007, installed a carrier-neutral, open access ducting infrastructure in South Africa. Through this underground infrastructure, any operator with a communications licence can run a fibre optic network.

Some provincial governments, such as those in Gauteng and the Western Cape, have instituted broadband plans and proceeded with metropolitan networks and government e-services services, as have the major metros Johannesburg, Cape Town, and eThekweni municipality (greater Durban). The result has been significant duplication in metropolitan areas (where multiple cables, including that of Dark Fibre Africa and Fibreco, have been laid); some duplication on the main intercity routes; and very little extension of the network off of the main routes to smaller towns and villages.

The mobile market, though it has four operators and one MVNO, is dominated by the two incumbents, MTN and Vodacom, who jointly command a market share of more than 80%. With the belated reduction in mobile termination rates, the market has become more competitive as the smaller operators have slashed prices in an attempt to gain market share. Incumbents have responded by offering various airtime promotions, including successful dynamic pricing discounts (where prices are determined on the basis of real-time traffic assessment within a particular cell), bundled services, and flat rates on regional roaming. They also provide airtime promotions and sales of smart phones. However, market dynamics in the mobile market did not change significantly with Telkom Mobile's entrance into the market in 2010.

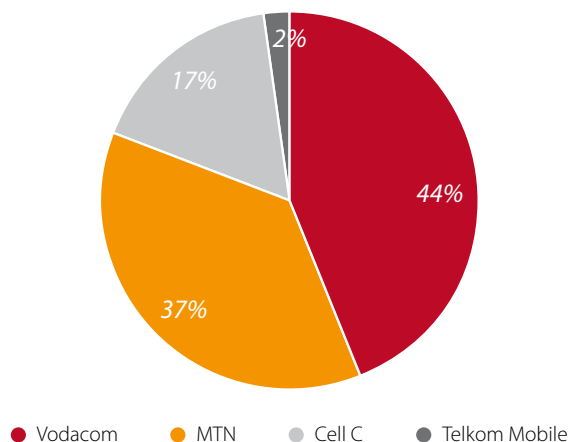
*Mobile termination  
rate reductions  
have spurred  
market competition*

Earlier entrant Cell C, meanwhile, got a foothold in the market by targeting lower-income subscribers, though more recently it has adopted a more aggressive pricing strategy and tried to erode the share of the incumbents' contract market. In 2006, Cell C entered into a partnership with Virgin (as an MVNO). Virgin has focussed its efforts on the high-end youth market, hoping to capitalise on its international brand positioning. But after operating in South Africa for more than six years, Virgin has managed to sign up only 400 000 customers despite its strong brand position internationally. The most recent entrant, Telkom Mobile, has signed up 1.4million customers in less than two years of operation.<sup>1</sup>

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<sup>1</sup> Virgin announced in mid-2012 that it would reduce its franchise-owned stores in South Africa from 38 to eight as part of its new strategy to align its business processes with that of its new major shareholder, FRIENDi Group, and in the hope that taking the management of the remaining stores in-house would help it attract new clients (Mochika, 2012).





*Dominant operators MTN and Vodacom remain entrenched in the market*

**Figure 1: Estimated market share based on annual reports and Cell C statement**

*Source: Vodacom Integrated report for the year ended 31 March 2013. MTN, Integrated Business Report for the year ended 31 December 2012. Cell C, IT Web July 2012. Telkom Mobile, Telkom Annual report for the year ended March 2013.*

In 2009, Telkom sold its share of Vodacom to Vodacom's parent Vodafone. Prior to the Vodafone transaction, the South African Government owned 37.7% of Telkom, which in turn owned 50% of Vodacom. As a result of the transaction, the government now has a 14% direct shareholding in Vodacom (Vodacom, 2009). Telkom's rationale for selling off its stake in this cash cow (Vodacom) was initially unclear, but in October 2010, Telkom launched its 100%-owned mobile subsidiary, Telkom Mobile. Despite the advantages of access to the physical and retail network of its parent the incumbent fixed-line operator Telkom, and some highly competitive data offerings, Telkom Mobile has not priced its voice calls competitively enough for long enough, and has thus only managed to secure a fraction of this market still dominated by Vodacom and MTN.

## Policy and legal framework

While South Africa led telecommunications reform initiatives on the continent in the mid-1990s – with the introduction of mobile competition to the (subsequently partially privatised) fixed-line incumbent Telkom, followed by further liberalisation of the fixed and mobile markets at the turn of century – these early reform efforts were undermined by lack of effective policy implementation and follow-up. The result, today, is an uncompetitive market structure, weak institutional arrangements and compromised regulatory effectiveness, which have resulted, as indicated above, in South Africa plummeting down international ICT indices.

*Ineffective policy implementation hinders the reform process*

Little progress has been made to reverse this trend under the current administration, led by President Jacob Zuma since his election in 2009. The ICT sector has suffered from leadership discontinuity at Executive government level, with no fewer than five different Ministers of Communications serving since 2009 and also flux in the office of the DoC Director-General. Whether the instability in the Ministry and DoC is a cause, or result, of the lack of prioritisation of ICTs on the national agenda, is debatable. What is certain is that unlike in countries as diverse as the USA and Australia, as Singapore and Mauritius, the transformative potential of ICTs (and broadband in particular) to drive productivity, stimulate growth and employment, and enable democracy appears largely to have been ignored in South Africa.

From the two-line reference to telecommunications in the Government's New Growth Path, to the limited focus on broadband in the Presidential Infrastructure Coordinating Commission (PICC) established in 2011 to coordinate infrastructure projects across all spheres of government and state-owned enterprises, there is little to suggest that ICTs are considered a priority for the country.

In December 2012, the PICC finally launched the Strategic Integrated Project (SIP) 15: Expanding Access to Communication Technology. SIP 15 aims "to ensure universal service and access to reliable, affordable and secure broadband services by all South Africans, prioritising rural and under-served areas and stimulating economic growth" (PICC, 2012). SIP 15 includes prioritisation of national migration from analogue to digital transmission of terrestrial television broadcasting by June 2015, and expansion of access to communication technology through broadband infrastructure rollout. To this end, a national backbone infrastructure will be established which will *inter alia* include "establishing core Points of Presence (POPs) in district municipalities, extend[ing] new Infraco fibre networks across provinces linking districts, establish POPs and fibre connectivity at local level, and further penetrate the network into deep rural areas" (PICC, 2012, p. 23). But while the state, in SIP 15, does emphasise the need for "coordination and integration of communications infrastructure activities within state-owned enterprises, private entities, provinces and local government" as being critical, there is no indication as to how this will be achieved in the wake of the previous lack of development on such initiatives. State-owned companies are identified as the agents of SIP 15, and although mention is made of public-private collaboration, no clear funding or delivery mechanism is indicated. And initiatives to connect schools, which SIP 15 specifically targets, are not highlighted beyond reference to a broad informational and human development programme.

*There is little to suggest that ICT policy documents get priority treatment*

Even in the 2011 National Development Plan: Vision for 2030, which provides some vision for the sector, ICT is only conceived within the context of economic infrastructure. The Plan fails to thread ICTs throughout the document in acknowledgment of the cross-cutting nature of ICTs. Practically, and in terms of current implementation, there is thus no clarity on, or coherence in, South Africa's ICT policy or strategy, in spite of government's pledge, as far back as 2009, to undertake a policy process referred to as ICT Vision 2020.

### ICT Vision 2020

With the arrival of a new administration following the 2009 elections, the appointment of new leadership in the Ministry and DoC was heralded by the ICT industry association, the South African Communications Forum (SACF), as "a new era of co-operation and dialogue between government, industry and civil society, to set clear targets and goals for bridging the widening digital divide in South Africa and creating sustainable jobs through the development of the ICT industry" (SACF, 2009). In his Budget Vote Speech of June 2009, then-Minister Sipiwe Nyanda launched the ICT Vision 2020 process, announcing his intention to develop an Integrated National ICT Policy Framework. Under the direction of the Minister and the DoC, the ICT Vision 2020 was to:

- provide a roadmap for the ICT industry's long-term development and growth and for South Africa to become a leading country in the information era,
- entail the development by industry, in partnership with government, of a unified vision and strategy towards clearly defined goals and an aspirational vision of the industry to be achieved by 2020, and
- include research on: various components of the sector; local and international factors to affect it in future; and best options to be followed for future development.

In providing support for this initiative, the SACF cited several reasons for the decline of the ICT sector in South Africa, including: “low levels of trust and co-operation between government and the private sector ICT industry, which has often been marked by courtroom skirmishes. Now, government has committed to joining hands with industry and civil society to overcome these challenges” (SACF, 2009).

However, progress on the initiative was stalled following the departure of the DoC Director-General, Mamodupi Mohlala, and subsequently Minister Nyanda himself, following a Cabinet reshuffle less than two years after Nyanda's appointment. The new Minister, Roy Padayachie, picked up the reigns on this policy project by bringing together the largest communications companies into an industry forum in 2011, with the aim of finding ways, through ICT Vision 2020, to achieve 100% broadband penetration and 1million jobs. In 2012, as the Minister began to formulate a plan to move the sector forward, and less than a year after his appointment, Padayachie was, however, transferred to the Ministry of Public Service and Administration, and a new Minister, Dina Pule, was installed. The new Minister used the existing industry forum (the SACF) as a basis for the national policy review, with the intention of developing an integrated e-strategy for the country (as proposed by the 2011 National Development Plan) by the end of 2013.

To this end, the Department of Communications held an ICT Policy Colloquium in April 2012, which brought together an unprecedented number of stakeholders (over 600) eager to finally be part of a new policy initiative. The colloquium was presented with a background paper largely sketching the status of the sector to date, with no policy proposals for discussion by subcommittees. And despite the colloquium coming five years after the passing of the ECA of 2005 (the objective of which was to enable a converged environment in South Africa), the colloquium subcommittees were broken down according to industrial age communications silos (broadcasting, telecommunications, and postal), with only a few cross-cutting committees on content and investment matters. The subcommittees were primarily chaired by industry representatives, with only one committee having a representative from civil society. The opening plenary panel of the colloquium included CEOs of the commercial national networks only. Neither the regulator, nor the public broadcaster, nor a union or civil society representative contributed to the scene-setting of the opening session. There has been no formal output from this colloquium, which took place over a year ago. Late in 2012, the Minister appointed an ICT Policy Review Panel, but this body, too, has been siloed into committees on the basis of traditional broadcasting, telecommunications, and postal focus areas. These silos suggest absence of the converged framework, integrated value chain and ecosystem approach which are informing current ICT policy thinking across the globe.

The lack of policy direction and inconsistency in Executive decision-making have impacted negatively on state-owned enterprises. And the ramifications of the parlous state of majority-state-owned Telkom, as the primary backbone of the country, are significant for the entire sector. Poor decisions by Telkom Boards and Cabinet about the sale and acquisition of assets, not least of which was the sale of its cash cow Vodacom to Vodafone – only to invest in the same highly entrenched, effectively duopoly market in which it had owned half of the dominant operator – have steadily eroded its surpluses and share value. Also damaging Telkom have been its abortive foray into South Africa's subscription TV market and into the telecommunications market in Nigeria, the two of which have cost the company hundreds of millions of Rands (ZAR), and resulted in the company sustaining significant losses over the last few years.

Since 2007, Telkom's share price has lost 70% of its value, predominantly driven by an average 9% annual drop in fixed-line voice traffic, while per-unit-pricing remained more or less stable. By early 2013, the company's market capitalisation was only ZAR8.8billion against a net asset value of ZAR30billion. Attempts by the Board and management to salvage its dismal performance, most recently through the attempted sale of 20% of the company to Korea Telecom, have, however, been thwarted by government, resulting in the resignation in late 2012 of Telkom's fifth CEO in seven years.

*The siloed approach in the ICT policy colloquium is not reflective of a converged policy framework*

*State enterprises have been negatively affected by inconsistencies in decision-making and the lack of policy direction*



*The National Development Plan sets a strategic redirection for the ICT sector*

## National Development Plan: Vision for 2030

The National Planning Commission's (NPC's) National Development Plan, which followed the release of the NPC's Diagnostic Report in 2011, was presented and accepted by Parliament in 2012. In the Plan's chapter on economic infrastructure, the vision for the ICT sector is stated as follows: "[...] by 2030 ICT is expected to underpin the development of an inclusive dynamic information society and knowledge economy" (NPC, 2011). In the short term, from 2012 to 2015, realisation of this vision will entail development of a "comprehensive and integrated e-strategy that reflects the cross-cutting nature of ICTs" (NPC, 2011). For these goals to be achieved, the Plan refers to new ways to allocate the spectrum that will be available following the migration from analogue to digital transmission for terrestrial television broadcasting and sets out a strategy for universal access, including targets, monitoring, and evaluation indicators. Also, the Plan identifies the need for demand-side stimulation strategies such as e-literacy, skills development and institutional development, and other strategies to promote ICT diffusion that provide inter-governmental as well as private and public coordination – things which were missing from the DoC broadband policy (RSA, 2009) gazetted three years earlier but not implemented. Another key focal point, according to the Plan, is building affordable access to a number of services through effective regulation of competitive markets (NPC, 2011).

For the medium term, the period from 2015 to 2020, the Plan endorses the target, proposed by the DoC, of achieving 100% broadband penetration by 2020, including expansion of the definition of broadband from 256 kbps to at least 2 mbps (NPC, 2011). For the long term, in the period from 2020 to 2030, the state is envisioned as making extensive use of ICTs in delivery of services to citizens, including entertainment, information, and education. And the Plan suggests greater collaboration between the state, industry, and academia as critical to the success of any e-strategy (NPC, 2011).

## ICT Policy Review Panel and Draft Broadband Policy

Then-Minister Pule's April 2012 national ICT colloquium involved a review of regulation and policies regarding telecommunications, broadcasting, postal services, and e-commerce services – a review intended to lead to the adoption of a White Paper outlining an integrated ICT policy framework. The DoC was due to release a Green Paper in 2013, but this ideal was pushed out, and instead, the Minister appointed the aforementioned ICT Policy Review Panel. One of the outputs of the Review Panel has been a draft National Broadband Policy (DoC, 2013), published for consultation in April 2013. This draft Policy states the following objectives:

- ensuring universal service and access to affordable and secure broadband services by all citizens, with a special focus on rural areas and under-served areas;
- re-articulating government's commitment to inclusion of all citizens in the information society;
- ensuring an integrated approach towards the deployment of broadband services;
- ensuring the continued expansion and availability of broadband capacity to meet the economic and social goals of the country;
- reducing the cost of broadband services; and
- clarifying the roles of government, state-owned companies, and private companies in the development of broadband infrastructure.

(Minister Pule was, as mentioned above, replaced as Minister in July 2013 by Yunus Carrim.)

While some of the blame for the disjuncture between policy and implementation can be attributed to the on-going crises and flux within the Ministry and Department, some of the blame for the stalling of critical regulatory interventions to support market entry and competitor viability – such as cost-based interconnection, local loop unbundling (LLU), regulation of essential facilities, and spectrum allocations – needs to be attributed to the onerous demands the ECA of 2005 places on the regulator ICASA. With ICASA not having even fulfilled its mandate under the previous Telecommunications Amendment Act (No. 64) of 2001, the ECA required the regulator to re-license the entire sector on horizontal lines to reflect convergence in the sector; to unbundle the local loop; to declare essential facilities; to conduct spectrum valuation; and to engage in interconnection pricing – all on the basis of market definitions and determinations of dominance in the market. Devoid of any supporting policy document, the poorly drafted ECA, together with ICASA's lack of capacity and expertise to implement, has produced a series of bottlenecks in the path towards a fair and competitive ICT environment. The sector is characterised by relatively constrained growth of new services, relatively constrained extension of infrastructure, accompanied by high wholesale and retail prices. Together these factors have inhibited optimal use of services, and particularly new data services.

The sub-sections below assess some of the major policy outcomes illustrated by the existing state of South Africa's ICT sector. Part Two of this report then explores the degree to which the core policy objective – affordable access to the full range of communications services – is being realised in people's everyday lives. As is explored in the demand-side analysis in Part Two of this report, affordability and access are critical factors for ensuring a faster diffusion of internet use in South Africa. It has been estimated that the cost of meeting South Africa's broadband needs is US\$80billion, but modelling for the ICT Vision 2020 process by the Human Sciences Research Council (HSRC) indicates that it could be done for half of that. The HSRC modelling contends that only US\$40billion is required to expand current networks as part of the path to achieving 100% broadband, via a combination of mobile and fixed-line access (Gillwald *et al.*, 2012). However, to attract this kind of capital or even a significant private sector input, the South African Government needs to create an environment conducive to investment, through credible commitments and a certain regulatory environment. And capital is not all that is required. The creation of an integrated information structure will require a clear delivery strategy, including demand-stimulation strategies. The significance of this for improving broadband access for the economy and polity is evident in the findings of the RIA South Africa Household and Individual ICT Survey, and in the RIA South Africa Informal Sector ICT Survey (the findings of which are presented in the final section of Part Two of this report).

*Critical regulatory interventions have been stalled by the onerous demands of the 2005 EC Act*

*ICASA's lack of capacity and expertise hinders the regulatory process*

## Policy outcome 1: poor institutional arrangements

*Weak leadership and institutional incapacity limits the development of a comprehensive ICT strategy*

The leadership challenges and lack of institutional capacity in the Ministry and DoC have undermined state intentions to develop a vision and appropriate policy for the ICT sector and to provide strategic direction on key issues. The unnecessarily protracted broadcast digital migration process and the failure to develop an integrated e-strategy over the past decade are two of the more striking examples of this lack of vision and capacity. Weak political appointments, poor cadre deployment, and lack of leadership have consistently plagued the DoC, ICASA, and the Universal Service and Access Agency of South Africa (USAASA).

### ICASA

*Highly ineffective regulation is a result of the politicisation and juniorisation of ICASA*

The authority and autonomy of the regulator ICASA to implement national policy have been undermined through structural conflicts of interest in the institutional arrangements; political constraints; lack of competencies; and the politicisation and “juniorisation” of the organisation. The outcome has been highly ineffectual regulation of the sector with consequent absence of competitive outcomes or protection of consumer welfare (see the TRE assessment findings below). While part of the problem relates to the lack of ICASA autonomy from the Department – and, indeed, lack of autonomy from certain elements of industry – also contributing to the problem are ICASA’s low levels of experience and competence, absence of leadership, and appointments on the basis of political or personal allegiance rather than technical competence (making individuals accountable to their political principals, rather than to the principles of the law and Parliament). Without sufficient accountability accompanying the autonomy that does legally pertain to ICASA, decision-making processes and systems are compromised. The structural conflicts of interest that pertain to the continued ownership – indeed concentration of ownership – by the state in the sector, and the Ministry being responsible both for the safeguarding of still-significant assets in the sector and for policy that determines the well-being of state entities’ competitors, creates an environment of regulatory uncertainty and undermines the credibility of the country as a secure investment destination.

Some of the problems in the institutional arrangements could have been addressed to some degree by the proposals for the sector contained in the 2007 Report from Parliament’s Review of Chapter 9 and Associated Institutions, led by Kadar Asmal, but these proposals were never publicly aired, adopted or implemented (Parliament, 2007). The existing negative perceptions of the telecommunications regulatory environment are discussed in more detail below in relation to the findings of the RIA 2012 TRE assessment exercise.

### USAASA

*The USAASA has failed to fulfil its mandate*

USAASA has perpetually been kept alive, in each new round of legislation over the last two decades, despite its failure to (ever) deliver on its mandate. USAASA was again plunged into disarray in the period under review, with its management and Board removed from office in 2012 based on accusations of financial maladministration. Some of the Agency’s problems can, to an extent, be explained by the historical evolution of the sector’s institutional arrangements over the past 20 years. The Agency was originally intended, in the Telecommunications Green Paper and White Paper processes of the mid-1990s, to be part of the independent regulator or accountable to it, but the Agency’s accountability was shifted to the DoC by the 1996 Telecommunications Act which established the Agency with its original name, the Universal Service Agency (USA). Based on a five-year sunset clause attached to the USA’s existence by the 1996 Act, a review of the Agency was conducted for the DoC in 2000. That review indicated that the Agency had not achieved much of its intended mandate and was already showing signs of institutional and leadership failure (that would later



appear to be intractable). Given that the project of universal service had made little progress and there was much yet to be done, it was proposed that the lifespan of the agency be extended (Stavrou and Benjamin, 2000). The review report acknowledged that political pressure put on the Agency (e.g. for the questionable use of funds for projects of the DoC) had drawn the Agency into the delivery of services (e.g. community access centres and Public Internet Terminals) rather than focussing on administering funds (in the Universal Service Fund [USF] generated by levies on operators) for use by operators and service providers. In the 2003 Telecommunications Amendment Act (the legislation that extended the Agency's existence), an Agency Board was introduced, to buffer the organisation from the DoC. But because the Minister was given responsibility for appointing the Board, DoC pressure continued, if less directly.

By the time the sector's law was being reviewed again in 2005, there had been little improvement in the leadership and management crises at the Agency, but the Agency was maintained by the ECA of 2005. The ECA changed the Agency's name from the USA to USAASA, but did not provide an opportunity for the fresh start the Agency so sorely needed. The Agency's Fund, now to be called the Universal Service and Access Fund (USAF), was renewed under the ECA to fund projects and programmes that "strive to achieve universal service and access to ICTs by all South African citizens" (RSA, 2005).

The ECA requires all licence-holders to contribute to the USAF in accordance with the instructions of the Minister. ICASA, however, is the body responsible for prescribing the basis and manner of contributions, which may not exceed 1% of a licensee's annual turnover. (The Minister is responsible for determining the exact percentage of turnover.) Neither ICASA nor the Minister has to date made the necessary determinations, leaving the existing regulations, which require all licensees to contribute 0.2% of annual turnover, in force (despite the repeal of the 1996 Telecommunications Act under which the regulations were prescribed). The ECA extends contribution to the Fund to broadcasting licensees, who may now also access the Fund. However, those broadcasters already contributing to the Media Development and Diversity Agency (MDDA) can have their MDDA contributions offset against any USAF levies owing. Despite the administrative challenges posed by the requirements of the 1996 Telecommunications Act in order for Fund levies to be determined and to be disbursed, the ECA continues the 1996 Act's requirement that all levies paid into the Fund be transferred to the National Revenue Fund. The funds can then only be accessed by USAASA through Parliamentary appropriation. The ECA allows the Minister to issue policy directions to the USAASA Board in carrying out its oversight functions. Meanwhile, the Act requires USAASA to make recommendations to the Minister as to what constitutes universal service and access, but it is the Minister who is required to make determinations in this regard and publish them in the Government Gazette.

The requirements of the Act in relation to USAASA require it to coordinate efforts towards universal service and access. To do so, USAASA may undertake investigations, conduct research, and survey and evaluate the extent to which universal service and access have been achieved. The Agency is also required, when requested to do so, to advise ICASA on universal service.

In 2011, USAASA reported to Parliament that it had failed to meet targets in many of its projects, including "set-top box distribution; broadband infrastructure projects; the development of public access centres; the creation of an access and service strategy", (Mahlong, 2011) and that the Agency had not yet developed ICT access and impact indicators. In addition, a clearly defined universal access and service strategy was still lacking, as well as guidelines for the application of the Fund's manual and standard operating procedures .

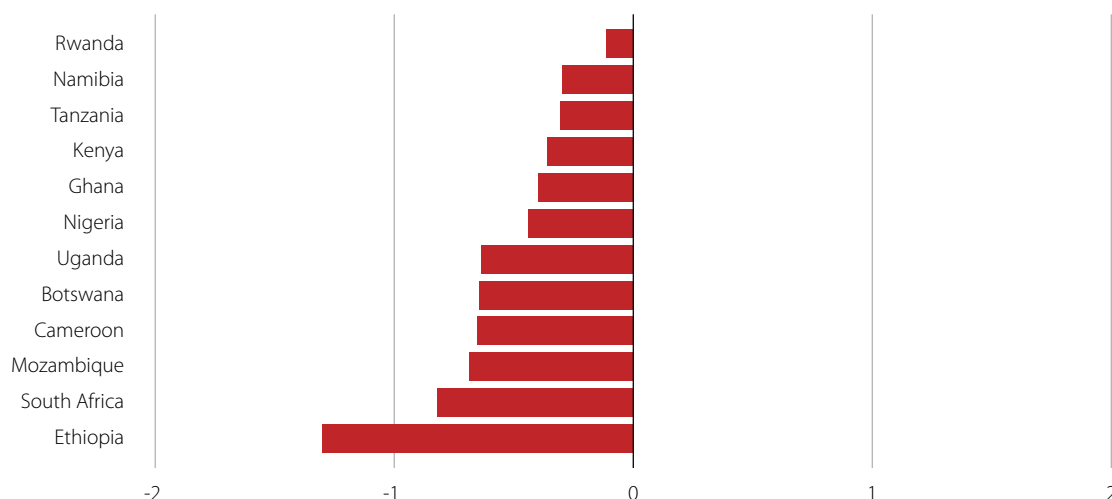
*A clearly defined universal access strategy is still absent*

## Policy outcome 2: ineffectual regulatory environment

The desired objective of telecom policy reform and regulation is improved sector performance. Performance can be assessed in terms of indicators for connectivity, price, quality of service (QoS), and choice, each of which is dealt with in the policy outcome sub-sections that follow this one. This sub-section focuses on regulatory frameworks, within which all the other elements play themselves out. It uses the Telecom Regulatory Environment (TRE) assessment method, which assesses the effectiveness of sector regulation through stakeholder perceptions of seven regulatory dimensions: market entry, QoS, anti-competitive practices, universal service obligations (USO), access to scarce resources, interconnection, and tariff regulation.<sup>2</sup> A TRE assessment probes the perceptions of stakeholders of the entire policy and regulatory environment, not the regulator *per se*. The analysis of the TRE data is then performed by triangulating the TRE findings with data on the performance of the sector (the supply-side) and with the results of the RIA Household and Individual ICT Access and Use Survey (the demand-side).

(In cases where sector performance indicators show performance that can be considered satisfactory but TRE scores are low for that market segment, it may be possible that the problem is the communication of the regulatory actions, or that other factors at national level are tainting the stakeholders' perceptions on the issue. If the latter conclusion is reached, an appropriate recommendation could be improvement of the way the regulatory authority communicates its actions.)

*There are generally negative views about the effectiveness of the regulatory environments in Africa*



**Figure 2: Overall RIA TRE rankings, 2012**

Source: RIA TRE assessment data 2011-12

Even within the context of the generally negative views of the effectiveness of national regulatory environments on the continent, the perceptions of South African stakeholders of their national telecommunications regulatory environment is notably poor. In comparison to the 11 other countries surveyed in the RIA 2012 TRE assessments,

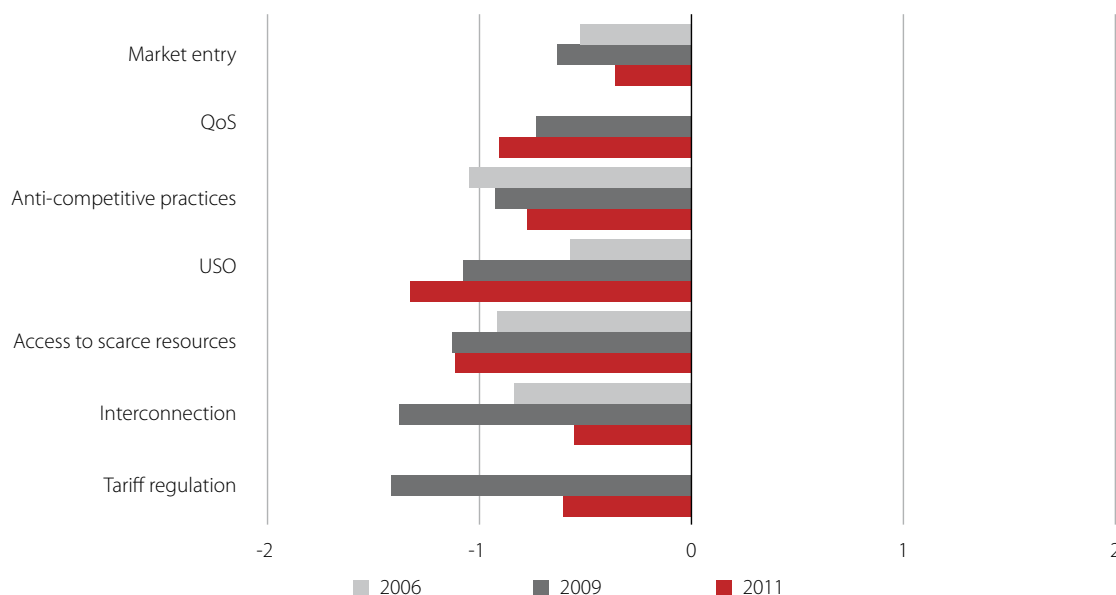
<sup>2</sup> The TRE assessment is a diagnostic instrument for assessing the performance of policy and laws affecting the telecommunications sector and the various government entities responsible for their implementation. This methodology was developed by LIRNEasia (see LIRNEasia, 2008).

South Africa scores only slightly better than one of the other 11 countries, Ethiopia (which has undergone the least market and regulatory reform on the continent).

All 12 of the countries assessed by RIA received negative overall scores, with Rwanda getting the least negative score, i.e. the Rwandan regulatory environment is perceived less negatively by its stakeholders than the regulatory environments of the other 11 countries assessed. Rwanda's assessment seems likely to reflect the "halo effect" produced by its government's commitment to the country becoming an ICT hub in Africa - with ICT development driven from the Rwandan Presidency - rather than the country's provision of an environment particularly conducive to investment and development of the sector. The institutional arrangements in Rwanda do not enable autonomous regulatory decision-making and this is reflected in sub-optimal performance indicators in relation to access (even access to basic voice services, but particularly internet) despite several state-led initiatives to improve the access situation. Prices in Rwanda are, however, showing the effectiveness of competition in the market and of enforced MTR reductions.

Meanwhile, although still negative, the less-negative (than Ethiopia and South Africa) rankings of Ghana, Kenya, and even Tanzania (despite its underdeveloped economy) reflect somewhat positive performance in these markets. Ghana is a highly competitive market with five mobile competitors. The Kenyan ICT market, although characterised by extreme dominance by the incumbent mobile provider Safaricom, has seen critical regulatory intervention levelling the playing field and generating positive outcomes. For its part, Tanzania continues to move systematically through its regulatory reform programme, with the Tanzanian regulator working on reduction of MTRs and seeking to reach decisions that will make spectrum available.

The factors contributing to South Africa's poor TRE position (compared to 10 of the other 11 RIA countries assessed) are now discussed below in more detail.



**Figure 3: Shifts in perception of the efficiency of the regulatory environment in South Africa**

Source: RIA TRE assessment data 2011-12

*The management liberalisation approach hampers the competitiveness of new market entrants*

The negative South African stakeholder perception regarding the first-listed TRE criterion, market entry (see Figure 3), while less negative than in previous RIA TRE assessments, relates to the policy of managed liberalisation, which has been pursued in South Africa since the 1996 Telecommunications Act. The managed liberalisation approach has made it impossible for new market entrants to compete effectively with an entrenched incumbent operator (Telkom) within the fixed-line market and with two dominant operators (Vodacom and MTN) in the mobile market.

With pressure from the Ministry, which identified unbundling of the local loop as a key intervention that might improve South Africa's sluggish competitive environment, LLU was on the top of the agenda of the regulator ICASA during 2010. Despite ICASA having identified four possible options for the unbundling, there are as of yet no regulations in place but draft regulations for public comment were released on the 7 August 2013 (ICASA, 2013). The first option suggested by ICASA is "bitstream", or wholesale access. Under this option, Telkom would not be required to unbundle its physical copper cable infrastructure; instead, it would provide access to the infrastructure to other operators on a wholesale basis. The second option proposed is shared access to Telkom's local loop. Under the second option, operators seeking local loop access would provide different services on the same line (i.e. both data and voice services). The third option suggested is full local-loop, or full access. This would entail the assigning of the local loop to rival operators who would be responsible for the running of the entire local loop. The final option would entail Telkom's competitors getting access to its "primary connection point" at street level (Gedye, 2011; Mail and Guardian, 2011).

*The regulator has failed to address the dominance of incumbent operators and create a level playing field*

The increased focus on LLU was reinforced by a complaint lodged by Neotel with ICASA's Complaints and Compliance Committee (CCC) in 2011, over Telkom's refusal to lease its last mile (i.e. local loop) and telephone exchanges to Neotel. The CCC ruled in Neotel's favour, stating that Neotel's request was valid in terms of the new facilities leasing regulations issued by ICASA. Telkom, on the other hand, argued that the imminent local loop regulations (non-existent at the time of the CCC ruling) should govern Telkom's copper infrastructure, and not the facilities leasing regulations (MyBroadband, 2012b).

Although the market has been liberalised by the ECA – and by the Altech ruling<sup>3</sup> on the migration of licensees to the converged horizontal licensing regime envisage by the Act – the lack of effective regulation of access to wholesale voice and data has meant that new entrants are unable to compete effectively in these market segments and by and large have been unable to push down the cost of communications. Pricing provides the best indicator of the competitiveness of a market, and is itself an indicator of the effectiveness of the market structure and regulation of the sector. Price indicators are dealt with in detail later in this report.

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3 Delays by ICASA in issuing ECA-compliant licences, as a result of Ministerial intervention in who was eligible for licences and which of them could provide their own facilities, resulted in Altech bringing a case against the Minister, ICASA, and the group of preferred licensees among the existing VANS licensees. Reneging on its earlier policy interpretation of a Ministerial directive that licensees would be permitted to self-provide, ICASA indicated that only those selected VANS who received the new licences from the regulator following the 2007 Ministerial policy direction, but with no clear criteria for their award, would be entitled to self-provide. Altech, a VANS provider, challenged the decision to limit the number of converted ECNS licences. It also sought relief from the contested prohibition on VANS being able to provide their own network facilities instead of having to obtain these from incumbent licensed telecommunications network operators such as Telkom or Neotel. The court, in granting the relief sought by Altech, declared that the prohibition on self-provisioning was in direct conflict with the enabling legislation and ordered that all VANS operators licensed before the start of the conversion process be allowed to self-provide, in accordance with the initial policy direction and the initial interpretation offered by ICASA in 2005 (See Gillwald, 2007 for fuller account.)



The settlement between the Competition Tribunal and Telkom in 2013 after the decade-long anti-competitive practice dispute lodged by VANS providers against Telkom first with ICASA and then with the Competition Commission provides evidence of the chilling effect that the dominance of a vertically integrated fixed-line operator can have on creation of fair competitive markets, even where markets are liberalised. Telkom's dominance in the market, and the regulator ICASA's inability to create a fair competitive regime for new entrants (an inability confirmed by the Competition Commission ruling), show that ICASA needs to be vigilant within the mobile market to ensure that vertically integrated mobile operators currently dominant in that market (which has thus far not seen any wholesale access regulation) do not limit fair competition in the mobile broadband market (which in South Africa currently provides the dominant means of internet access) in the same way that Telkom succeeded for many years in limiting competition in the fixed-line market segment.

## Policy outcome 3: limited infrastructure extension and bottlenecks

### Undersea cables

*International bandwidth capacity had increased significantly in terms of quality and pricing*

Until 2009, South Africa had amongst the highest international bandwidth prices in the world, because the bandwidth was via satellite and a single undersea cable, South Atlantic 3 (SAT-3), whose sole South African owner was the incumbent Telkom. Today, South Africa enjoys services from four new submarine cable systems, causing prices to drop significantly. The privately held, open access SEACOM cable was the first competing cable to land, in 2009. SEACOM is 17 000 km long and had an initial capacity of 1.2 tbps, which is being upgraded to 4.2 tbps (Gadget, 2013). The SEACOM cable is the only cable servicing the eastern seaboard of the continent and links South Africa, Mozambique, Madagascar, Tanzania, and Kenya with India and Europe. The Eastern Africa Submarine Cable System (EASSy) landed in South Africa in 2010 and is 10 000 km long with a capacity of 4.72 tbps (EASSy, 2013). The MainOne cable landed in 2010, and the West Africa Cable System (WACS) became operational in late-2011. WACS is 17 200 km long, with an initial capacity of 500 gbps, upgradable to a mammoth 5.12 tbps (WACS, 2013). The African Coast to Europe (ACE) cable came online in South Africa in 2012, with a capacity of 5.12 tbps and a length of 17 000 km (ACE, 2013).

The landing of these cables has led to an improvement in international bandwidth capacity, both in terms of quality and pricing (via competitive sales to all carriers). The wholesale cost savings have not, however, always been passed on from the operators to customers to any great extent, with the norm being either additional bandwidth offered for the same price or modest reductions in retail prices (see pricing discussion below).

*Late entrants have failed to compete with incumbents due to the lack of regulatory support*

While growing bandwidth demand is increasingly being met at the international level, this has highlighted the shortfalls in the national backbone and high-speed local access networks. The ICT policy paralysis witnessed in South Africa over the past decade and a half has had extremely negative policy outcomes with regard to infrastructure extension. The aforementioned policy of managed liberalisation, as adopted by the South African Government in the first years of sector reform in the late 1990s, allowed incumbents to become highly entrenched before competition was introduced. The absence or slowness of regulatory support for new entrants in their early years – e.g. via wholesale access regulation and regulatory forbearance – has meant that none of the later entrants has been able to compete with the incumbents. (The ultimate casualty of the absence of fair competitive ICT markets has been consumer welfare. Both the cost and quality of services, as discussed in Part Two of this report, compare poorly with other lower-middle-income countries, including such countries elsewhere in Africa.)

The policy failures and implementation problems with regard to introduction and extension of fixed broadband networks in South Africa resulted in the Department of Public Enterprises (DPE) embarking on the process to establish a state-owned broadband infrastructure company, Broadband Infraco. The fibre optic networks of Transnet and Eskom, which were to have been set aside for the second network operator, were taken from Neotel by the DPE (just as Neotel was signing its final licence agreements) and transferred to the wholly state-owned Infraco in 2007. The company was licensed for the provision of wholesale services and became operational in 2009 following licensing delays relating to determination of the kinds of services it would be entitled to offer. Infraco has since invested in national and international backbone communications networks, and is one of the main investors in WACS.

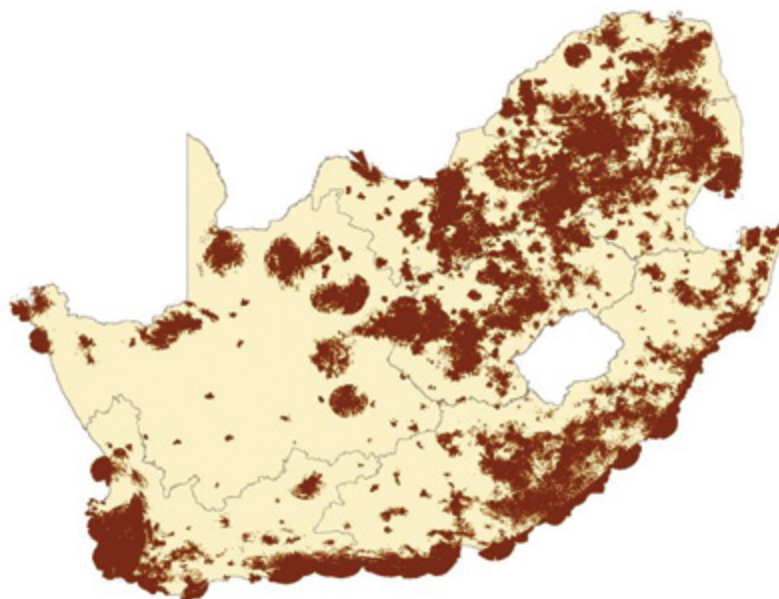
But state coordination has been weak and arguably there has not been sufficient investment in Infraco even to build out the roughly 12 000 km of backbone planned (not a great distance for a national backbone for a country the size

of South Africa). Neotel was granted an exclusive three-year roaming agreement on the Infraco network. Although the argument has been made that the introduction of Infraco squeezed out private sector investment, the mobile operators (able to self-provide their own backhaul from 2003 onwards) were also happy at the prospect of not having to invest in their own networks and to have an alternative to Telkom. But any potential for an open access broadband operating model in South Africa was scuppered by a lack of state coordination and the subsequent delay in the licensing of Infraco. In 2009, unable to wait any longer, MTN, Neotel and Vodacom started co-building an alternative intercity infrastructure network, having already started cabling the metros. With the deluge of increased data on mobile networks, which provide the overwhelming bulk of internet access to non-corporate and non-government users, backhaul networks remain a major concern for operators, resulting in commercially driven infrastructure-sharing. Within the local access network, the possibility of handing over heavy data users from expensive 3G and 4G networks to WiFi networks (common in some markets with high levels of mobile penetration and use) has not been possible in South Africa because of the limited availability of WiFi in the country.

The aforementioned Dark Fibre Africa is a carrier-neutral open access ducting infrastructure provider that started rolling out its network in October 2007. To date, Dark Fibre has rolled out 7 300 km of infrastructure. Dark Fibre funds infrastructure rollout and leases the ready-made infrastructure to licensed operators, on which they can provide different converged services (ITWeb, 2013). This model is believed to significantly improve operators' go-to-market strategies and significantly reduce their capital expenditure costs. Dark Fibre's clients include Vodacom, Telkom, and MTN, amongst others. Figure 4 shows that while significant progress has been made in metropolitan areas and in inter-city routes, broadband coverage across the country remains extremely uneven (ITWeb, 2013).

*Insufficient investment has been made into the rollout of open access broadband infrastructure*

*The state company Broadband Infraco is underfinanced*



**Figure 4: Broadband coverage map in South Africa**

Source: Ministry of Communications (2012)

## Infrastructure sharing and inter-agency coordination

*There is no co-ordinated plan for the rollout of fibre technology*

Regulatory and way-leave approval bottlenecks have also hampered efficient rollout of services. Despite the identification of the need for an integrated national rights-of-way plan for fibre rollout – to be agreed between the regulator, the metros, and the National Roads Agency – no progress has been made in this regard, and operators are required to get individual way-leave permissions from the Roads Agency and municipalities. This permissions process appears to be entirely uncoordinated, even at the individual institutional level, such that pavements and streets are constantly being pulled up and put back as operators go in one after another.

The need for infrastructure-sharing to overcome duplication – and bring down costs and reduce environmental impact – is something regularly referred to, but, as with other important sector matters, little has been done to formally coordinate the process. Private infrastructure-sharing company Dark Fibre has privately coordinated the building of ducts into which it lays dark fibre, which can then be lit by licensed operators. Dark Fibre claims that civil engineering of infrastructure and ducting accounts for 70% to 80% of total fibre rollout costs, and these processes generally confer no strategic advantage.

*The absence of mobile operators' facilities regulation handicaps the competitiveness of new market entrants*

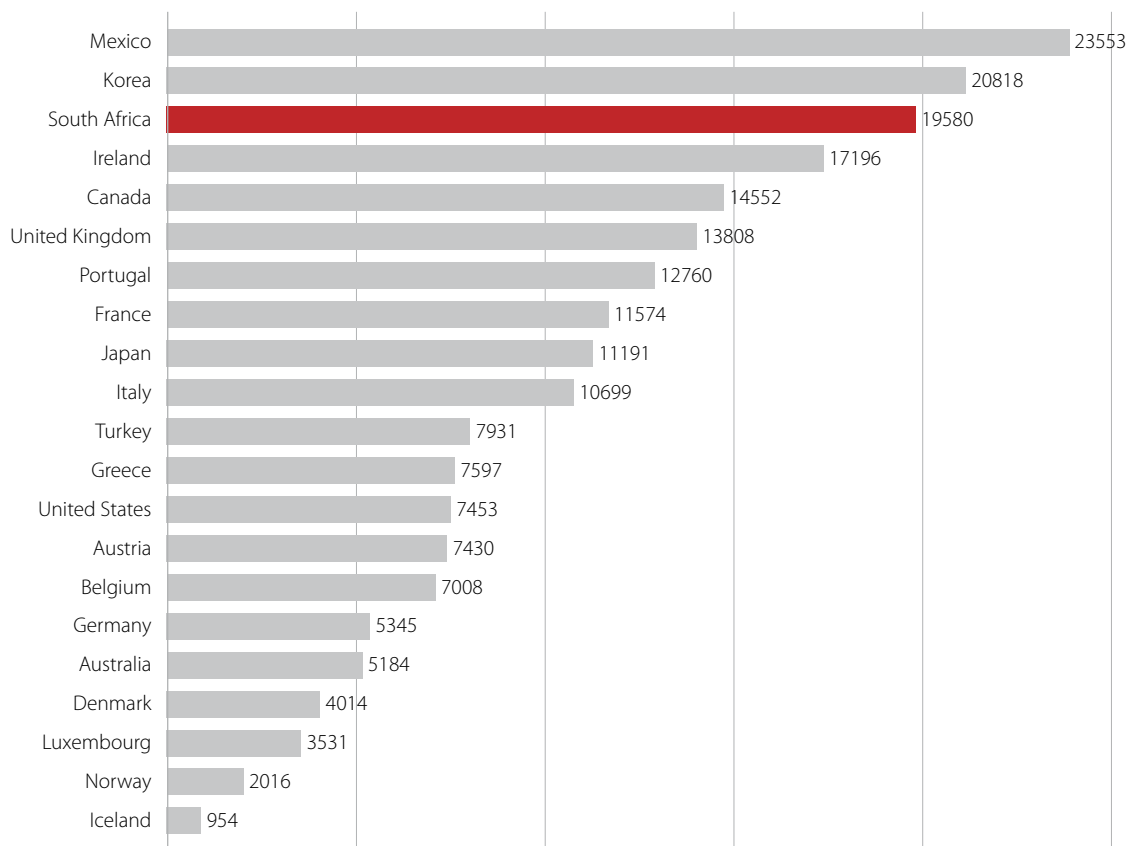
Key issues for successful competitive entry into markets are the ability to interconnect with, and to lease facilities from, incumbent operators already in the market. All operators need to interconnect with each other in order to seamlessly exchange traffic. New entrants are typically entitled to roam on the networks of existing operators while they build out their networks, but due to the high costs of doing so, and the inability to control the network they are roaming on, the longer a new entrant does this the more likely it is to compete ineffectively with an incumbent. Service providers, virtual operators, and even some networkers, on the other hand, may decide to never self-provide their network facilities or other elements, and will thus be perpetually dependent on receiving timely and cost-based access to facilities from wholesale service providers. In the fixed arena, facilities generally take the form of different types of leased lines (which can also be provided as retail services to large users such as corporates, either by incumbents or resellers and services providers), but also include interconnection, and resale through various forms of LLU. With mobile data becoming the major form of access to the internet, wholesale access to mobile operators' networks has also become a key competitive issue and yet, like fixed facilities, these mobile operator facilities have not been regulated so as to ensure they are provided to the myriad of service providers in the liberalised environment (thus limiting new entrants' opportunities to compete fairly in South Africa's highly entrenched mobile market dominated by incumbents Vodacom and MTN).



## Policy outcome 4: high wholesale pricing

### Facilities-leasing

Leased lines remain the major facility required to build high-capacity ICT links between and within dispersed enterprises, and are a major input cost for the services sector. Although leased-line prices have come down via some competition from Neotel in the corporate market, Neotel's product offerings are not all substitutable and the incumbent Telkom has the advantage of being able to offer turnkey solutions. The leased-line pricing structure has also been affected by the introduction of Telkom's ADSL service, which smaller-usage businesses have shifted to from more expensive leased lines. South Africa has high leased-line prices in comparison to most OECD countries for 2011 (see Figure 5 below). (And it must be noted, in analysing the data in figure 5, that the high cost of a 34 mbps leased-line in a country such as Korea is largely a result of declining demand for that relatively low level of bandwidth.)



*Leased line pricing remains high in comparison to other middle-income countries*

**Figure 5: National leased line pricing (per month) basket 34 mbps (USD PPP)**

Source: Compiled by RIA from OECD (2011) and Telkom (2012) data

A cost-based mobile termination rate encourages competition and affordable pricing

### Termination rates

The mobile termination rate (MTR) – the rate that operators charge each other to terminate calls on each other’s networks – was first regulated in South Africa in March 2011. The rationale for regulatory intervention in MTR pricing is that call termination is a monopoly: while call origination can be made competitive in numerous ways, there is simply no alternative to terminating a call on the network of the operator which owns the number a caller is trying to reach. Termination rates above the cost of an efficient operator distort the market and produce anti-competitive effects. Given that mobile termination is an inherent monopoly, regulators have no alternative mechanism besides adjusting termination rates in line with costs – if such adjustments are not made by operators. Determining costs can be done by a regulator through a benchmarking exercise of termination costs, such as was undertaken in Namibia in 2009, or through detailed cost studies such as those undertaken in Botswana, Kenya, Nigeria, Tanzania, and Uganda.<sup>4</sup> There is now overwhelming international evidence from across the world that cost-based MTRs encourage competition and more affordable pricing.<sup>5</sup>

In October 2010, ICASA gazetted its MTR regulations, effective from March 2011. From a peak rate of ZAR0.73, the October 2010 regulation introduced a glide path towards a peak and off-peak termination rate of ZAR0.40, achieved in March 2013. But this MTR of ZAR0.40, now in place, is still well above that of many other African countries and above what is globally considered to be the cost of an efficient operator. In Namibia, the MTR has been cut from ZAR1.06 (a similar price to that of South Africa in 2010) to ZAR0.30 in less than two years. Other countries such as Kenya and Uganda now have MTRs below US\$0.02 (approximately ZAR0.20 at the August 2013 exchange rate.)

Table 3: Mobile termination glide path in ZAR

	Peak	Off-peak
March 2011	0.73	0.65
March 2012	0.56	0.52
March 2013	0.40	0.40
Asymmetrical termination rates may apply, whereby operators with less than 25% market share could charge up to 20% more for calls they carried on their networks between 1 March 2011 and 28 February 2012. Thereafter, the maximum premium they could charge fell to 15%, and finally, in March 2013, it will fall to 10%. Only Vodacom and MTN have more than 25% of the mobile market, and only Telkom has more than 25% of the fixed market.		

Source: ICASA (2010, 2011)

Cost-based MTRs remove market distortions and provide efficient investment incentives. The net effect of fairer competition is lower costs of communication, better services, and more equitable returns on investment for all operators (Stork, 2011, 2012). In support of retaining high MTRs, dominant mobile operators have argued that lowering MTRs leads to increases in access and use prices,<sup>6</sup> resulting in fewer people being able to afford communication

4 The regulators concerned would do well to share the results of these studies with other regulators, because in vastly different environments the results have tended to be very similar.

5 See, for example, Stork (2012) for OECD countries.

6 This is often linked to the waterbed effect and the two-sided market argument (Vodafone, 2007).

services and lower profits (which would limit operators' capacity to invest in network extension and upgrading). RIA has been unable to find evidence of this dynamic in any jurisdiction examined by RIA in Africa (see Gillwald and Stork, 2012), and this dynamic is not present in South Africa.

Incumbent operators are quick to point out, and the media to report, the loss in revenue suffered due to termination rate cuts, while generally omitting to report on incumbent operators' cost savings from reduced termination payments. Operators receive termination revenues from, and pay termination fees to, other operators. The question is thus not whether an operator has less revenue from termination after MTR cuts but rather, how the net profit or net loss from termination has changed and how this affects the operator's overall performance. For example, the annual net profit from termination of South Africa's largest mobile operator, Vodacom, increased by ZAR66million, despite a reduction in its incoming termination revenue, after MTRs were cut by ICASA (see Table 3). Strangely, the incumbent fixed-line operator Telkom, which has been at the wrong end of asymmetrical termination rates for nearly two decades, also complained about a loss in termination rate revenue through MTR cuts.<sup>7</sup> In reality, Telkom's total interconnection revenues increased in the 2011-12 financial year.<sup>8</sup> As one would expect with there being over 60million SIM cards active across South Africa's mobile networks, Telkom is a net termination rate payer. Accordingly, Telkom's net termination payments decreased, largely due to the MTR reductions, from ZAR5billion (in the 2009-10 financial year) to ZAR3.1billion in 2011-12. The logic behind Telkom's complaints about the MTR rate cuts thus remains unclear, unless the operator was asking for greater mobile-fixed symmetry (an argument Telkom has not made explicitly).

Lower termination rates mean only that net payers pay less and net receivers receive less. MTN, for example, is a net receiver. Its net profit from call termination (revenues in excess of expenses) for South Africa decreased from ZAR1.085billion (in its financial year ending December 2010) to ZAR741million (in its financial year ending December 2011), a decrease of ZAR644million and not a loss of ZAR2.5billion as claimed in May 2011. Its termination revenue decreased by ZAR644million in 2011, while its termination expenses dropped by ZAR300million, leading to a net reduction in termination revenue of only ZAR344million in 2011.<sup>9</sup> MTN's Capex, revenue, and EBITDA margins all increased in its financial year ending December 2011 compared to the previous financial year. MTN's implied per-minute price (ARPU/MOU) decreased by ZAR0.20, becoming similar to Vodacom's implied price. The estimate for MTN is based, however, on blended ARPUs (because prepaid ARPU and MOU are not reported separately from postpaid APRU/MOU by MTN).

*Operator EBITDA's margins increased despite the introduction of the mobile termination rate glide path*

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7 Telkom SA Limited (2011).

8 Telkom SA Limited (2012). At this time, Telkom had sold its lucrative shareholding in Vodacom (which had enjoyed significant revenues for years from some of the highest (asymmetrical) termination rates in the world), and now had its new mobile service Telkom Mobile. Telkom Mobile did manage to secure, from the regulator, an asymmetrical termination rate, together with Cell C, for its terminations with the dominant operators Vodacom and MTN.

9 See MTN (2011)

**Table 4: Mobile termination rates in RIA Countries - 2013 update**

	Mobile termination rate				Comments	Source
	Currency specified by regulation		US\$ exchange rate	Value in US\$ cents		
Kenya	1.44	KES	83.21	1.7	1 July 2012: 1.15 and 1 July 2013: 0.99	CCK (2010)
Mauritius	0.9	MUR	28.9	3.1		ICTA (2008)
Ghana	0.045	GHS	1.84	2.4	NCA set glide path to 4.50 Ghana pesewa in 2013 and 4 Ghana pesewa for 2014, SMS on all mobile networks 0.7 from 2012, then 0.6 and 0.5 in 2013 and 2014.	NCA (2010)
Namibia	0.3	NAD	8.20	3.7		CRAN (2009)
Zambia	0.05	ZMK	5 066.37	0.0	further reductions to 5 US cents by 1 Jan. 2012	ZICTA (2010)
Nigeria	8.2	NGN	157.5	5.2	for existing operators	NCC (2009)
Uganda	131	UGX	2 469.6	5.3		Businge (2011)
Rwanda	28	RWF	598.98	4.7	RWF 35 to RWF 33 in January 2012, RWF 28 in January 2013 and RWF 22 in January 2014	RURA (2011))
Botswana	0.40	BWP	7.49	5.3	glide path to 0.3 Pula by 2014	BTA (2011)
Tanzania	7.16	TZS	1 562.44	0.0		TCRA (2007)
South Africa	0.4	ZAR	8.20	4.9	March 2013	ICASA (2010)
Mozambique	2.59	MZN	27.9	9.3	Symmetric MTR since 2010	INCM (2010)

\* Average interbank rate for 2011

Source: Oanda.com (n.d.)

Because they are private, unlisted companies and non-dominant players, no public information is available for Neotel and Cell C in relation to the impact of MTR cuts. These operators were not willing to divulge such information – even in generalised form without actual figures. With Vodacom and MTN being net receivers (Vodacom even receiving more in 2012 than in 2011), and Telkom being a net payer but paying less in 2012 than in 2011 and 2010, one can assume that Neotel is a net payer.<sup>10</sup>

<sup>10</sup> This highlights the need for ICASA to collect actual figures for all interconnection revenues and payments from operators, for standardised time periods, in order to determine exactly the impact of termination rate cuts.



The negative South African stakeholder perception relating to interconnection, as reflected in the TRE assessment outlined above, stems from the belated and insubstantial nature of the termination rate reductions in South Africa via its recent glide path. Until the cuts of March 2013, the reductions were insufficient to produce the positive competitive outcomes on retail rates witnessed in other countries. Before 2013, dominant operators Vodacom and MTN were able to withstand short-term pressure on retail prices as the marginal smaller players were unable to leverage the small increments by which termination rates had been reduced to significantly undercut Vodacom's and MTN's prices. (More is said below about mobile operators' responses to the MTR glide path, particularly the March 2013 MTR cut.)

**Table 5: Fixed termination rate reductions**

	Peak (ZAR)	Off Peak (ZAR)
2006	0.29	0.16
2007	0.29	0.16
2008	0.29	0.16
2009	0.29	0.16
2010	0.28	0.16
2011	0.2	0.12
2012	0.15	0.12
2013	0.15	0.12

Source: ICASA (2010, 2011)

On the fixed side, termination rates have remained asymmetrical, with very little reduction in the rate between 2006 and 2013. A flat termination rate across both fixed and mobile would improve the viability of the fixed network operators, who also face the challenges of building out next-generation networks.

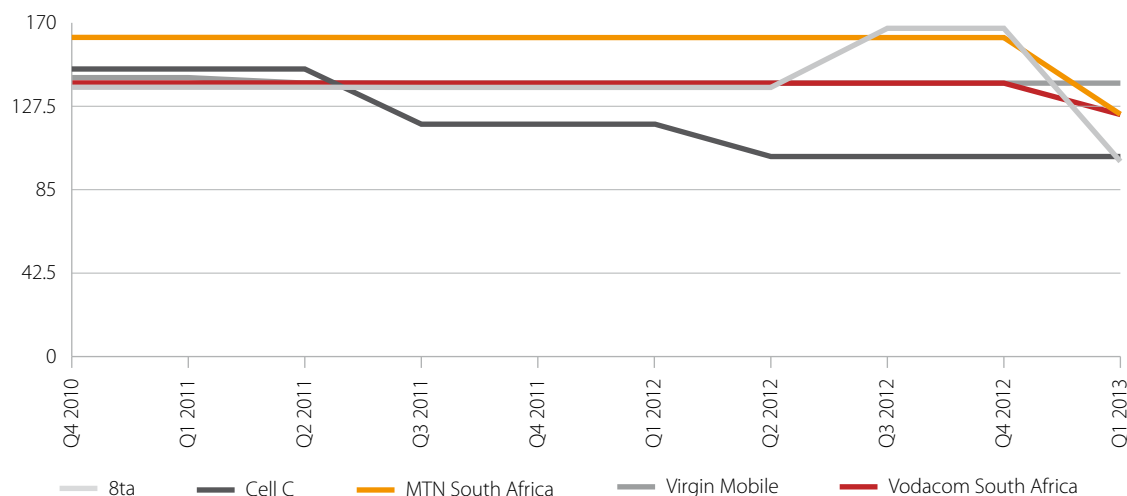
## Policy outcome 5: high mobile and fixed retail prices

*Competitive pricing pressure followed the MTR reduction in March 2013*

South Africans are only now, with the last termination rate reduction in the current glide path (in March 2013), beginning to see the benefits of competitive pricing pressure in the prepaid mobile market. Yet, prices for prepaid mobile, the service used by the majority of citizens and particularly the poor, still remain high in comparison with other African countries, as discussed below.

As a result of the second reduction of the MTR in March 2012, Cell C was able to cut its prices to ZAR0.99 per minute – below the psychological ZAR1.00 barrier – and this was followed by Vodacom briefly, but Vodacom's cheapest price went back up. Following the third wholesale termination rate cut in March 2013, Telkom Mobile lowered its tariff to ZAR0.95 per minute (through a service bundled with Telkom fixed-line provision), becoming the lowest-priced product offering in the country. The price cuts put pressure on the tariffs of the two dominant operators, as they were losing market share.

MTN, having resisted price cuts throughout 2012, and after losing almost half a million subscribers in March 2013 due to the migration of users towards cheaper operators (despite the popularity of its dynamically priced offering MTN Zone), was forced finally to reduce its tariffs and introduced MTN One4All, a new flat tariff set at ZAR1.20 per minute with per-second billing. Similarly, Vodacom introduced Anytime per Second, set at the same price as its competitor MTN. However, the incumbents, while matching each other's price, did not go down to Cell C's lowest price offering of ZAR0.99 per minute, which last entrant Telkom Mobile did (as we saw above) match and even go lower than.



**Figure 6: Cheapest prepaid mobile product by operator in South Africa, based on OECD<sup>11</sup> lower-user basket of 2010, in ZAR**

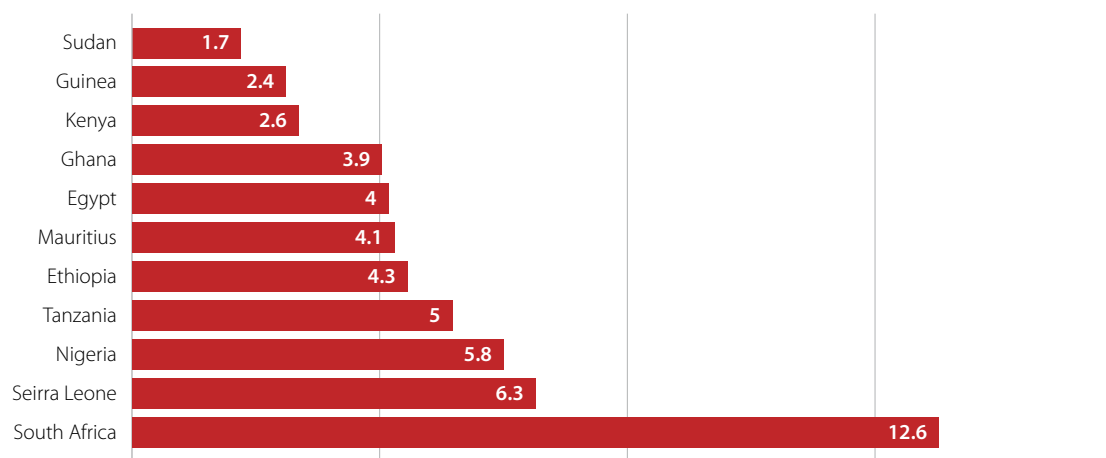
Source: RIA Pricing Transparency Index: Prepaid Mobile data 2013

11 In order to overcome comparative price complexities at least practically, the Organisation for Economic Co-operation and Development has developed a "price benchmarking baskets" methodology. This methodology is based on 40 calls in a month and distribution of calls across time and off-net and on-net. Although the overall basket volumes and destination distribution in the original OECD basket also include voicemail, RIA has removed voicemail from the basket and redistributed throughout the amount of on-net and off-net calls because voicemail is free of charge with the majority of African operators. See OECD (2010).

These pricing moves demonstrate that the dominant operators MTN and Vodacom, which have historically been entrenched in the market, are finally being affected by the price-cutting efforts of late entrants Cell C and, more recently, Telkom Mobile. The dominant operators are now reacting to price pressure, as price-sensitive users migrate towards smaller operators.

MTN has consistently had the highest price in South Africa for its cheapest prepaid product in terms of the Organisation for Economic Co-operation and Development (OECD) 2010 prepaid low-user mobile basket (40 calls per month prepaid), with its 2012 cheapest lower-user basket cost sitting at ZAR167, while Vodacom's cheapest prepaid pricing has been constant and marginally lower, sitting at ZAR138 in 2012 for the OECD monthly lower-user basket (OECD, 2010). In the first quarter of 2013, following price pressures from smaller operators and the enforcement of the third reduction of MTRs, both MTN and Vodacom reduced prices to the equivalent of ZAR122 for the OECD lower-user basket, still higher than the cheapest tariffs of the small operators. Cell C's low-user basket cost is now at ZAR10, while Telkom Mobile's is at ZAR103. Telkom Mobile in 2013 announced a promotion that would see its on-net price at ZAR0.95 per minute and its off-net price at ZAR0.95, the lowest mobile prices ever offered in South Africa. Whether Telkom Mobile keeps its prices this low, and is able to pressure other operators to reduce prices, remains to be seen.

*MTN and Vodacom have been affected by price-cutting pressure from late entrants Cell C and Telkom Mobile*



*South Africa's pricing remains high on the continent despite a tariff dive*

**Figure 7: South African prepaid mobile prices in relation to the 10 cheapest countries in Africa, based on OECD lower-user basket of 2010**

Source: RIA Pricing Transparency Index: Prepaid Mobile data

When comparing South Africa with other African countries in terms of the OECD 2010 lower-user prepaid mobile basket, South Africa is seven times more expensive than the cheapest country (Sudan) surveyed by RIA in Africa and twice as expensive as Sierra Leone, which is only the 10<sup>th</sup> cheapest country in the RIA Pricing Transparency Index: Prepaid Mobile. This comparison with other African countries studied by RIA shows that although the enforced reduction of MTRs, and price pressures, have brought about a reduction of tariffs, South Africa's prepaid prices continue to be very expensive in comparison to many other African countries. In Table 6 below, South Africa comes 23<sup>rd</sup> out of 46 operators measured across Africa in the RIA Prepaid Mobile Price Index in terms of the cheapest prepaid mobile product in the country, and 26<sup>th</sup> in terms of the cheapest prepaid mobile product in the country from a dominant operator.

While prices are high across all services in South Africa, South Africa's high prepaid mobile prices, and poor showing on this measure compared to other African countries, is of particular concern as a policy outcome, as prepaid mobile services are the communication services most used by the poor.

**Table 6: March 2013 prepaid mobile costs based on OECD lower-user basket of 2010**

	Cheapest product from dominant operator		Cheapest product in country		% cheaper than dominant
	US\$	Rank	US\$	Rank	
Ghana	3.9	1	3.9	4	Dominant is cheapest
Egypt	4.01	2	4.01	5	Dominant is cheapest
Mauritius	4.13	3	4.13	6	Dominant is cheapest
Ethiopia	4.3	4	4.3	7	N/A
Kenya	4.37	5	2.58	3	41.0%
Sudan	4.56	6	1.72	1	62.3%
Guinea	6.26	7	2.41	2	61.5%
Tunisia	6.36	8	6.36	12	Dominant is cheapest
Algeria	6.48	9	6.48	14	Dominant is cheapest
Libya	6.88	10	6.88	16	Dominant is cheapest
Congo Brazzaville	7.82	11	7.82	17	Dominant is cheapest
Tanzania	8.32	12	5.01	8	39.8%
Uganda	9.17	13	6.32	11	31.1%
Rwanda	9.19	14	6.37	13	30.7%
Nigeria	9.48	15	5.77	9	39.1%
Namibia	12.2	16	12.2	19	Dominant is cheapest
Mauritania	12.33	17	12.33	20	Dominant is cheapest
Liberia	12.4	18	12.4	21	Dominant is cheapest
Cote d'Ivoire	12.75	19	12.75	24	Dominant is cheapest
Senegal	12.76	20	12.76	25	Dominant is cheapest
Benin	13.16	21	12.45	22	5.4%
Central African Republic	13.16	22	13.16	26	Dominant is cheapest



Sierra Leone	13.59	23	6.28	10	53.8%
Mozambique	14.02	24	14.02	28	Dominant is cheapest
Botswana	14.66	25	11.75	18	19.8%
South Africa	14.91	26	12.57	23	15.7%
Burkina Faso	14.95	27	14.72	29	1.5%
Mali	14.97	28	14.97	30	Dominant is cheapest
Togo	15.52	29	15.52	31	Dominant is cheapest
Chad	16.8	30	16.8	34	Dominant is cheapest
Malawi	16.91	31	16.91	35	Dominant is cheapest
D.R. Congo	17.1	32	17.1	36	Dominant is cheapest
Cameroon	17.32	33	17.13	37	1.1%
Seychelles	18.13	34	18.13	38	Dominant is cheapest
Zambia	19.07	35	18.57	39	2.6%
Niger	19.35	36	16.34	32	15.6%
Angola	22.55	37	19.41	41	13.9%
Zimbabwe	22.75	38	21.57	43	5.2%
Morocco	22.92	39	22.92	44	Dominant is cheapest
Madagascar	23.06	40	19.63	42	14.9%
Lesotho	23.74	41	19.28	40	18.8%
Swaziland	26.01	42	26.01	45	Dominant is cheapest
Cape Verde	29.82	43	29.82	46	Dominant is cheapest

Source: RIA Pricing Transparency Index: Prepaid Mobile data 2013

*Mobile broadband  
is cheaper and  
faster than fixed  
line broadband*

## Policy outcome 6: mobile broadband cheaper than fixed

While prices for South Africa's prepaid mobile voice services continue to be very high by continental and global standards, the country's mobile data market, which is becoming a significant revenue stream for mobile operators, is highly competitive. From analyses of prepaid and postpaid mobile and ADSL (fixed) broadband RIA price categories, it is clear that fixed-line packages are (surprisingly) far more expensive than comparable mobile packages. Also boosting mobile data's appeal compared to fixed in South Africa, particularly for low data use and uneven consumption, are mobile data's lower setup costs (e.g. no monthly line rental charges and installation fees) and its more convenient prepaid charging options. For these reasons, it is unsurprising that many South African home users opt to use a 3G dongle modem or mobile handset to access the internet instead of setting up an ADSL connection. With mobile operators offering different broadband data options and packages for different market segments, the mobile broadband market is where pricing pressure is occurring, as operators compete to attract and retain broadband customers. As a result, where fixed operators have moved into mobile with the intention of benefiting from bundled service offerings of fixed and mobile, the danger exists of their mobile offering, driven by competition in the mobile market, cannibalising their fixed-line offering. This is evident in South Africa, which has the most extensive (though still very limited) fixed network in sub-Saharan Africa. Mobile operators, particularly the late entrant Telkom mobile arm Telkom Mobile, offer cheaper and faster internet plans than the service offered by the fixed incumbent Telkom.

In the assessment of broadband pricing below, prices are compared for categories of 1GB and 5GB. The monthly cost is established by dividing the total cost of use for a 24-month period, including installation costs, dongle purchases, line rental and out-of-bundle MB costs. Only the cheapest product available from an operator is displayed in Tables 7 and 8.

**Table 7: 1GB RIA price categories, prepaid and postpaid mobile broadband, in ZAR per month**

		up to 7.2 mbps	at 7.2 mbps	up to 21.6 mbps	above 21.6 mbps
Prepaid mobile	Telkom Mobile	165.63	165.63	178.17	257.29
	Cell C	176.04	176.04	190.63	
	MTN	303.54	303.54	311.88	
	Vodacom	295.63	295.63	308.13	345.63
	<b>Cheapest</b>	<b>165.63</b>	<b>165.63</b>	<b>178.17</b>	<b>257.29</b>
Postpaid mobile	Telkom Mobile	85.63	85.63	98.17	177.29
	Cell C	100.79	100.79	115.38	
	MTN	79.00	79.00	79.00	89.00
	Vodacom	85.63	85.63	98.13	135.63
	<b>Cheapest</b>	<b>79.00</b>	<b>79.00</b>	<b>79.00</b>	<b>89.00</b>
ADSL	iBurst	409.54	409.54	669.54	
	MWEB	364.13	544.13	1 314.13	
	Telkom	423.71	423.71	931.71	
	WebAfrica	367.46	617.46	667.46	
	<b>Cheapest</b>	<b>364.13</b>	<b>409.54</b>	<b>667.46</b>	
Fixed wireless	Neotel	189.25	519.83	1 519.83	

*Prices for broadband contracts are lower than prepaid broadband packages*

Source: RIA broadband pricing calculations 2013

Telkom Mobile has the cheapest prepaid product for a user requiring 1GB of use per month, while MTN has the cheapest postpaid 1GB product. Both Vodacom and Telkom Mobile offer prepaid LTE products in all four speed categories, while MTN only offers LTE speeds postpaid. ADSL prices for any of the providers covered cannot compete on price for 1GB use per month for the lower three speed categories and there is no ADSL product offering beyond 21.6 mbps. Fixed wireless is also only available for the lower three speed categories. Neotel products cannot compete with mobile and only beat ADSL in the speed category below 7.2 mbps

**Table 8: 5GB RIA price categories, prepaid and postpaid mobile broadband, in ZAR per month**

		up to 7.2 mbps	at 7.2 mbps	up to 21.6 mbps	above 21.6 mbps
Prepaid mobile	Telkom Mobile	316.63	316.63	329.17	408.29
	Cell C	235.29	235.29	249.88	
	MTN	1 081.54	1 081.54	1 089.88	
	Vodacom	845.63	845.63	858.13	895.63
	<b>Cheapest</b>	<b>235.29</b>	<b>235.29</b>	<b>249.88</b>	<b>408.29</b>
Postpaid mobile	Telkom Mobile	265.63	265.63	278.17	357.29
	Cell C	216.04	216.04	230.63	
	MTN	269.00	269.00	269.00	269.00
	Vodacom	275.63	275.63	288.13	325.63
	<b>Cheapest</b>	<b>216.04</b>	<b>216.04</b>	<b>230.63</b>	<b>269.00</b>
ADSL	iBurst	499.54	499.54	759.54	
	MWEB	424.13	544.13	1 314.13	
	Telkom	423.71	432.71	758.71	
	WebAfrica	417.46	417.46	667.46	
	<b>Cheapest</b>	<b>417.46</b>	<b>417.46</b>	<b>667.46</b>	
Fixed wireless	Neotel	189.25	519.83	1 519.83	

Source: RIA broadband pricing calculations 2013

The picture changes for the 5GB per month category, where Cell C is the cheapest mobile prepaid and postpaid provider. The cheapest ADSL product costs twice as much as the cheapest mobile product. Neotel's fixed wireless is the cheapest for below 7.2 mbps broadband products, but cannot compete at any of the faster speeds.

ADSL is the only broadband product that offers uncapped access, the only remaining advantage of fixed-broadband. Together with some reliability advantages raised in the quality of service discussion below, this is really Telkom's only competitive advantage. As seen above, it is strategically important for Telkom not to focus on mobile broadband at the expense of its fixed broadband business. Telkom would need to invest in faster technologies such as VDSL2 or fibre-to-the-home if it wants to remain significant with wired broadband offerings.

## Policy outcome 7: mobile broadband speeds faster than ADSL

Operators have argued that it is flawed to compare pricing in different countries without also comparing quality and coverage, arguing that South Africa has some of the most advanced networks in the world and extremely high population coverage. While these assertions are true, it is also true that other countries with much lower prices are enjoying extensive national coverage and latest-generation networks with the help of proactive regulators, engaged governments, and booming economies. Movitel of Angola and MTC of Namibia were the first operators in Africa to deploy LTE, in April/May 2012, followed by Mauritius's second-largest mobile operator, Emtel, which launched its commercial LTE service at the end of May 2012, and Smile Communications in Tanzania, which launched a commercial LTE service in June 2012.

QoS regulation was absent in South Africa until 2013, hence the negative TRE perception seen above for this criterion. But in May 2013, the South African regulator ICASA published QoS reports covering Vodacom, MTN and Cell C's networks and services in Gauteng, Eastern Cape, Western Cape, and KwaZulu-Natal Provinces. The reports showed that the operators were falling short in meeting call set-up success rate (CSSR) targets in a number of provinces. Despite the QoS reports being a positive step towards addressing the level of QoS, operators have questioned methodology used by ICASA-drive-testing, using the TEMS investigation tool. Operators have previously questioned the reliability of drive-testing as the testing quality was believed to be too limited (ITWeb, 2013). Meanwhile, according to the latest report of Ookla, an international broadband testing company, South Africans are on average only getting 74% of the speeds they sign up for, which is lower than the global average of 85%. Ookla's (n.d.) Household Promise Index ranks South Africa number 55 out of 64 countries.

The Ookla findings are supported by a broadband QoS pilot study conducted by RIA in South Africa in all nine provinces. The study found that consumers in South Africa are not getting advertised speeds. The study also demonstrated that mobile 3G and LTE services outperform fixed broadband. Using host-based measurements from MyBroadband, Figure 9 shows that no matter where the measurements are taken (i.e. to a local or international server), mobile speeds are faster than fixed-line speeds. The median downstream throughputs of the LTE connections are the highest, at around 25 mbps. The 3G connections also generally experience higher download throughput than the fixed-line service plans. The download speed of mobile broadband is far outperforming fixed-line broadband speed in South Africa.

*Mobile broadband offerings are preferred to fixed ones*

*Consumers are not getting advertised connection speeds*

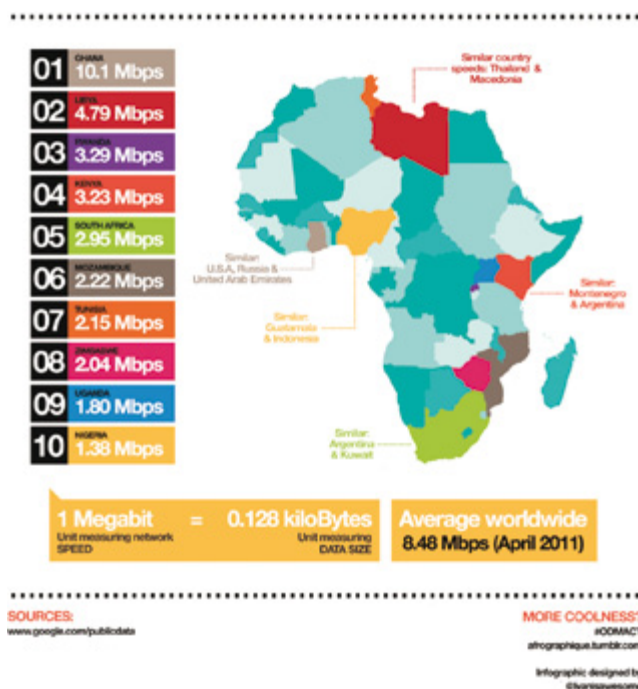


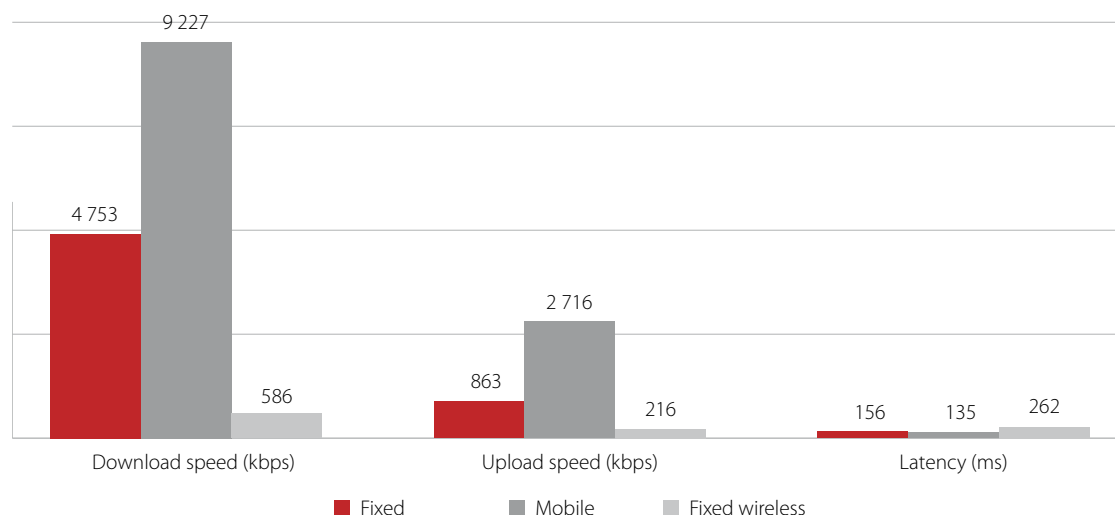
Figure 8: African broadband download speeds

Source: Google (2011)



*Mobile broadband throughput is better than that of fixed*

However, speed is not the only limiting factor on performance. Although the mobile broadband service throughput is better than fixed at all points throughout the country, it is unlikely to become a substitute for fixed-lined connectivity where that is already available because, although fixed-line throughput is poor, the reliability of ADSL over time is more constant and thus is preferable for users requiring consistently high quality levels (Chetty *et al.*, 2013).



**Figure 9: South African broadband speeds**

*Source: MyBroadband (2013), based on measurements from 75 000 point*

Unlike in more developed nations, in South Africa – according to the RIA pricing data and pilot study of broadband performance – mobile broadband is thus both cheaper and faster than fixed broadband. However, because of its variability, mobile is unlikely to replace fixed-line connectivity, particularly for consumers needing a stable and reliable internet connection. To encourage widespread broadband adoption and use in the country, South Africa has to invest in next-generation fixed-line infrastructure (VDSL and fibre-to-home) and bring fixed broadband prices down across the board.

## Policy outcome 8: spectrum allocation bottlenecks

With wireless the major driver of individual broadband uptake in South Africa, the release of critical spectrum (in the prime spectrum around the 700MHz and 800MHz bands) by the migration from analogue to digital transmission of terrestrial TV has been a major area of policy focus and industry pressure. Efficient assignment of spectrum in these frequencies, which are particularly suited to the deployment of high-speed wireless broadband services using 4G technologies such as LTE, is seen as crucial to delivering next-generation broadband services to South Africans and to overcoming the so-called “digital divide” between broadband-connected urban citizens and those living in rural areas with inferior connectivity. Yet spectrum remains a critical regulatory bottleneck.

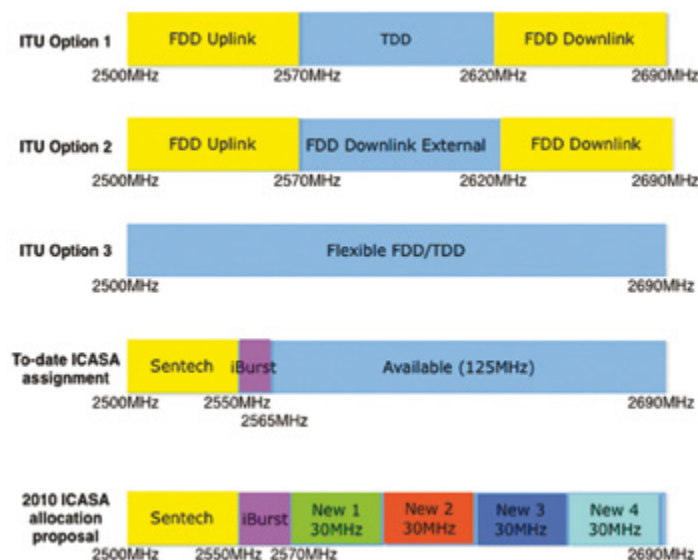
*Spectrum limitations remain a critical regulatory bottleneck*

Frequency spectrum in the 800MHz band was allocated by ICASA to Neotel, South Africa’s first infrastructure-based fixed-line competitor, in 2010. Access to this spectrum had been earmarked by Neotel as key to rolling out cost-effective voice and internet services for individual and SME customers across South Africa. The CDMA2000 mobile technology has been used globally in the 800MHz spectrum to provide larger coverage for both voice and high-speed internet services at lower costs, thus providing optimal economies of scale. This automatically translates into improved affordability of telecommunications services to consumers for whom telecommunications have previously been unaffordable<sup>12</sup> (Burger, 2013). (Telkom also deploys WiMAX to meet broadband demand where it is unable to deploy ADSL.)

Most wireless access providers in South Africa currently make use of licence-exempt frequencies in accordance with the ICASA Frequency Licence Exemption Regulations of 2008 (ICASA, 2008). The industry is growing exponentially to meet the massive, pent-up demand for cost-effective, quality broadband across the country – from high-density suburbs to remote rural communities. However, it is recognised that use of licence-exempt frequencies is not a sustainable solution, due to the number of new entrants seeking access to spectrum and the congestion of these allocated bands. Late in 2012, ICASA announced its intention to review the National Radio Frequency Plan to ensure that that it corresponds to the decisions of ITU World Radio Conference of 2012 (WRC-12) and the latest ITU Radio Regulations; and that it aligns with the Southern African Development Community Frequency Allocation Plan (SADC FAP). On 24 December 2012, ICASA published the second Draft Frequency Migration Plan, following consideration of comments made in initial submissions, public hearings and supplementary submissions (ICASA, 2012). The Plan includes a framework for development of a Spectrum Assignment Plan for bands earmarked for migration and those identified in the future National Radio Frequency Plan. Comment on the Draft Frequency Migration Plan was due in February 2013, but at the time of the completion of this report in August 2013, nothing had yet been made public regarding the inputs received.

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<sup>12</sup> See Eepublishers (2013) for a more detailed account of the rationale for allocation.



**Figure 10: 2.6GHz band – comparison between ITU options and possible ICASA allocation**

Source: Compiled by Calandro (2011)

## Digital migration

*Little progress has been made towards digital terrestrial television*

The policy process for migration of terrestrial TV from the current analogue frequencies to digital terrestrial television (DTT) frequencies started over a decade ago with appointment of the first Digital Broadcasting Advisory Body (DBAB). The migration will result in an increase in the number of TV channels available, and thus increased programming and content. Another advantage of digital migration is that it allows for more efficient use of frequency spectrum, some of which can be channelled away from TV for alternative uses, including wireless broadband. The digital migration process was originally planned for completion in November 2011, but has been delayed by a number of factors, including: appointment of a series of specialist bodies whose findings were not implemented; arbitrary reconsideration of the agreed DTT transmission standard by the Ministry; and contestation over set-top box (STB) standards and conditional access (CA) systems.

The political dimensions of migrating broadcast channels off valuable spectrum are compounded in South Africa by the fact that, as in many other developing countries, most people still do not have broadband internet access (or any internet access at all). However, at the same time, unlike many other developing countries, South Africa has a sophisticated television environment with a constitutionally protected public broadcaster (as opposed to the state broadcasters in many other African countries) and community, private free-to-air, and subscription broadcasters, which together represent significant and vocal interests. TV and radio thus remain primary modes of information and education, posing challenges to state efforts to move free-to-air television channels off their existing frequencies to make way for broadband internet services which, it has been argued, would initially only be affordable to a relatively small elite class with computer access and connectivity. But with the changes to broadband access brought about by mobile connectivity, this case may be more difficult to make, though the nature of content use on a mobile phone and TV screen or computer are of course quite different.

On the demand side of broadband internet (as is discussed in Part Two of this report), there is little doubt that in the short term, demand will be met through mobile phone services and devices. Although large numbers of people are currently unable to afford smartphones, South Africa does have a relatively high penetration of feature phones and smartphones with internet capability, a penetration likely to increase rapidly as people become more internet-dependent. However, if broadcast digital migration is correctly managed, it has potential to deliver long-term broadband internet penetration benefits by generating spectrum dividends for broadband rollout, including rollout to underserved areas.

Like with so many other ICT matters, South Africa was initially ahead of the curve on broadcast digital migration. In 2001, an amendment to the Telecommunications Act required the establishment of the aforementioned DBAB by then-Minister of Communications Ivy Matsepe-Casaburri. A mixed task team of operators and academia was appointed to DBAB, and within a year DBAB reported to Cabinet on proposed digital broadcast standards, migration priorities, STB development and spectrum and multiplex (MUX) arrangements. DBAB proposed a market-led pilot, with a significant role for the public broadcaster. The proposals, based on global experience following the first round of unsuccessful digital terrestrial broadcasting experiences in countries such as the UK and Spain, were never formally published or adopted.

Without reference to DBAB or its report, the same Minister Matsepe-Casaburri in 2006 appointed a new body, the Digital Migration Working Group, which reported back to the Minister in 2006, and then a Digital Dzonga multi-stakeholder body to take the migration forward. The Digital Dzonga worked closely with the Southern African Digital Broadcasting Association (SADIBA) industry body to pilot terrestrial services and ensure that trials could take place from 2008 onwards. But having made significant progress in implementation of the migration plan, the Digital Dzonga body was disbanded in 2010 by minister Siphile Nyanda. In addition, issues around DTT standards were unnecessarily thrown into confusion by political interference when Minister Nyanda and his Director-General in the DoC, Mamodupi Mohlala, unilaterally decided to review the choice of DVB-T as the standard for DTT transmission, so as to give consideration to a Japanese-developed standard that had been adopted (and was being lobbied for) by Brazil. The Minister's decision to review DVB-T (the standard which had been approved by Cabinet in 2007) followed an official DoC visit to Brazil by invitation of Brazil's then-President Lula, whose industrial policy entailed the local production of STBs using the rival Japanese-developed standard.

With DVB-T pilots well advanced in South Africa, and basic specifications for equipment already agreed upon, the industry spun into turmoil during this state reconsideration of the DVB-T standard, bringing progress towards migration to a halt. Minister Nyanda, however, served for less than two years, and after the appointment of a new Minister, Roy Padayachie, the DVB-T standard was reaffirmed (in its next generation, DVB-T2, which provides greater spectrum efficiency) via an announcement in early 2012, and the migration process was put back on track.

The DTT STB's CA and electronic programme guide (EPG) specifications have also been major points of contention, and South Africa's industrial policy, requiring local production of STBs (with the intention of being able to supply these throughout the continent) has also been fraught. Among other things, the decision on whether the development of the STB should be optimised to enable internet access, requiring a more costly return path, delayed agreement on the STB specifications.

Controversy did not end there. Commercial free-to-air broadcaster e.tv brought a case against the next Minister of Communications, Dina Pule (the third minister in rapid succession), who had backtracked on a decision that the broadcasters operate their own DTT multiplexes (MUXs) and had instead centralised the operation of the MUXs in

*Controversy over the DTT standard has slowed progress towards DTT adoption*

the hands of state-owned signal distributor Sentech. The case was decided in e.tv's favour, and the Minister withdrew her appeal against the decision. Matters were delayed further by issues around allocation of MUXs and the number of public channels necessary to cater to issues of language and diversity.

The decision was then taken to use the significant unspent USAF funds intended for disbursement by USAASA to subsidise mid-level STBs for the poor. About 5million of the poorest TV-owning households will qualify for a 70% subsidy from USAASA for their DTT STBs, which are expected to retail for between ZAR400 and ZAR700. The total subsidy to be provided via USAASA for STBs currently stands at an estimated ZAR2.7billion (excluding distribution costs). In 2012, around ZAR950million was allocated to USAASA from USAF funds (Odendaal, 2012). Also in 2012, the DoC allocated ZAR1.8billion to Sentech for DTT transmission infrastructure rollout and for the costs of dual illumination (analogue-digital simulcasting) of broadcaster signals during the migration period before analogue switch-off. Dual illumination is expected to cost Sentech ZAR95million in 2012, ZAR106million in 2013 and in 2014, and ZAR107million in 2015. The analogue switch-off date has repeatedly been postponed. Initially, in 2008, DoC policy called for switch-off to be in November 2011. That deadline was then pushed to 2012, and then 2013, and now there is doubt that South Africa will even be able to meet the June 2015 switch-off date it committed itself to.

## Auctions

Although officially committed to technological neutrality, the regulator has been caught in a struggle between those wishing to see the "digital dividend" spectrum – spectrum that becomes available at the conclusion of broadcast digital migration – allocated in a way that would be optimal for WiMAX and those who believe a more efficient use of the spectrum would be for LTE use. The broadcast digital migration processes have been so protracted that the initial policy preference for WiMAX – in the belief that it would best be able to meet the needs of underserved rural and remote communities – has now been overtaken by the claims for efficient use of spectrum and accessing of the internet through mobile phones offered by the LTE fourth generation GSM technology. The spectrum in the 2.6GHz band is ideal for high-density urban areas and would enable the next generation of broadband network based on LTE to be rolled out. The 800MHz band can also be used for the rollout of an LTE network but, unlike the 2.6GHz band, it is better suited to rural areas and this is clearly what ICASA is targetting (Gedye, 2012). Operators have been chomping at the bit to launch LTE services since 2010, but the delays and about-turns by ICASA have prevented release of the necessary spectrum. Until LTE, South African operators had led adoption of each generation of GSM on the continent, and even in the world, from the initial introduction of first generation GSM services in 1993; but now they lag not only more mature jurisdictions but also in many other African countries. LTE services are now offered in several African countries, including Kenya and Namibia, well in advance of South Africa.

ICASA sought to respond early to the pressure to release spectrum for broadband services. ICASA initially published regulations for spectrum-on-demand in November 2006, and South Africa took an important first step by announcing plans to release 60MHz of spectrum at 800MHz and 190MHz of spectrum at 2600MHz (the new spectrum) for broadband use. But the process stalled, and it was only two years later that ICASA called for comments, following publication of its decisions on licensing of the remaining radio frequency spectrum in the 2.6GHz and 3.5GHz bands in June 2008 (ICASA, 2008).

In 2009, ICASA put out an invitation to apply (ITA) for the 2.6GHz and 3.5GHz spectrum. The ITA outlined the process and licensing framework and ICASA at the same time issued a Position Paper and draft regulations (ICASA, 2009). Hearings took place in October 2009, and in May 2010, ICASA published the Regulations and issued a call for applications by 30 July 2010 (ICASA, 2010). The intention was to run an auction, but with a qualified requirement of 30% BEE ownership



as part of Broad-Based Black Economic Empowerment (B-BBEE) policy. However, timelines and details of the process were excluded from the ITA. The Regulations were then challenged by operators and ICASA efforts came to naught. After operators warned ICASA that it was opening itself up to possible legal action if it went ahead with its plans to license the spectrum without waiting for the Minister's policy direction, ICASA announced a delay in the licensing of the high demand spectrum bands

Finally, in December 2011, ICASA unveiled its spectrum assignment plans, which signalled its intention to bundle 800MHz and 2.6GHz spectrum and to assign spectrum specifically for two wholesale networks. But these network operators would not be allowed to re-sell these services in the retail market. Following criticism of the regulation, and following the extensive lobbying of the DoC, the entire auction process was again withdrawn in 2012, six years after the process first started.

In December 2012, ICASA reopened the issue of spectrum allocation in the bands, announcing a timetable that would see new entrants being licensed for the new spectrum by the end of April 2013. However, the 800MHz spectrum will be freed up only once the migration from analogue to digital television is complete – a completion which, as mentioned in the preceding sub-section, is likely to occur in 2015 at the soonest.

The ongoing lack of direction on USO strategies may also have unintended consequences in the area of spectrum allocation. In an attempt to fulfil its USO mandate, ICASA has included rollout obligations for licensees that require a 70% geographic coverage within five years for licensees in both spectrum bands, 50% of which must be outside of the main metropolitan centres of Gauteng, Cape Town, and Durban (where users, including high-end users, are concentrated). Those players licensed for the 2.6GHz band will have to meet a 50% geographical coverage target within four years (ICASA, 2012). ICASA proposes a mix of direct assessment and beauty contests rather than competitive auctions - which are widely perceived as an efficient way to allocate spectrum. requires prospective licensees to cover 50% of the population of their district (in 3.5GHz) or the country (in 2.6GHz) within two years of their being awarded the spectrum – failing which, the licensees would risk losing their spectrum. However, accompanying regulations state clearly that ICASA will take away spectrum licences only if companies fail to achieve 50% of that target, i.e. just 25% of the population. Critics have pointed out that this is likely to result in yet another failed USO intervention, as operators will simply cover the more lucrative markets of Gauteng, Cape Town, Durban, and Port Elizabeth, which are already well-served by infrastructure, to achieve the 25% target. This would mean that ICASA would not achieve its objective of broadening coverage outside the metropolitan areas, nor achieve the more efficient allocative outcomes possible through clearer-cut auction allocation methods.

The regulations have been criticised for failing to comply with international best practice. Dominic Cull from Ellipses, and BMI-TechKnowledge's Martin Roetter, in their submissions to ICASA, have argued that the fundamental problem is the way ICASA has provisioned the spectrum (Cull, 2012; Roetter, 2012). The regulator had indicated its intention to auction the spectrum off in single, 30MHz chunks, an approach which is well-suited to companies wanting to build networks using WiMAX, but not those wishing to deploy LTE. Cull argues that what ICASA should have done with the spectrum was shift the existing holdings in the 2.6GHz band, especially iBurst's, so that the band could be used for both WiMAX and LTE (Cull, 2012). The rules governing the 3.5GHz spectrum auction also only permit companies with so-called "class" network licences — i.e. municipal licensees – to bid for 3.5GHz spectrum. Cull has pointed out that there are 52 districts in South Africa, with two licences on offer per district, for a total of 104 licences. However, there are only about 50 class network licensees in the country (Cull, 2012). In the wake of Altech's 2008 court victory against the Communications Minister, many of the smaller ISPs secured individual licences rather than class licences.

*Spectrum allocation has been stalled by the regulator ICASA*

*The latest spectrum regulations have been criticised by the GSM Association for not being in line with international best practice*

Few of these licensees have the resources for the ZAR70 000 non-refundable deposit and the refundable ZAR250 000 auction fee required to participate in the auction. With no guidelines from ICASA, there is considerable uncertainty around the auction.

Based on recent studies linking the extension of broadband to economic growth, the GSMA concludes that the ICASA proposals for assigning the new spectrum would lower the net present value of GDP by between ZAR450billion and ZAR510billion over the period 2014 to 2025, when compared with assignment of the spectrum to existing operators (which is what the GSMA bases its case on). The GSMA argues the ICASA proposals would reduce the net present value of government tax revenues by between ZAR95billion and ZAR110billion, when compared with the base case. The GSMA also argues for the economic benefits of moving from the ICASA proposals to the base case assignment is equivalent to 500 000 additional jobs, at current South African wages (McLeod, 2012). Although the actual figures can be contested on different base cases, they are indicative of the high opportunity costs of delaying the allocation of high band spectrum which, arguably, with sufficient latitude in the licence for market self-correction (spectrum-trading), it would be less costly to allocate now even if not done in optimal fashion.

## Policy outcome 9: financial performance of mobile incumbent operators strong but Telkom weak

### Fixed-line market

The instability within the sector has been caused, to a great extent, by the precarious position the incumbent, Telkom, finds itself in as a result of government's indecision about its future. Telkom's share price has been in free fall since selling off its stake in Vodacom, the liquidity from which was surprisingly not put into building out Telkom's backbone but, rather, into starting a new mobile operator in this highly entrenched market and attempting an expensive and failed detour into subscription television – an attempt which accrued losses of over ZAR80million (Telkom,2010). Telkom has also had to cover a ZAR7billion loss arising from its seemingly severely over-priced investment in Multilinks in Nigeria.<sup>13</sup>

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<sup>13</sup> This figure was provided by the late Minister Roy Padayachie in response to questions in Parliament and a report from TechCentral in July 2011. See TechCentral (2011).

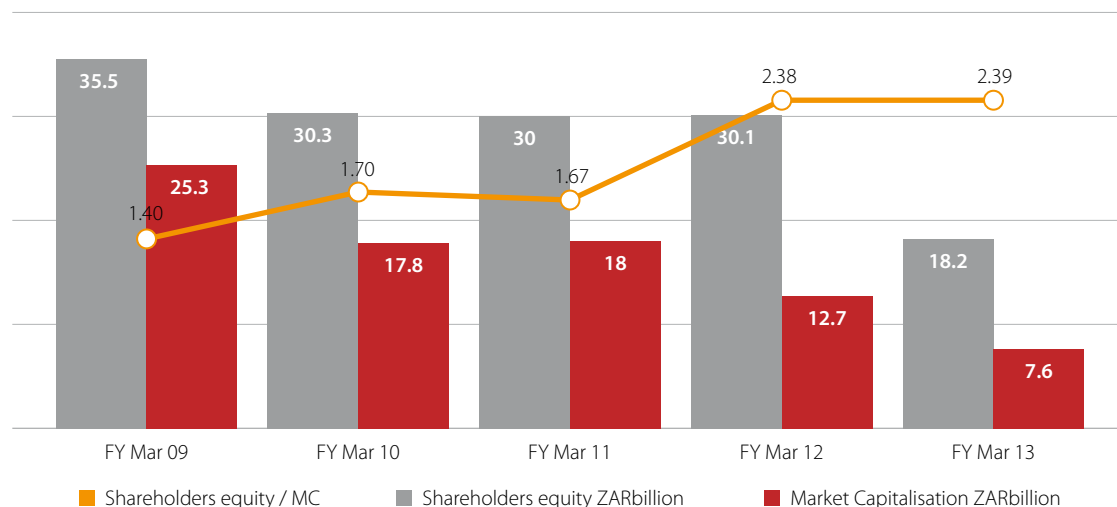
Table 9: Telkom FY ending 31 March

		FY2009	FY2010	FY2011	FY2012	FY2013
Subscribers (thousands)	ADSL subscribers	548	647	752	827	871
	Internet all access subscribers	423	512	543	523	527
	WiMAX subscribers	2.60	3.00	3.20	3.38	3.22
	Fixed access lines	4 451	4 273	4 152	3 995	3 800
	Postpaid – PSTN	2 769	2 625	2 552	2 499	2 427
	Postpaid – ISDN channels	781	784	772	767	756
	Prepaid	766	744	703	623	522
	Payphones	135	120	125	106	95
Revenues (ZARm)	Voice incl. Telkom Mobile				17 668	16 818
	Fixed subscriptions and connections			6 762	7 643	7 743
	Fixed-line use				9 501	8 591
	Data incl. Telkom Mobile			10 699	10 237	10 801
	Leased line facilities				2 051	1 963
	Managed data network services				899	1 005
	Data connectivity				5 339	5 595
Key financial indicators	EBITDA margin	32.9	30.3	26.9	20	
	Total revenue (ZARm)	36 433	38 305	33 879	33 668	33 119
	Net profit (ZARm)	4 496	37 585	1 342	-90	-11 499
	Total assets (ZARm)	85 771	56 819	54 347	52 568	41 636
	Total liabilities (ZARm)	50 276	26 555	24 325	22 427	23 397
	Shareholders equity (ZARm)	35 495	30 264	30 022	30 141	18 239
	Return on equity	0.13	1.24	0.04	-0.00	-0.63
	Share price end of March (end of day)	48.53	34.1	34.61	24.34	14.68
	Market capitalisation (ZARm)	25 274	17 759	18 024	12 676	7 645
	Number of ordinary shares in million	520.78	520.78	520.78	520.78	520.78
	Shareholders equity divided by MC	1.40	1.70	1.67	2.38	2.39

Source: Telkom (2013) and previous annual reports

Telkom's biggest drop in value came following the decision by Cabinet not to authorise a deal that would have seen Korean Telecom (KT) buy out 20% of the ailing company for ZAR2.6billion. Telkom's stock fell 12%, to ZAR20.20, after the KT deal was rejected, wiping ZAR1.4billion off its market capitalisation. The share price dropped significantly again, 3.4% to ZAR17.43, in August 2012, on news following the imposition of a ZAR449million fine by the Competition Tribunal for Telkom's abuse of its dominance in the telecommunications market between 1999 and 2004 (a period in which Telkom was a monopoly provider of telecommunications facilities).<sup>14</sup> Telkom's share price fell a further 3%, and was trading below ZAR16, after CEO Nombulelo Moholi's resignation following the Minister withdrawing Ministerial proxy votes (in the Telkom AGM) for reappointment of Telkom Board members. (This prompted the resignation of the Board chairman and was followed by the announcement of the CEO's resignation a few days later in November 2012.)

Telkom's fixed-line results over the last five years reflect a service in decline. The number of residential users has continued to decline due to mobile substitution. While postpaid fixed-line declined by 3.7% in 2010-11, prepaid declined by 3% and public pay phones by 5.7% to 125 000 (compared to 158 000 public payphones in 2007) (Telkom, 2011).



**Figure 11: Telkom shareholders equity (net assets) compared to market capitalisation**

Source: RIA calculations based on Telkom (2013) and previous annual reports

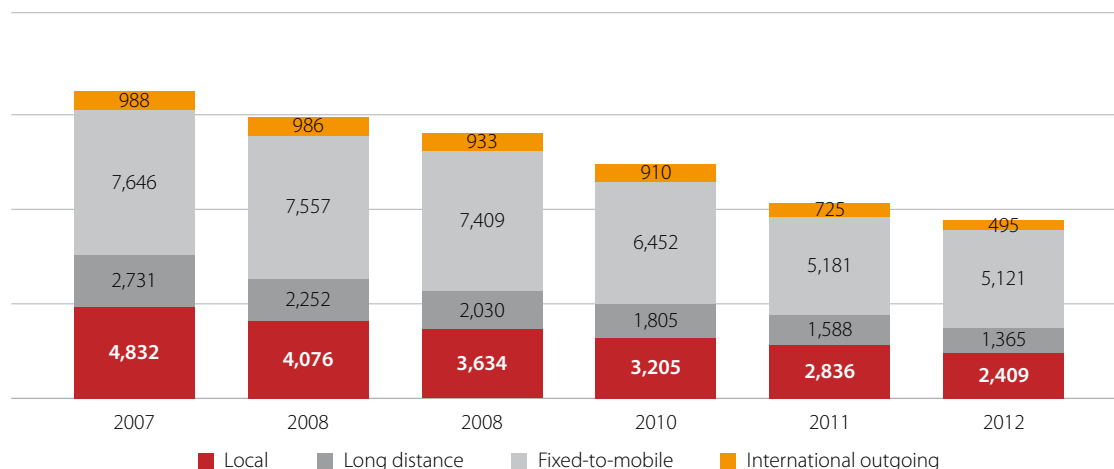
Telkom's fixed-voice revenue decline is affecting local, long distance, fixed-to-mobile and international call revenues. Telkom increased fixed-line prices in August 2013, which will obviously not lead to higher revenues but only to a faster fixed-to-mobile substitution and further decline of fixed traffic revenues.

<sup>14</sup> The Competition Tribunal concluded that Telkom leveraged its upstream monopoly in the facilities market to advantage its own subsidiary in the competitive VANS market. Telkom's conduct caused harm to both competitors and consumers alike and impeded competition and innovation in the dynamic VANS market. The Competition Commission had originally asked the Tribunal for the maximum penalty of 10% of revenues which came to ZAR3.5billion, and which Telkom appealed and lost. In the meantime the Commission had added further complaints against Telkom to its docket, but the Tribunal finally reached agreement with Telkom (whose financial situation had become dire) on behavioural remedies and set in place the functional separation of Telkom with a fine of only ZAR450million.

*Telkom was fined R449million for the abuse of its dominance between 1999 and 2004*

*Fixed mobile substitution is underway*





**Figure 12: Telkom fixed-line traffic revenues (ZARmillions)**

Source: Telkom (2012) and previous reports

*Neotel has been running at a loss since it officially launched in 2006*

Neotel has been running at a loss since it officially launched in 2006. However, the extent of the loss is unclear as the company does not have a separate reporting system from its parent company Tata Communications. According to reports by TechCentral and ITWeb, the company's loss was an estimated ZAR1billion in 2010 and an estimated ZAR1.9billion in 2011 (Brainstorm, 2012).

## Mobile market

It is significant that none of the dire warnings from South Africa's dominant operators about the negative impact of reductions in MTRs have come true. The current key performance indicators of dominant mobile operators Vodacom and MTN look better than those for previous years. In line with their pioneering role and market leadership in the industry, these two operators have found new productive revenue streams through growing their data businesses and their value-added services. For both companies, revenues and subscriber numbers increased in their most recent financial reports.

### MTN

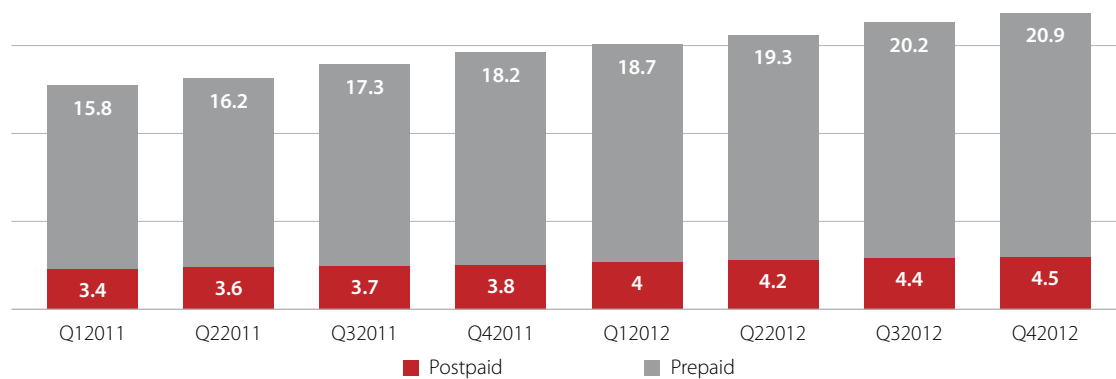
*MTN's performance has been positive*

MTN South Africa's prepaid and postpaid subscriber numbers increased in the eight quarters to the end of the financial year ending March 2012 (FY2012). Postpaid average revenue per user (ARPU) figures declined while prepaid ARPU's were constant over the previous eight quarters – somewhat unexpected given the increased demand for data.

MTN revenues increased by 7% and EBITDA by 6.5% for FY2012 compared to 2011, while the EBITDA margin remained constant at a high 35.2%. Data and SMS revenues increased 38% and 58% respectively. With evidence<sup>15</sup> of significant free message data service substitution for SMS, one would have thought that revenues from SMS would be in decline. A possible explanation for the SMS revenue increase could be increased SMS use for machine-to-machine communications and bulk SMSing. MTN reported 13.4million data users for FY2012.

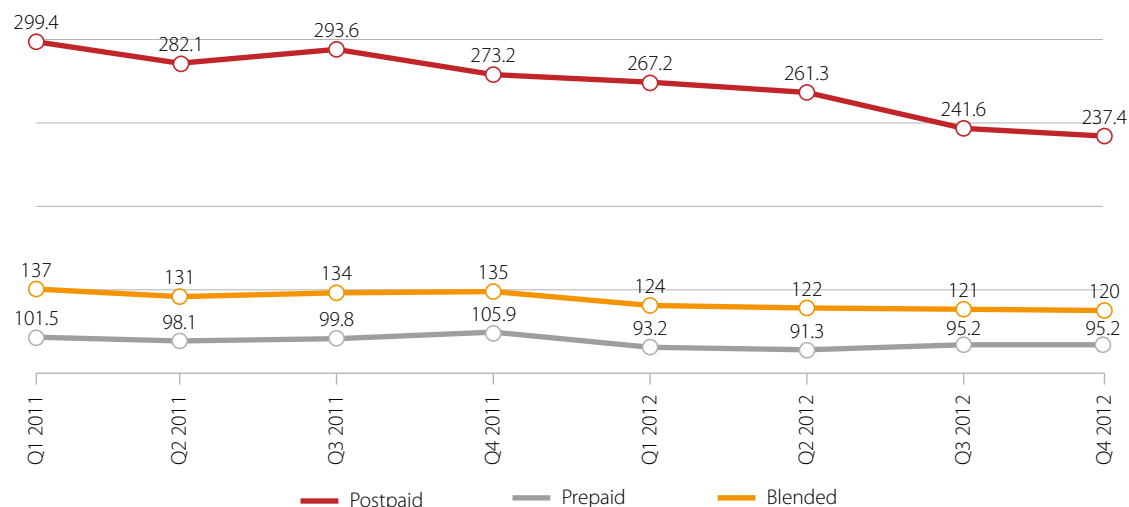
<sup>15</sup> RIA ICT Survey data 2011-12

MTN also increased its capital expenditure (CAPEX) in FY2012 to 15.5% of revenues, up from 10.6% in the previous year. The CAPEX per subscriber increased from ZAR186 to ZAR253, indicating MTN's confidence in the South African telecommunications market and its expected returns from the market. The higher CAPEX is mostly attributable to network extension and upgrading to 4G. Interestingly, MTN did not report on interconnection revenues and expenses in its annual report for FY2012, something it had done for the previous seven financial years. MTN's last reported interconnection net revenues were positive.



**Figure 13: MTN South Africa subscriber numbers in millions**

Source: MTN (2012) and previous report



**Figure 14: MTN South Africa ARPU (ZAR)**

Source: MTN (2012) and previous report

Table 10: MTN South Africa for FY ending December

		FY2009	FY2010	FY2011	FY2012
Subscribers (SIMs) in million	Prepaid	13.0	15.5	18.20	20.90
	Postpaid	3.0	3.4	3.8	4.50
	Total	16.1	18.8	22	25.4
ARPU (ZAR)	Prepaid	100	112	106	95
	Postpaid	365	329	273	237
	Blended	145	152	134	122
MOU	Outgoing	64	71	69	70
Implied minute prices ARPU/MOU (ZAR)					
Capital expenditure	Total (ZARm)	6 034	3 908	4 105	6 416
	% of revenue	18.2%	10.9%	10.6%	15.5%
	per subscriber (ZAR)	376	208	186	253
Revenues	Total (ZARm)	33 149	35 822	38 597	41 349
	Data	2 475	3 638	4 646	6 409
	SMS	2 021	2 490	2 641	4 176
	Data incl SMS	4 496	6 128	7 287	10 585
EBITDA	Total (ZARm)	10 410	12 188	13 591	14 476
	Margin	31.4%	34.1%	35.2%	35.2%
	EBITDA / Subscribers (ZAR)	647.9	648.3	616.8	569.9
Interconnection (ZARm)	Interconnection revenue	7 271	6 568	5 924	
	Interconnection and roaming expenses	6 400	5 483	5 183	
	Net cash flow from interconnection incl. roaming	871	1 085	741	
	Net interconnect		1 481	1 182	

Source: MTN (2012) and previous annual reports

## Vodacom

Vodacom South Africa's performance has been solid for the financial years ending in March 2010, 2011, 2012, and 2013. Revenues have consistently grown, to ZAR58.6billion in the financial year ending March 2013 (FY2013). Its EBITDA margin slightly improved by nearly one percentage point, while operating profits increased from ZAR16.7billion to ZAR17.4billion in FY2013. Prepaid and postpaid subscriber numbers increased, as did traffic in terms of outgoing minutes. Active<sup>16</sup> SIM card numbers increased from 19.7 to 30.3million between 2010 and 2013. Vodacom's voice traffic increased while SMS traffic decreased, a trend that was to be expected given the availability of alternative forms of texting via data services such as Whatsapp, Viber, Facebook, and Skype. Vodacom's decreased prepaid and postpaid MOU, lower voice revenues, and higher data revenues also indicate a clear trend – from voice to data connections – for South Africa's telecommunications sector.

Vodacom has seen its profit increase while prices decreased in the more competitive environment created by the reductions in MTRs - as reflected in the price benchmarks of the previous sections of this report and also in Vodacom's audited financial statements. Voice revenue divided by outgoing minutes declined from ZAR1.46 in 2010 to ZAR1.03 in 2013. Also, the implied price (ARPU divided by MOU) decreased overall despite an increase for postpaid subscribers. (ARPU takes all revenue together, including interconnection and data revenue, and divides it by subscribers.) Vodacom's postpaid subscriber implied price increase is due to high data use.

Interconnect expenses for FY2013 were not published by Vodacom, with only the interconnect revenues made public. The net impact of MTR reductions can thus not be assessed, as is also the case for MTN.

*Vodacom's performance has been consistent for the financial years ending March 2010, 2011 and 2012*

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<sup>16</sup> These are customers who had used services in the previous three months.

**Table 11: Vodacom South Africa financials and key performance indicators FY ending in March**

		FY2010	FY2011	FY2012	FY2013
Revenue ZARm	Mobile voice	27 422	28 584	29 395	29 151
	Mobile interconnect	8 075	6 755	6 062	4 916
	Mobile messaging	2 716	2 962	3 143	3 027
	Mobile data	4 614	6 180	7 639	8 882
	Revenue total	50 431	53 371	56 932	58 607
Interconnect revenue as % of total revenue		16.0%	12.7%	10.6%	8.4%
Interconnect expenses ZARm		6 324	5 682	4 923	
Net interconnect ZARm		1 751	1 073	1 139	
Operating profit ZARm		14 763	15 522	16 671	17 640
EBITDA margin		36.8%	36.8%	37.3%	38.2%
Subscribers (million)	Total	19.7	22.9	28.9	30.3
	Prepaid	15.2	17.8	23.3	24.4
	Contract	4.5	5.1	5.6	5.9
Outgoing minutes (millions)		18 792	22 160	26 341	28 349
Messaging (millions)		5 949	6 509	6 650	6 071
Mobile voice revenue / outgoing traffic		1.46	1.29	1.12	1.03
Monthly MOU	All	111	119	114	102
	Prepaid	82	95	97	90
	Postpaid	220	202	177	154
Monthly ARPU (ZAR)	All	184	183	157	129
	Prepaid	105	106	91	76
	Postpaid	447	404	362	328
Implied minute prices (ZAR)	All	1.66	1.54	1.38	1.26
	Prepaid	1.28	1.12	0.94	0.84
	Postpaid	2.03	2.00	2.05	2.13

Source: Vodacom (2013) and annual reports



## Telkom Mobile

While Vodacom and MTN are improving their performances from year to year, and Cell C seems to finally be making some gains in the mobile market, Telkom Mobile is struggling to get its business up and running. Telkom Mobile gained active prepaid subscribers but lost postpaid subscribers in the financial year ending March 2013 (FY2013). At the same time, postpaid ARPU dropped by 20%. These are clear signs that Telkom Mobile is struggling to gain a foothold.

Telkom Mobile managed to expand its number of base stations by 29%, and sites by 45.3%, in FY2013. Of its sites, 651 were upgraded to carry LTE equipment. Currently Telkom Mobile offers amongst the lowest data prices for the highest throughput in the areas where it is available.

It remains to be seen whether Telkom's bundling efforts – offering fixed voice together with fixed and mobile data services, will bear fruit. Fixed-line and fixed broadband access may become more attractive when combined with mobile broadband at double or more the speed of ADSL (20 mbps compared to 1-10 mbps) and combined with the convenience of mobility. At the same time, however, Telkom's 3.8million fixed-line subscribers, many of whom are business subscribers, and its 870 000 ADSL subscribers, may not provide Telkom Mobile with the leverage necessary to compete with the dominant mobile players to whom many of its fixed-line and corporate customers are already tied. Only time will tell whether Telkom Mobile will be able to attract a new customer base through Telkom's bundled services (on which Telkom Mobile piggy-backs), but the history of fixed services in South Africa does not bode well.

*Telkom Mobile is struggling to find sustainable growth*

**Table 12: Telkom Mobile financial performance extracted from Telkom SA financial reports**

		FY2012	FY2013
Active subscribers	All	1.53	1.48
	Prepaid	1.04	1.16
	Postpaid	0.44	0.38
Infrastructure	BTS	1 782	2 299
	Sites	1 348	1 958
	LTE sites		651
ARPU (ZAR)	Blended	74.16	61.47
	Prepaid	20.89	23.96
	Postpaid	206.83	166.13
Revenue (ZARm)	Mobile voice and subscription	524	484
	Data	163	364
	Mobile handset sales	319	435
	Total	1 200	1 283

Source: Telkom (2013) and previous annual report

*Cell C's aggressive pricing has put pressure on dominant operators*

## Cell C

Cell C has in the past made a strong appeal for retention of asymmetrical MTRs in its, and Telkom Mobile's, favour. Without any transparency on Cell C's financial situation, assessment of its viability within the current competitive environment is impossible. This is something that the regulator will have to assess as it enters into its MTR review in 2013. Cell C's aggressive price reductions (outlined earlier) have certainly pressured the dominant operators into reducing their prices, and the significant investment Cell C received from shareholders Saudi Augar<sup>17</sup> suggests it remains serious about growing the mobile market and eroding some of the market share of the dominant players. Cell C says it has 11.5million customers, which constitutes about 17% of the market, and it has publicly targeted 25% of the market as the share necessary for it to become a viable competitor. With Vodacom's share of the market standing at 44% (with more than 30million SIMs sold), and MTN at 37% market share (25million SIMs sold), Cell C will require a supportive regulatory environment and considerable inventiveness.

*The current MTR and mobile telephony pricing remains high in comparison to other African countries*

## Conclusions

The MTR has finally been lowered sufficiently, as of March 2013, to result in pricing pressure on the dominant operators Vodacom and MTN. While previously these two dominant players were able to ignore newer entrants' efforts (Cell C's efforts in particular) to undercut them, Cell C and Telkom Mobile have more recently been able to attract price-sensitive consumers and force down the prices of the dominant operators. However, the current MTR – and therefore pricing – remains high in comparison with other African countries surveyed in the RIA Pricing Transparency Index: Prepaid Mobile. As outlined earlier in this report, South Africa's cheapest prepaid mobile price from a dominant operator is several times more expensive than the cheapest identified among dominant operators in the 46 African countries monitored by the RIA Index, and magnitudes of scale more expensive in terms of the cheapest product from any operator in a country before (where South Africa ranks 23rd out of 46 countries in the Index).

Amongst the best-performing African countries on mobile pricing are those which have introduced cost-based MTRs. South Africa's prepaid prices are unlikely to come down further until the MTR is reduced to the cost of an efficient operator. Global and African benchmarking suggest that this cost is in the region of US\$0.01 or US\$0.02 (i.e. around ZAR0.10 to ZAR0.20 at the current exchange rate). This is less than half of the current MTR (ZAR0.40) in South Africa.

*Mobile pricing is unlikely to decrease without further mobile termination rate reductions*

The decline of voice services and the growth of data are having significant impacts on the development of the mobile market. Voice and data subscribers are becoming increasingly difficult to distinguish between, as airtime is purchased and converted for data use and, at the same time, data services are used to make voice calls. It will continue to be necessary to understand and assess the competitiveness of markets, the market shares, and the success of players in this converged environment. With data becoming the dominant revenue stream, this is where much of the pricing pressure is occurring, as operators try to attract and retain broadband customers.

With the growing demand for data services, the South African regulator ICASA needs to enable operators to respond to the changing nature of the business and to innovate and grow new services in response to declining voice revenue streams.

## Part two

### Policy outcome 10: unaffordable access and suboptimal use

This section draws on the nationally representative RIA South Africa Household and Individual ICT Access and Use Survey conducted in 2012 (see RIA (2012) for Survey methodology). The only demand-side survey of its kind, it provides insights into not only the levels of access to ICTs but also the nature of use and the amounts users are spending on ICTs. Importantly, the RIA 2012 ICT Survey also provides data on those marginalised from services, the reasons for their non-use, and the willingness of individuals to pay for services they would like to access. Because the RIA ICT Survey gathered extensive additional household information, including income and expenditure, through a method that was nationally representative, the findings can be disaggregated into rural and urban settings, on gender lines, and between users at the top of the pyramid (ToP) and the base of the pyramid (BoP)<sup>17</sup> – information that is simply not available from national supply-side data or demand-side surveys that are not nationally representative.<sup>18</sup>

**Table 13 : Summary of ICT access in South Africa from Census and RIA ICT Survey data**

	Census		RIA	
	2006	2011	2007	2012
Households with fixed line	18.5%	14.5%	18.2%	18.0%
Households with computer	15.6%	21.4%	14.8%	24.5%
Households with radio	76.5%	67.5%	77.7%	62.3%
Households with television	65.5%	74.5%	71.1%	78.2%
Households with internet		35.2%	4.8% (household) 15.0% (individual)	19.7% (household) 33.7% (individual)
Cellphone ownership (household)	72.7%	88.9%	62.1%	84.2%

Source: RIA ICT Survey data 2011-12, StatsSA (2011)

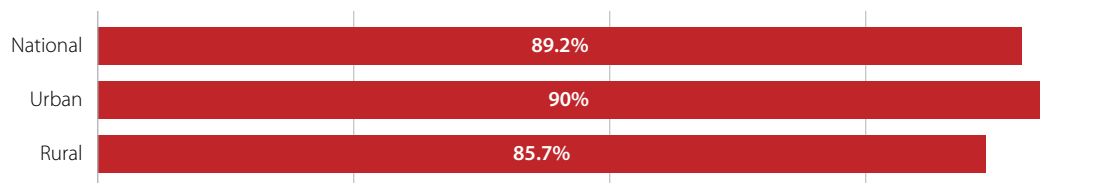
<sup>17</sup> The BoP is a concept which draws on then-US President Franklin Delano Roosevelt's notion that economic reconstruction after the Great Depression required drawing on the resources of the "forgotten men" in order to develop new models of doing business – new models that see the economic potential in the billions of people worldwide who live in poverty but are nevertheless consumers of goods and services. The BoP idea was popularised by C.K. Prahalad in his 1998 book *The Fortune at the Bottom of the Pyramid* (Prahalad, 1998) and the 2005 book *Capitalism at the Crossroads* by Stuart L. Hart (Hart, 2005). Hart focussed on the capacity of people at the BoP as not only consumers but also producers. Subsequently, Ted London, in his paper "Reinventing strategies for emerging markets: beyond the transnational model", constructed a role for people at the BoP as business partners and innovators.

<sup>18</sup> The South African Census only measures household not individual use, so any household with at least one person with a mobile phone able to access the internet is counted as a household with internet even if the person with mobile access may be out of the home most of the day.

BoP here refers to individuals who are living on less than ZAR432 per month, which is in the National Development Plan as the basic poverty line as defined by Statistics South Africa (NPC, 2011)<sup>19</sup>.

## Household indicators

South Africa is highly electrified by global South standards, with even 85% of households in rural areas accessing power from the national grid.

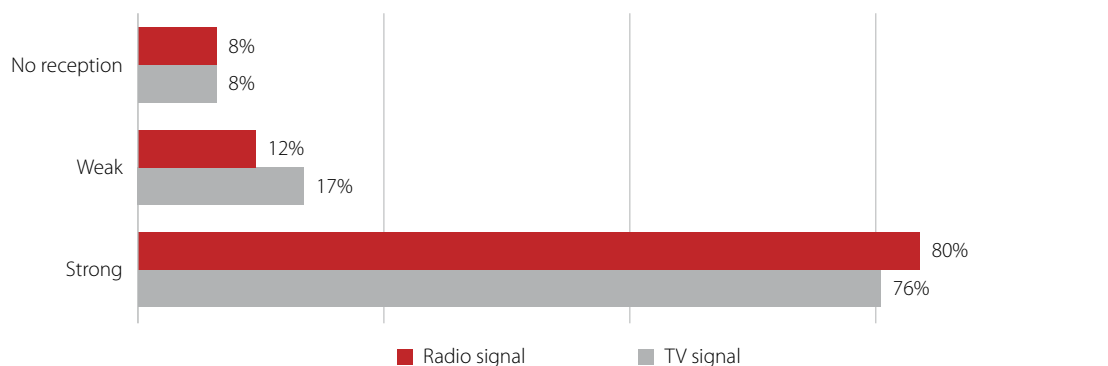


**Figure 15: Households with electricity**

Source: RIA ICT Survey data 2011-12

## Television and radio ownership and use

As indicated in Figure 16, 75% of households surveyed by RIA state that they have a strong television signal and over 80% of households reporting that they receive a strong radio signal.



**Figure 16: TV/radio reception in South Africa**

Source: RIA ICT Survey data 2011-12

Nearly 78% of South Africans 15 years or older surveyed by RIA stated that they watch television, of which 88% said they are happy with the choice of programmes available. Programmes primarily watched by households include the news (88.5%), entertainment (87%), and sports (68%). Over 56% of households watch health programmes and 56%

<sup>19</sup> This figure is less than the US\$2.5 per day figure (i.e. roughly ZAR25 per day, which is about ZAR750 per month) used by the World Bank and other Bretton Woods institutions as the poverty datum line (see Calandro *et al.*, 2012).

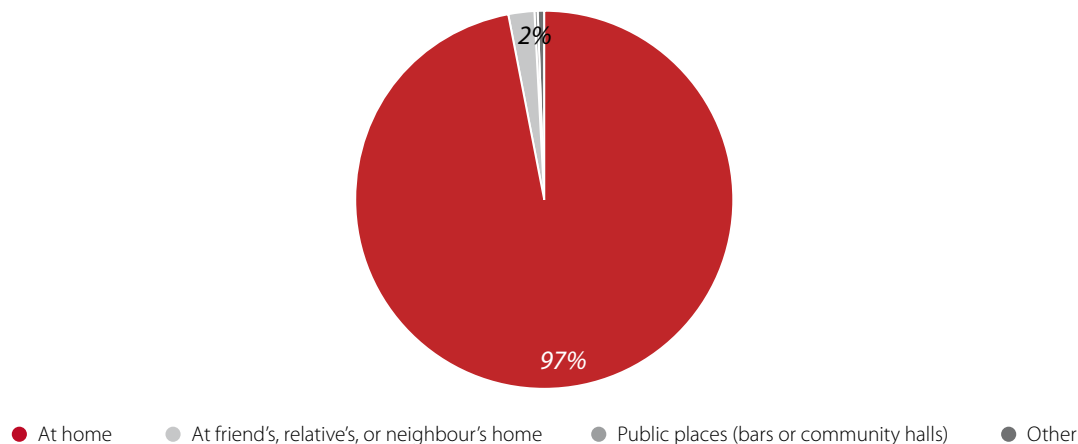
watch educational programmes. Despite digital migration being planned for completion by June 2015, only 14.6% of households that watch television said they have heard about digital television. Thus, from a policy perspective, there clearly needs to be awareness raised about digital migration and how it will affect consumers.

**Table 14: Television access and use**

		National	Urban	Rural
Watching TV		77.7%	86.6%	63.3%
Happy with the choice of programmes		87.9%	86.9%	89.8%
What do you watch?	Entertainment	86.9%	85.3%	90.5%
	Educational programmes	56.1%	55.6%	57.2%
	News	88.5%	88.1%	89.5%
	Sports	67.9%	64.8%	74.5%
	Health programmes	56.3%	57%	55%
Heard about digital migration		14.6%	18.4%	6.0%

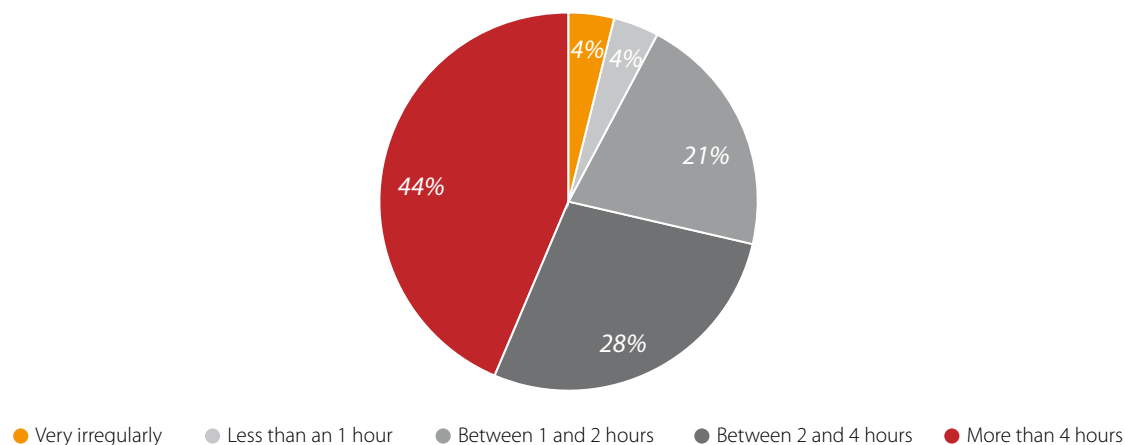
Source: RIA ICT Survey data 2011-12

Considering the extensive coverage and high uptake of television, it is not surprising to note, in Figure 17, that most households watch television in the home and 44% of the households watching television spend more than four hours per day watching, while 28% watch television between two and four hours per day and 21% between one and two hours per day.



**Figure 17: Location where TV is watched**

Source: RIA ICT Survey data 2011-12

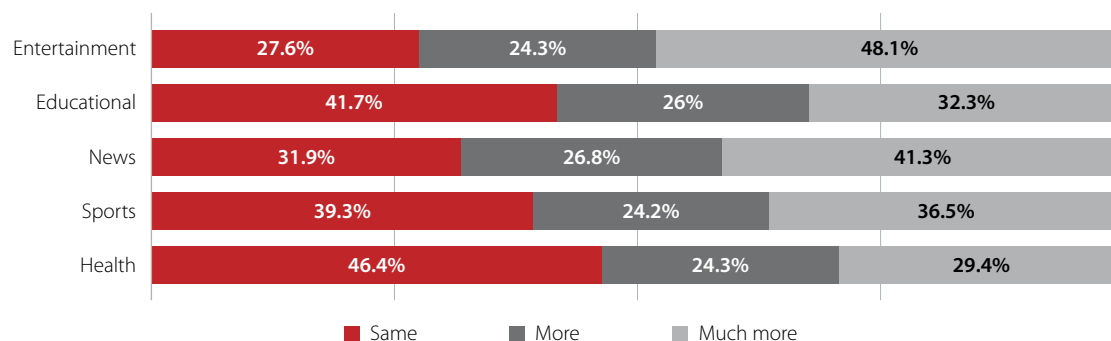


**Figure 18: Number of hours spent watching TV per day**

Source: RIA ICT Survey data 2011-12

Over 48% of households, when asked which programmes they would like to watch if there were more channels available, stated that they would prefer more entertainment programming, while 41% stated they would prefer news, and 37% said they want to watch more sporting programmes.

*Entertainment, sport, and news programmes are the most preferred by TV viewers*



**Figure 19: If there were more channels available, the kinds of programmes you would like to see more of**

Source: RIA ICT Survey data 2011-12

Table 15 highlights some of the opinions of individuals aged 15 and older who watch television. Over 80% indicated that television expands their thinking and understanding of the world. Over 70% stated that television connects them to their country and community, and 72% stated that the content on television should be more relevant to their community. These findings suggest that although a large number of households watching TV say they are satisfied with the current choice of programmes, there is still a need to develop policies geared towards development of programmes with more local content and/or community-based programmes (72% of respondents said content on television needs to be more relevant to their community).

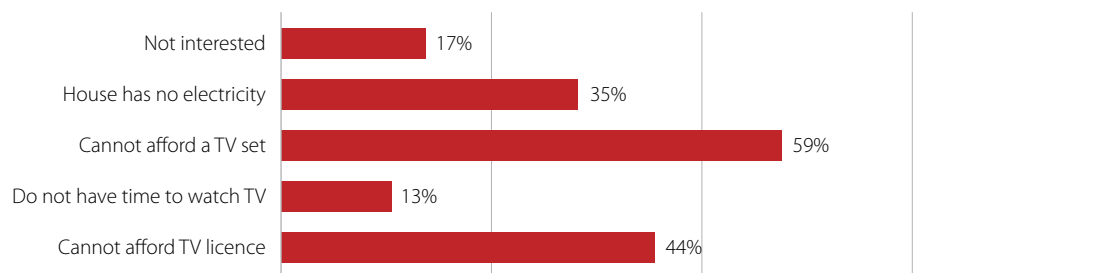


**Table 15: Television viewing and preferences**

	Do not agree	Not sure	Agree
Television expands my thinking and understanding of the world	10.70%	6.30%	83.00%
I only watch satellite TV (e.g. DStv)	77.10%	2.20%	20.70%
I rely on TV for my education	61.40%	5.00%	33.65
TV connects me to my country and my community	17.50%	11.70%	70.80%
Programmes on TV are all boring and irrelevant to me	77.50%	11.40%	11.10%
I find TV programmes morally offensive sometimes	43.50%	11.90%	44.60%
I keep my TV on all the time and watch whatever is being broadcasted	79.40%	6.10%	14.50%
TV helps to find jobs by keeping me informed	73.20%	8.20%	18.60%
Content on TV should be more relevant to my community	20.10%	7.80%	72.10%
I could not live without TV	68.00%	4.60%	27.30%
I am hooked to soapies (TV series)	51.70%	4.50%	43.80%
I would like to have Pay TV (e.g. DStv) but cannot afford it	48.00%	3.30%	48.80%

Source: RIA ICT Survey data 2011-12

Among respondents without household access to TV, nearly 60% said they do not have access because they cannot afford a TV set, while 44% stated that they cannot afford a TV licence (which currently costs ZAR265 per annum) and 35% stated that their house has no electricity.



**Figure 20: Reasons for not having a television**

Source: RIA ICT Survey data 2011-12

More than 55% of individuals aged 15 years and older said they listen to the radio and 73% said they own a personal radio receiver. Of these radio listeners, 92% said they listen to music, 87% to the news, 65% to religious programmes, 60% to programmes on local issues, and 59% to sports programmes.

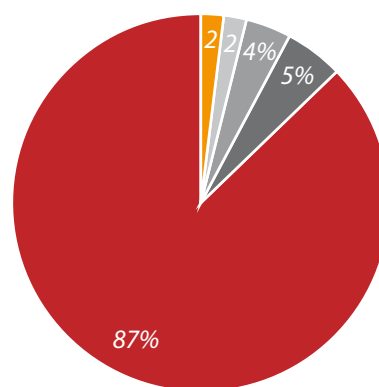
**Table 16: Radio access and use**

		National	Urban	Rural
Listening to radio		55.6%	56%	55%
Own personal radio		73.0%	73.9%	71.5%
Main programmes listened to	Music	92.3%	93.5%	90.3%
	Politics	40.2%	39.4%	41.5%
	Educational	49.4%	52.4%	44.4%
	Programmes on local issues	59.8%	57.9%	62.9%
	Sports	59.4%	55.2%	66.2%
	News	86.5%	86.8%	86%
	Business	34.7%	35.2%	34%
	Health	49.4%	53.75	57.5%
	Religious	64.5%	62.85	67.5%

*Music, news and religious programmes dominate radio listening*

Source: RIA ICT Survey data 2011-12

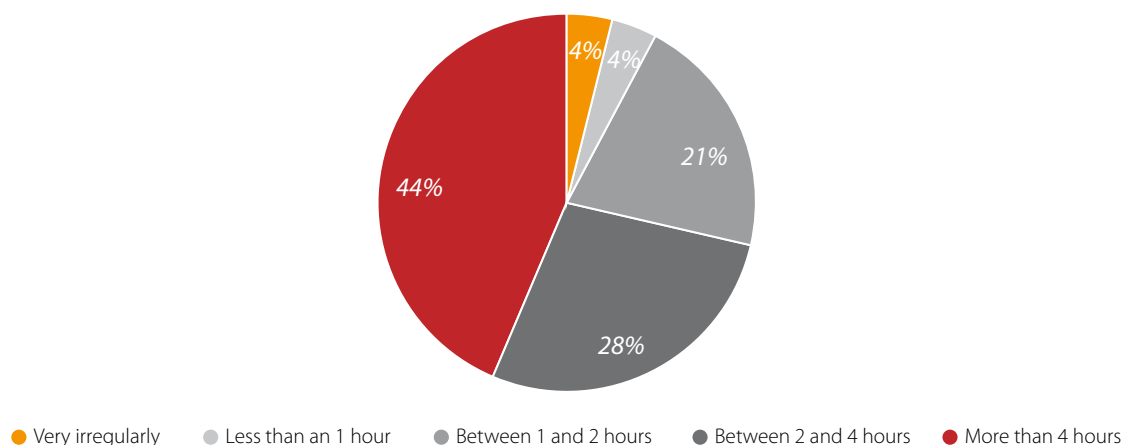
There are similarities between the trends in radio listening and the trends seen above in TV viewing. Around 87% of radio listener respondents said they listen to radio at home (see Figure 21), and 44% listen to the radio for more than 4 hours per day, 28% between two and four hours per day, and 21% between 1 and 2 hours per day (Figure 22).



● At friend's/relative's/neighbour's ● Using my mobile phone ● Work 1 and 2 hours ● While travelling (car) ● At home

**Figure 21: Where radio is listened to**

Source: RIA ICT Survey data 2011-12



**Figure 22: Average hours per day listening to radio**

Source: RIA ICT Survey data 2011-12

Again, as was found among TV viewers, radio listeners feel that local content is very important, with 86% stating that radio in their language is important to them. In addition, 60% stated that radio provides relevant health information, and 57% mostly listen to music (see Table 17).

**Table 17: Reasons for listening to the radio**

	Do not agree	Not sure	Agree
The radio provides me with relevant health information	28.8%	11.2%	60%
The radio provides me with useful information for farming	61.2%	17.1%	21.7%
Radio content in my language is important for me	11.4%	3%	85.6%
I only listen to news	87.2%	3.3%	9.4%
The radio helps me stay informed/find a job	68.3%	6.8%	24.9%
I mostly listen to music	38.4%	4.3%	57.2%
My radio is always switched on	76.1%	3.5%	20.4%

Source: RIA ICT Survey data 2011-12

## Fixed lines

In the 2008 RIA South Africa Survey, 18.2% of households had a working fixed line. In the 2012 Survey, fixed-line access at household level has declined slightly to 18%, of which 77.7% is prepaid and 22% postpaid, while 10.7% of the households surveyed in 2012 indicated they had previously owned a fixed-line phone but do not have one at present. In urban areas, 24% of households have a working fixed line, compared to only 5.8% in rural areas. Among households

*Mobile is becoming the preferred method of communication*

without a fixed line, when asked the reasons for not having a fixed connection, 86.7% stated that they use mobile phones instead (indicating that there is fixed-to-mobile substitution taking place), while 42.6% stated that fixed lines are not available where they live, 42.4% stated that they do not have a sufficiently regular income, and 51.5% stated that they simply cannot afford one.

**Table 18: Household fixed-line access**

	National	Urban	Rural
Households with a working fixed line	18%	24%	5.8%
Prepaid	77.7%	38.8%	60%
Postpaid	22.3%	61.2%	40%
Households without a fixed-line phone that previously had one	10.7%	13.4%	6.2%

Source: RIA ICT Survey data 2011-12

Despite the higher penetration rate of fixed-line services in South Africa with other RIA survey countries, it is evident that affordability remains a key challenge in South Africa. When asked how they would respond to a reduction in fixed-line call costs, 47.7% of fixed-line users stated that they would make more calls and 28% stated that they would use the money saved for something else.

## End of payphones?

*Public phone use is dwindling*

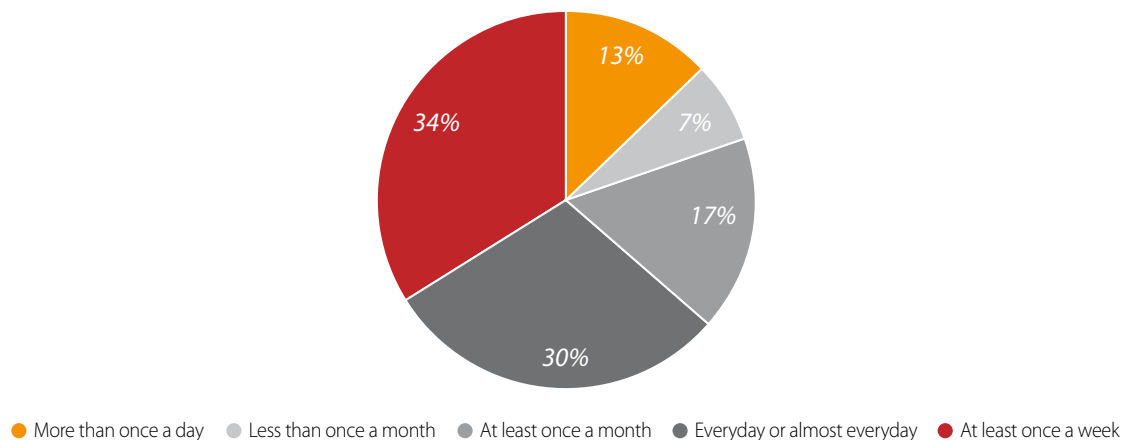
In countries with high mobile costs and poor fixed-line penetration, public payphones, which are generally cheaper than other telephony options and can be used with small cash denominations, continue to be used and form a part of wider communication access strategies by poorer users, even when they do own or can access mobile phone. There has been a general decline in the number of fixed payphones in South Africa (in line with global trends), though there was a modest increase in 2011 over 2010. Public phones are being used less and less as mobile penetration increases.

**Table 19: Telkom statistics**

	2007	2008	2009	2010	2011	CAGR
Fixed access lines (thousands)	4 642	4 533	4 451	4 273	4 152	(2.8%)
Postpaid PSTN	2 971	2 893	2 769	2 625	2 552	(3.7%)
Postpaid-ISDN channels	718	754	781	784	772	1.8%
Prepaid	795	743	766	744	703	(3.0%)
Payphones	158	143	135	120	125	(5.7%)
Fixed-line penetration rate (% of population)	9.8	9.5	9.1	8.7	8.3	(4.1%)
Revenue per fixed access line (ZAR)	5 275	5 250	5 349	5 345	4 863	(2.0%)

Source: Telkom (2011) and previous annual reports

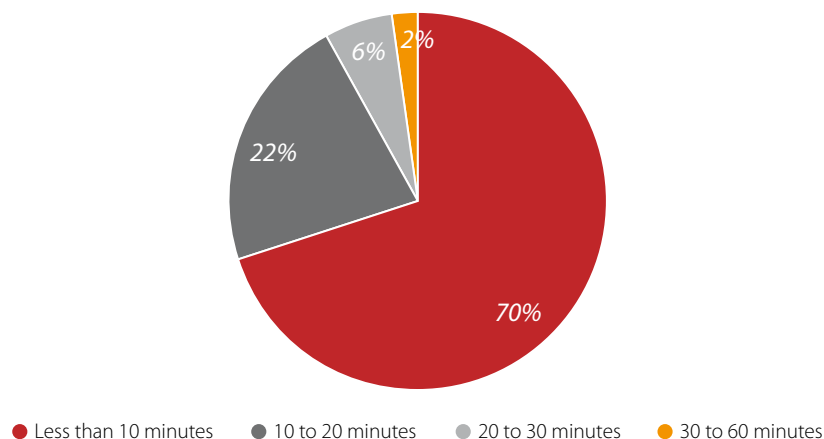
At the time of the survey in 2012, public payphone use (in the last three months) in South Africa stood at 28.7%. This is lower than the public payphone use (in the last three months) at the time of the 2008 survey, which stood at 42%. Despite a significant decline in the use of public payphones, there is evidence of frequent use amongst those who use them, with 34% of users stating that they use public phones at least once a week, 30% every day or almost every day, 13% at least once a week, and 17% at least once a month.



**Figure 23: Frequency of public phone use**

Source: RIA ICT Survey data 2011-12

The use of public phones is to some extent determined by their proximity to where people live. Nearly 10% of respondents stated that the public phones they use are less than 10 minutes' walk from where they live and 22.2% stated that the payphone they use is between 10 and 20 minutes walking distance from their home (Figure 24).

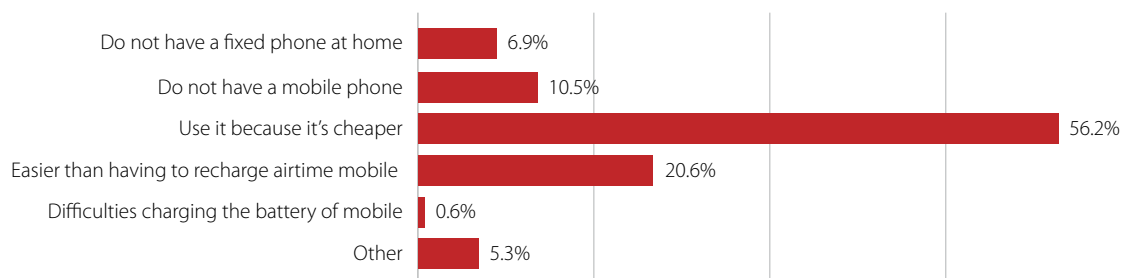


**Figure 24: Distance to public phone from home**

Source: RIA ICT Survey data 2011-12

*Affordability is a key factor for public phone users*

More than 56% of the payphone users said the primary reason for using public phones is that they are cheaper than other options, and 21% stated that they are easier to use than mobile phones requiring airtime recharges (Figure 25).



**Figure 25: Main reason for using a public phone**

Source: RIA ICT Survey data 2011-12

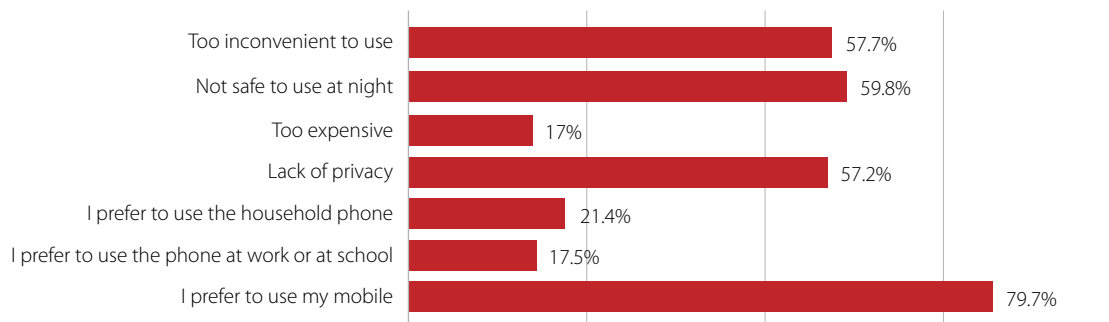
In Figure 26, it is shown that 62% of the payphone users stated that they use a telephone kiosk or umbrella operator (using a mobile operator's network), while 36% use a telephone booth (provided by a fixed-line operator).



**Figure 26: The kind of public phone used**

Source: RIA ICT Survey data 2011-12

Figure 27 presents the reasons cited by non-payphone users for lack of use of public phones. It is evident from the reasons cited that mobile phone use is replacing the use of public phones, with 80% of non-payphone users stating that they do not use public phones because they prefer mobile phones, 60% stating that public phones are not safe to use at night, 58% saying that payphones are too inconvenient to use, and 57% citing the lack of privacy.



**Figure 27: Reasons for not using a public phone**

Source: RIA ICT Survey data 2011-12



## Broadband internet

The 2012 RIA Survey found that the total number of broadband internet users in South Africa is 34% of the total population 15 years old or older. Table 20 demonstrates that wireless internet is the main type of broadband connectivity at household level in South Africa. Almost 20% of South African households surveyed by RIA have internet access, and of those, 56% get access to the internet via a mobile phone handset and 55% via a mobile modem. Only 22% of households with internet connectivity have a fixed-line ADSL connection. At individual level, 71% of South African internet users use the mobile phone handset to browse the internet.

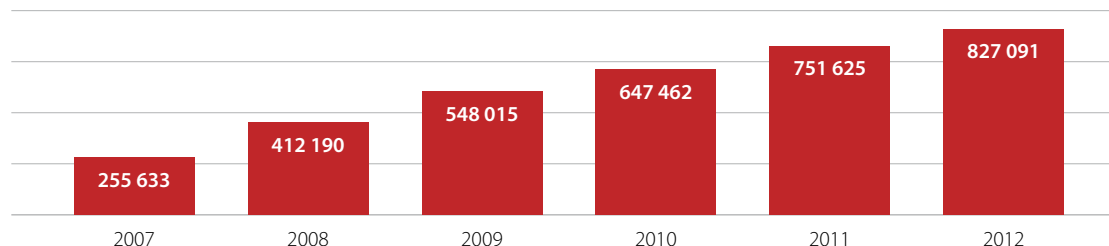
*Internet use is going mobile*

**Table 20: Internet access (household and individual)**

Type of internet connection by household with internet access (multiple response)	Using mobile phone	56.4%
	Mobile modem (3G)	54.8%
	Wireless broadband	7.5%
	Modem/ISDN dial-up	4.9%
	ADSL	22%
Location for accessing the internet in the last 12 months	Home	42.7%
	Work	35.9%
	Place of education	20.6%
	Community internet access	9.8%
	Any place via a mobile phone	70.8%
	Any place via another mobile device	18.2%

Source: RIA ICT Survey data 2011-12

These internet penetration figures demonstrate that there is still significant growth opportunity, both in the ADSL and broadband wireless markets. The number of Telkom ADSL subscribers increased from 751 625 in 2011 to 827 091 in 2012, while new WiMAX (provided by Telkom and Neotel) subscribers increased only marginally from 3 199 in 2011 to 3 381 in 2012 (Telkom, 2012).



**Figure 28: Fixed broadband internet (ADSL) subscribers**

Source: Telkom (2012c)

Wireless broadband subscribers exceeded ADSL subscribers by almost nine times in June 2011 (Vodacom, 2011), showing that mobile internet is the preferred way to go online in South Africa. Although both Vodacom and MTN continue to increase their postpaid internet customers, due to the high cost of mobile internet data, customers in South Africa rely to a great extent on prepaid data bundles to go online. In FY2011, Vodacom's active data customers (both prepaid and postpaid) grew by 34.6% to 9million customers, and by 35% to 12.2million customers in FY2012 (Vodacom, 2011, 2012). The total number of customers with active smartphones on the Vodacom network grew by 84% to 2.6million in 2011. In 2012, the number of active smartphones on Vodacom's network grew by 55% to 5.1million (Vodacom 2011, 2012). The growth in the use of smartphones has been a key driver of data revenue growth. MTN recorded 10.9million data users (both prepaid and postpaid) in FY2011 which grew 13.4million by FY2012 (MTN, 2011, 2012).

## Mobile ownership

*There is a high level of mobile phone ownership amongst the South African population*

Ownership of mobile phones (Table 21) is high in South Africa, with little difference between urban and rural areas and between those in the general population and those at the BoP. Use patterns are similar between the national level and the BoP population, except for use of smartphone features such as taking pictures, recording video clips, internet access, and emailing (Table 22).

**Table 21: Mobile ownership and use in South Africa**

		National	Urban	Rural	BoP
Mobile phone ownership		84.2%	86.3%	80.8%	74.8%
More than 1 active SIM card		14.2%	16.2%	10.9%	15.6%
Mobile phone main SIM card is	Prepaid	87.5%	83.1%	95.1%	98.5%
	Postpaid	12.5%	16.9%	4.9%	1.5%
Mobile phone mostly charged at	Home	92.7%	95.0%	88.9%	82.6%
	Shop	5.3%	2.3%	10.4%	15%
	Work/school	1.0%	1.2%	0.7%	0.2%
	Other	0.9%	1.4%	0.0%	2.2%
Mobile phone is capable of browsing the internet		51.0%	60.3%	35.1%	33.2%
Do you share your mobile phone with others?	No	85.7%	86.4%	84.5%	79.1%
	Daily	6.8%	6.5%	7.4%	8.1%
	Once a week	1.3%	1.4%	1.3%	2%
	Several times a week	1.6%	2.0%	0.8%	1.7%
	Several times a month	0.2%	0.2%	0.3%	0.5%
	Occasionally	4.4%	3.6%	5.7%	8.6%

Source: RIA ICT Survey data 2011-12

**Table 22: What mobiles are being used for**

	National	Urban	Rural	BoP
Making and receiving calls	99.2%	98.9%	99.6%	99.4%
Missed call/please call me etc.	92.3%	90.3%	95.7%	96.8%
Sending and receiving text messages (SMS)	95.8%	94.9%	97.4%	96.6%
Personal organiser/diary/notebook/watch	71.1%	71.0%	71.5%	66.8%
Playing games	43.7%	43.4%	44.2%	42.8%
Listening to music/radio	43.0%	45.3%	39.1%	37.5%
Taking photo/video clips	54.9%	64.0%	39.2%	36.3%
Browsing the internet	27.6%	34.3%	16.1%	13.6%
Facebook/Twitter/Mxit/other social networking	25.4%	30.4%	16.6%	12.8%
Downloading applications to mobile phone	21.9%	26.2%	14.5%	11.1%
Transferring airtime	20.7%	23.9%	15.3%	10.2%
SMS to radio or TV programmes	8.9%	9.7%	7.6%	6.1%
Reading and writing emails	16.7%	20.6%	10.0%	5.2%
International calls	13.8%	18.0%	6.6%	4.3%
Sending or receiving money	7.9%	8.6%	6.6%	3.6%
Roaming when abroad	4.6%	6.1%	2.2%	0.8%
Skype/VoIP	2.9%	3.2%	2.4%	0.5%

Source: RIA ICT Survey data 2011-12

## Safety

*The mobile phone is a key device in terms of personal safety and security*

The mobile phone is considered an important device in relation to safety and security matters, with 71% of the mobile owners surveyed saying they feel more secure and safe thanks to the mobile phone. Almost all the individual mobile owners said they use the mobile phone to check on the safety of their loved ones, and 58% agreed that they use their mobile to find out about safety issues and to alert people.

**Table 23: Do you agree with the following statements based on your experience with having a mobile phone?**

		National	Urban	Rural	BoP
It makes me feel more secure/safe	Do not agree	20.1%	22.1%	16.6%	15.7%
	Not sure	8.7%	8.2%	9.6%	9.9%
	Agree	71.2%	69.7%	73.9%	74.4%
Use it to check on the safety of my loved ones and see where they are	Do not agree	5.4%	6.2%	4.0%	2.5%
	Not sure	2.5%	2.7%	2.2%	4.8%
	Agree	92.1%	91.0%	93.8%	92.7%
Use it to find out about safety issues and to alert people	Do not agree	35.0%	36.3%	32.6%	34.5%
	Not sure	7.0%	6.9%	7.1%	8.7%
	Agree	58.0%	56.8%	60.2%	56.8%

Source: RIA ICT Survey data 2011-12

## Affordability

*Affordability remains a major obstacle to mobile phone ownership*

It was found that 67% of those without a mobile phone say they cannot afford one, and more than half (53%) of the people who do not own a mobile phone had used a mobile phone in the preceding three months – mostly the phones of other family members. About 24% of people without a mobile phone intend to get one within a year.

**Table 24: Of those that do not have a mobile phone**

		National	Urban	Rural	BoP
Why do you not have a mobile phone?	I cannot afford it	62.8%	59.5%	66.7%	70.4%
	No mobile coverage where I live	1.5%	2.8%	0.0%	2.2%
	No electricity at home to charge the mobile phone	8.5%	10.4%	6.3%	12.6%
	I don't have anyone to call	5.8%	7.9%	3.4%	4.7%
	My phone is broken	28.7%	21.5%	37.0%	29.3%
	My phone got stolen	17.5%	16.7%	18.5%	20.3%
Did you use a mobile phone in the past three months? Yes		53.2%	47.4%	59.8%	48.8%
Whose mobile did you use?	Family member	65.3%	59.7%	72.0%	64.8%
	Friends/colleague	23.1%	19.1%	27.9%	26.1%
	Public phone on the roadside	16.5%	21.9%	10.1%	17.2%
Do you plan to get a mobile phone in the future? If yes, when?	No	42.3%	47.4%	36.5%	44.1%
	Within the next 6 months	24.2%	25.0%	23.3%	20.3%
	Within the next year	23.9%	20.6%	27.7%	26.9%
	Within the next 2 years	9.6%	7.0%	12.5%	8.7%

Source: RIA ICT Survey data 2011-12

When asked how they would respond to a reduction in call costs, 43% stated that they would make more calls and 34% stated that they would use the money saved for something else. This suggests that there are further policy interventions required in order to increase affordability and facilitate access to mobile services. However, it must be noted that some operators have reduced their prices (as detailed earlier) since the RIA survey was conducted in 2012 and it will be important to see if these price reductions affect future RIA survey results.

## Internet use and social networking

There has been a significant growth in the number of households in South Africa that have a working internet connection. In the RIA Survey of 2008, 4.76% of households had a working internet connection. This has increased significantly to 20% in the 2012 Survey. In addition, the use of the internet amongst individuals 15 years and older more than doubled between the RIA Survey of 2008 and the Survey of 2012, from 15% to 34%. This rise in individual internet use can to some extent be attributed to increased use of computers. As seen in Table 25, 65% of individuals stated that they first used the internet on a computer. This suggests that there is a correlation between use of computers and use of the internet. Meanwhile, 35% of households surveyed stated that the household first used the internet on a mobile phone, and it was found that the mobile phone is the predominant means of household access to the internet, with 70.8% of households stating that they access the internet via mobile phones. The use of the internet via mobile devices is expected to increase as access to low-cost, internet-enabled devices increases.

*65% of individuals first used the internet on a computer*

*The mobile phone is the predominant means of internet access*

Unlike in countries with later onsets of widespread internet adoption, in South Africa the majority of individual internet users (64%), a majority even at the BoP (52%), started using the internet on a desktop computer or laptop (Table 25). As internet access increases through mobile access, this pattern can be expected to change.

**Table 25: Internet access and use**

		National	Urban	Rural	BoP
Respondents that use the internet		33.7%	41.3%	21.4%	18.4%
Used the internet first on a computer		65.0%	64.2%	67.2%	52.5%
Used the internet first on a mobile		35.0%	35.8%	32.8%	47.5%
Where did you use the internet in the last 12 months?	Any place via a mobile telephone	70.8%	70.5%	71.8%	70.7%
	Home	42.7%	47.0%	27.7%	15.5%
	Work	35.9%	37.6%	30.2%	6.5%
	Place of education	20.6%	20.2%	22.0%	23.3%
	Internet cafe	32.5%	30.2%	40.5%	40.5%
Are you signed up for any online social network (Facebook, Mxit, Twitter etc.)?		74.9%	78.9%	60.8%	52%
Do you have an email address?		65.9%	68.1%	58.4%	29.3%
How often on average have you used the internet in the last 3 months?	Every day or almost every day	64.5%	67.0%	56.0%	44.6%
	At least once a week	24.4%	23.5%	27.3%	28.3%
	At least once a month	9.2%	7.1%	16.7%	27.1%
	Less than once a month	1.9%	2.4%	0.0%	0%
What limits your use of the internet?	There is no interesting content for me	20.4%	18.7%	26.2%	30.5%
	Lack of local language content	8.4%	9.0%	6.3%	4.3%
	The internet is very slow	24.9%	24.4%	26.4%	20.8%
	Too expensive to use	37.8%	35.1%	47.2%	47.9%
	Few people to communicate with via the internet	19.0%	20.5%	14.0%	21.8%
How concerned would you be about security of your credit card or banking information when or if you ever bought something on the internet? Would you be?	Not at all concerned	7.9%	7.7%	9.0%	7.3%
	Somewhat concerned	12.3%	12.4%	11.9%	11.3%
	Very concerned	48.5%	49.4%	44.2%	49.3%
	Extremely concerned	31.3%	30.5%	34.9%	32.1%

Source: RIA ICT Survey data 2011-12



It was found (Table 25) that about 75% of individual internet users are signed up for a social network and 66% have an email address. It was also found (Table 26) that the internet is mainly used for social networking and communication purposes, and less for information-gathering, with 52% of individuals stating that they access social networking or video-sharing websites daily. In addition, 36% stated that they send and receive email daily, and 34% of individuals stated that they post information and use instant messaging daily.

**Table 26: Purposes for which the internet is used on a daily basis**

	National	Urban	Rural	BoP
Getting information about goods or services	10.2%	10.5%	9.0%	11.8%
Getting information related to health or health services	4.2%	5.1%	1.3%	2.6%
Getting information from government organisations	4.9%	4.3%	7.1%	4.1%
Interacting with government organisations	2.9%	3.6%	50.0%	0.0%
Sending or receiving email	35.6%	37.4%	29.3%	9.2%
Telephoning over the internet/VoIP	3.3%	3.9%	1.2%	0.0%
Posting information or instant messaging	33.7%	33.4%	34.6%	22.8%
Purchasing or ordering goods or services	3.2%	3.8%	1.3%	0.0%
Internet banking	3.8%	4.4%	1.6%	0.0%
Education or learning activities (formal)	9.8%	9.6%	10.6%	8.5%
Playing or downloading video games or computer games	12.7%	12.1%	14.7%	2.7%
Downloading movies, images, music, watching TV or video, or listening to radio or music	12.7%	11.6%	16.4%	2.7%
Downloading software	6.1%	7.1%	2.7%	1.0%
Reading or downloading on-line newspapers or magazines, electronic books	10.7%	9.7%	13.8%	4.4%
Participating in distance learning for an academic degree or job training	4.6%	4.3%	5.5%	1.0%
Getting information for school or university related work/Researching a topic	8.8%	8.9%	8.3%	4.6%
Looking for free education content, such as free courses	5.4%	4.9%	7.3%	5.7%
Collaborating online on documents (example Google docs)	8.2%	7.0%	12.4%	2.0%
Social networking or video-sharing websites (e.g. Facebook, Twitter YouTube, Mixit)	51.7%	51.5%	52.4%	35.9%
Finding or checking a fact/looking up a definition of a word	12.0%	10.1%	18.5%	8.9%

Source: RIA ICT Survey data 2011-12

*The primary reason for individuals not using the internet is their lack of access to a computer*

As seen in Table 27, 86% of individuals who do not use the internet stated that the primary reason is that they do not have access to a computer, while 75% of non-users of the internet stated that they do not know how to use it, and 49% stated that they do not know what the internet is. Meanwhile, 60% of non-users of the internet stated that it is too expensive, and 56% stated that none of their friends uses it. Among the policy implications is that the need for targeted initiatives to raise awareness about what the internet is and its uses. (In some instances, it was evident that there is a lack of understanding that social networking sites like Facebook are accessed via the internet.) From a policy perspective, the limiting factors for use of the internet relate to affordability, access, speed, and availability of relevant content. In addition, the price of computers remains prohibitively high, on top of high connectivity costs. The RIA Survey also found evidence of unmet demand for internet access, with 52% of non-users of the internet, when asked whether they would be interested in using the internet if it was available close to where they live, stating that they would be interested.

**Table 27: Reasons for not using the internet**

	National	Urban	Rural	BoP
I don't know what the internet is	49.2%	38.9%	61.6%	65.2%
No interest/not useful	41.6%	43.6%	39.1%	34.1%
I don't know how to use it	75.4%	67.3%	85.1%	85.8%
No computer/internet connection	86.2%	79.9%	93.7%	91.2%
Too expensive	60.2%	58.7%	62.1%	60.1%
No time, too busy	21.5%	23.6%	19.0%	20.1%
None of my friends use it	56.1%	47.7%	66.3%	66%
Is too slow, limited bandwidth	9.8%	9.0%	10.7%	10%

Source: RIA ICT Survey data 2011-12

## Computer use

Table 28 shows that, in a multiple-response question, 44% of the computer users surveyed own their own desktop computer and 35% own a laptop. A high number of computer users (61%) use computers at home, followed by 40% who use computers at work, and 29% who make use of internet cafes. Writing letters and editing documents are the most common uses of computers, done by 74% of the computer users, while 71% of the computer users stated that they use computers to browse the internet.

The urban areas, as expected, show higher ownership and use of computers. The majority of the population at the BoP relies on non-household access to use computers, with 43% using computers at internet cafes and 37% using computers at schools and universities. There were similarities in patterns of use amongst individuals in rural and urban areas, with the main activities being writing letters, editing documents, browsing the internet, and playing games.

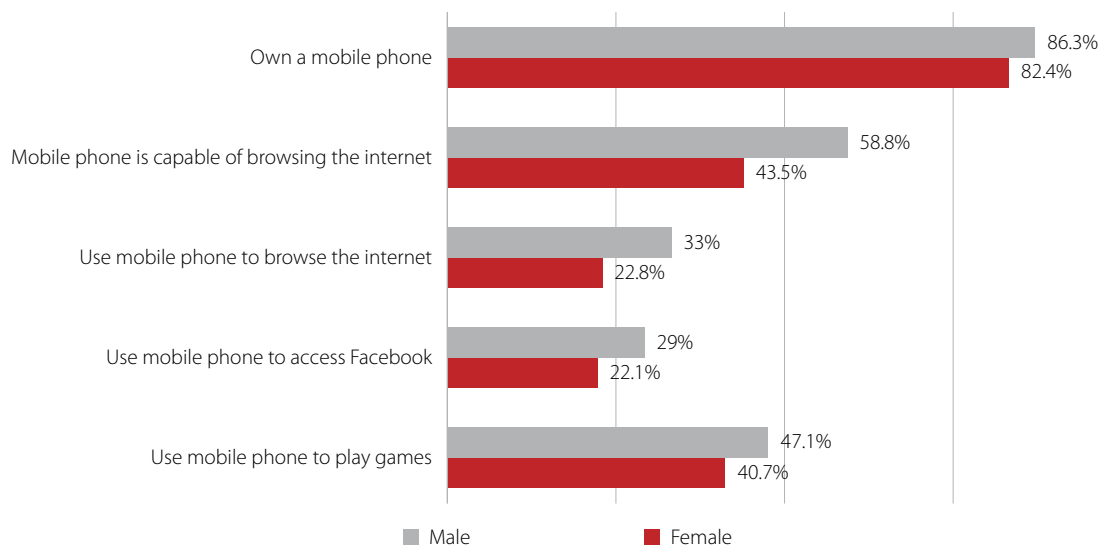
**Table 28: Computer use**

		National	Urban	Rural	BoP
Respondents using a computer (desktop or laptop)		29.1%	34.5%	20.3%	12.8%
Where do you use a computer?	Work	40.2%	46.1%	24.0%	1.7%
	School, university	22.8%	16.5%	40.1%	36.7%
	Library	6.1%	6.1%	6.2%	5.7%
	At home	61.1%	72.3%	30.7%	34.7%
	Internet cafe	29.0%	25.8%	37.7%	43.4%
	At a friends place	20.7%	18.0%	28.3%	30.3%
What do you use a computer for?	Writing letters, editing documents	74.3%	80.7%	56.8%	62.2%
	Calculations using spreadsheets such as Excel	53.5%	53.6%	53.3%	53.4%
	Browsing the internet	71.4%	71.2%	71.8%	57.4%
	Programming	35.3%	40.1%	22.3%	14.1%
	Remixing content found online: music, videos	37.2%	39.8%	30.1%	40.7%
	Playing games	62.3%	62.1%	62.6%	72.3%
Do you own a personal computer or laptop?	Desktop	44.4%	49.8%	29.3%	20.9%
	Laptop	34.6%	40.8%	16.8%	8.9%
Average age of computer user		31.47	33.01	27.26	24.57
Main activity during past six month of computer users	Student/pupil	24.8%	17.1%	45.7%	64%
	Unpaid house work (e.g. housewife)	2.1%	2.5%	0.7%	1%
	Retired	2.6%	3.4%	0.4%	2%
	Unemployed	16.0%	15.6%	17.3%	28%
	Employed	40.4%	45.9%	25.3%	5%

Source: RIA ICT Survey data 2011-12

## Gender

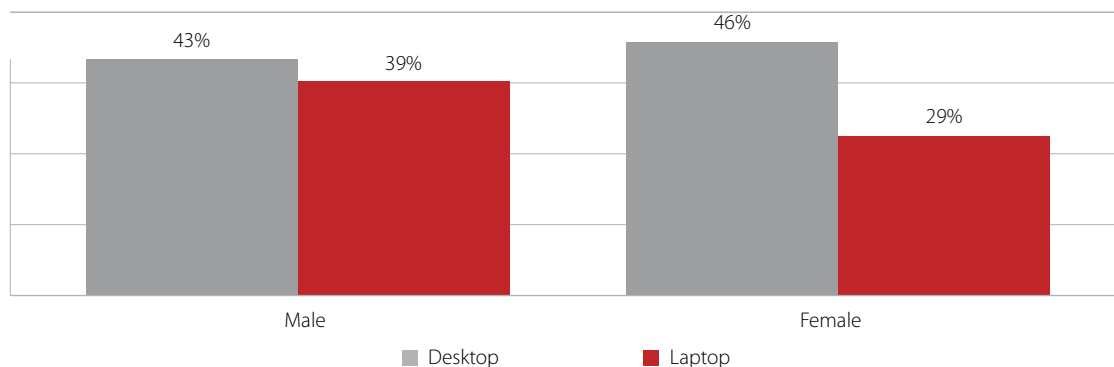
In Figure 29, it can be seen that little difference was found between the number of males and females who own mobile phones, with about 86% of males and 82% of females stating that they own one. However, more males (59%) than females (44%) stated that they have a mobile phone capable of browsing the internet, and more males use the mobile phone to browse the internet (33%) and to access Facebook (29%) than women (at 23% and 22% respectively).



**Figure 29: Gender differences in ownership and use of mobile phones**

Source: RIA ICT Survey data 2011-12

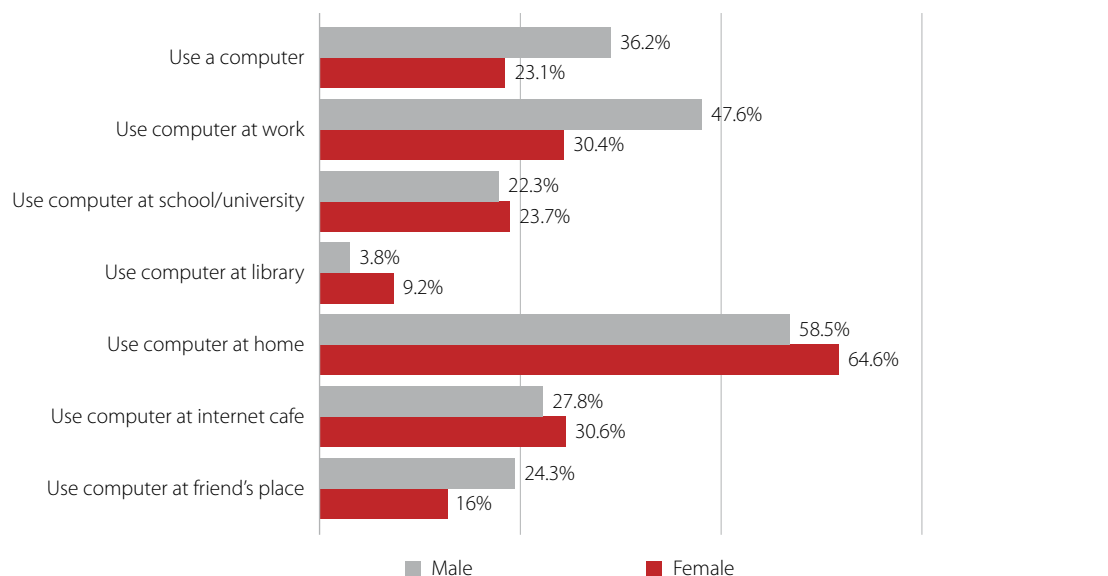
Figure 30 shows that more females (46%) than males (43%) stated that they own a desktop computer. However, more males (39%) than females (29%) stated that they own a laptop.



**Figure 30: Gender differences in ownership of a computer (desktop or laptop)**

Source: RIA ICT Survey data 2011-12

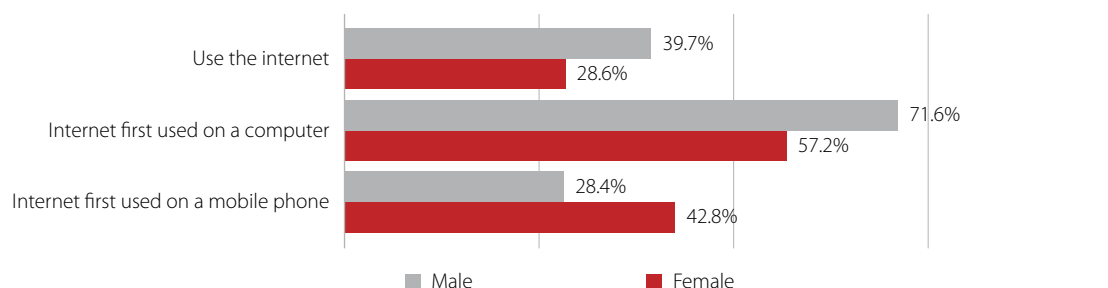
It was found that a higher percentage of males (36%) than females (23%) uses a computer. Meanwhile, among computer users, females are more likely (64.6%) than males (59%) to use a computer at home, and more females (31%) than males (28%) use computers at internet cafes. More males (48%) than females (30%), among the computer users, use a computer at work.



**Figure 31: Gender differences in places where computers are used**

Source: RIA ICT Survey data 2011-12

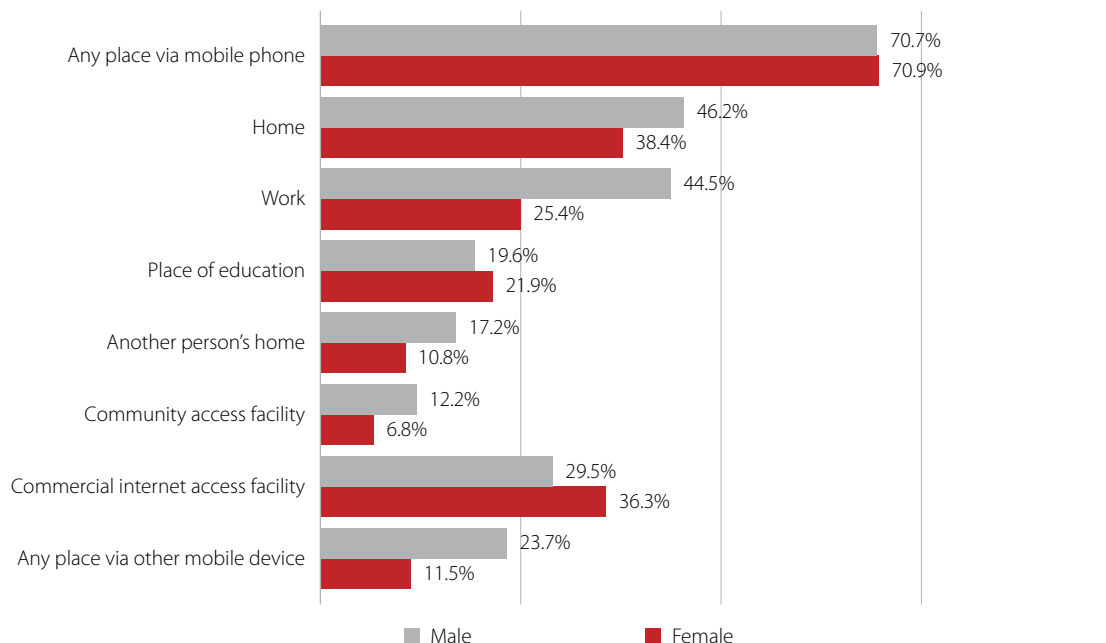
More males (40%) than females (29%) stated that they use the internet, as shown in Figure 32. Among internet users, there are more males (72%) than females (57%) who first used the internet on a computer, while there are more females (43%) than males (28%) who first used the internet on a mobile phone.



**Figure 32: Gender differences in use of the internet**

Source: RIA ICT Survey data 2011-12

As shown in Figure 33, most males (71%) and most females (70.9%) were found to have primarily accessed the internet via the mobile phone in the previous 12 months. More males use the internet at work (45%) and at home (46%) than females (at 38% and 25% respectively). Meanwhile, more females access the internet via a commercial internet access facility (36%) and place of education (22%) than male (at 30% and 20% respectively).



**Figure 33: Gender differences in internet use (in the previous 12 months)**

Source: RIA ICT Survey data 2011-12

*Income and education are the key determinants of ICT access and use*

An analysis by Deen-Swarray *et al.* (2013) shows that income and education are key determinants of access and use of ICTs. Accordingly, the gender gap increases as the technologies and services become more sophisticated and expensive, requiring greater levels of income and education to access and operate. This is because the share of women who are either unemployed or engaging in unpaid housework is comparatively large (in comparison to men), which contributes to their comparatively lower earning capacity. The 2012 RIA ICT Survey analysis across the 12 study countries found that on average, women earn comparatively less than men. On the matter of education, the gender disaggregation of individuals in the 12 RIA Surveys found a gender gap in attainment at tertiary, secondary, and primary education levels in most of the study countries. Fewer women than men have tertiary as their highest level of education in most of the countries, and this difference is widest in Ghana, Kenya, Nigeria, South Africa, and Uganda. In the secondary and primary school categories, the majority of the countries also have more men than women completing these levels of education. Previous RIA modelling on education and ICT literacy indicates that the level of exposure to ICTs required to be competent is typically only attained at tertiary education levels in Africa.

## Informal businesses

The RIA South Africa Informal Sector ICT Access and Use Survey 2012 is nationally representative for informal businesses located in residential or semi-residential areas. Commercially zoned areas were not surveyed as they are not covered by the Stats SA Census sample frame. According to the survey results, very few informal businesses in South Africa maintain a website (4%) even fewer have employees with email addresses (3%). Mobile phone ownership is slightly higher than that of other ICT devices among informal businesses, as deduced from focus groups. Focus group participants also indicated that they use a combination of SMS and voice on their mobile phones for business purposes.



A few of the businesses were found to use the internet to conduct business activities, and these businesses mainly access the internet through their mobile phones. Most of the informal business people surveyed do not know how to use a computer, and therefore would rather use the internet on their cell phones as they claim it is more convenient: "I do everything on my phone and I can take it anywhere," said one respondent. A challenge for some is availability of internet-enabled mobile phones.

**Table 29: ICT access and banking**

		Informal businesses
Mobile phone use	Use private mobile phone for business purposes	27.7%
	Business has dedicated business mobile phone	5.2%
	Business owner has both a private and a business mobile phone.	14.7%
	Business sends text messages for business purposes	40.3%
	Receive text messages for business purposes	21.4%
	Business sends or receives money via mobile phone	0.8%
Other ICT ownership	Computers	11.6%
	Internet access	10.6%
Business advertises via	Newspapers	4.4%
	Twitter, Facebook	3.7%
	Mobile phone SMS	2.6%
	Radio	2.2%
Businesses that have internet access	Receive orders via internet	21.7%
	Purchase products/services via internet	27.1%
Access to bank account	Dedicated business account	20.5%
	Private account for business purposes	17.8%
Most common means of sending and receiving money	Pay myself (in person)	56.1%
	Bank	24.4%
	Send cash with someone	13.7%
	Western Union/Moneygram	5%
	Post Office	0.5%
	Mobile money	0.4%

*Mobile phones are the primary means of communication within the informal business sector*

Marketing and advertising of their products is mostly done by word-of-mouth or people walking past the business location. A few of the businesses in the focus group discussions indicated that they use mobile applications, namely WhatsApp, Mxit, BlackBerry Messaging, Twitter, and Facebook – not only to communicate with their customers and suppliers but also to advertise their products and services. In fact, advertising is the most common business activity that businesses use these applications for, and a major area which those not yet using the internet and mobile applications would like to pursue. One of the participants described the benefits of using the internet: “One can advertise on places like Facebook where you can put pictures of your designs and have people comment if they like it.” Another participant, who currently distributes pamphlets as a way of advertising, claimed that “Facebook would also help you save on the money you would use on pamphlets.” The use of online applications for marketing and advertising was found to be most common among the participants engaged in hairdressing and in dress design and dressmaking businesses, as they use these applications as platforms to post photos (e.g. of new hairstyles, or new in dress designs, created by the business people). A few of the participants make use of Google extensively on their phones to search for latest trends in relation to their businesses and also to check on prices in factories outside of the province (the Eastern Cape) where the focus groups were held.

*In the informal business sector, cash is the predominant means of transaction*

It was found that informal businesses conduct most of their financial transactions, with both their customers and suppliers, through cash. The use of mobile money transfers is very limited. Most informal businesses do not have access to formal banking and so would rather transact in cash. A small number of the focus group participants said they have a bank account whilst others said they save money weekly through the Post Office or Shoprite (a supermarket chain), but these instances were quite limited.

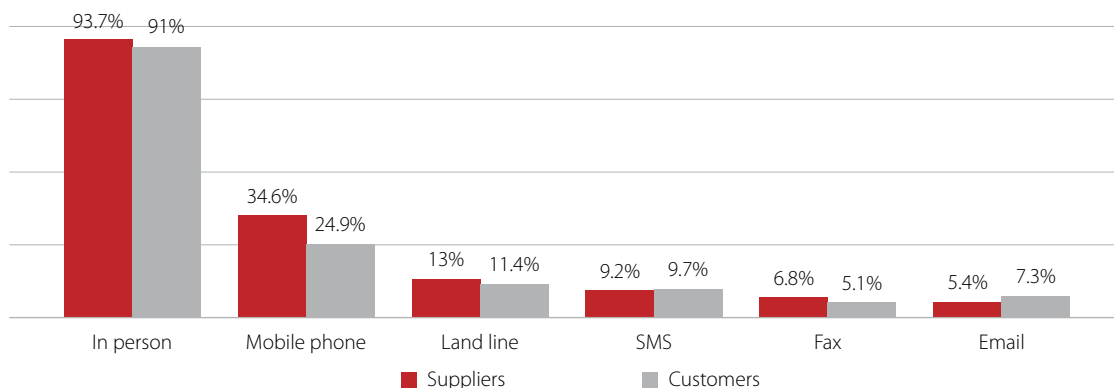
**Table 30: Informal businesses’ methods of financial transaction (multiple responses)**

	With suppliers	With customers
Cash	94.8%	96.8%
Cheque	6.1%	4.4%
Credit card	4.3%	3.4%
Bank account transfer	9.0%	5.5%
Online banking	3.3%	4.2%
Mobile money transfers	1.0%	1.1%
Letter of credit	2.2%	1.2%
Western Union or MoneyGram	0.1%	0.4%
Business sends money with someone	28.1%	25.8%

*RIA Informal Sector ICT Survey data 2011-12*

In communicating with their suppliers and customers, over 90% of informal businesses prefer to do so in person, face-to-face. Mobile phones are the second most common method used to communicate, with the informal business owners that participated in the focus group discussions stating that they make use of voice and SMS to keep in contact with their customers (mainly to make and confirm appointments and to place orders). Owners use voice particularly when they want to request payment for goods and services rendered on credit, and also to inform a client when a

service has been completed or a product is available. The owners prefer voice in these situations, as it gives them an immediate response from their customers. However, high cost prevents them from using voice at all times: "SMS is cheaper during the day, but then at night after 8 it is cheaper to call," said one participant.



**Figure 34: How informal businesses communicate with suppliers and customers**

Source: RIA Informal Sector ICT Survey data 2011-12

Stock-taking and record-keeping are mostly done manually, and some of the participants find this a challenge as there can sometimes be discrepancies and loss of information. One participant stated that "sometimes books are a problem because they get rained on and you lose your information", while another stated that "a small child can play with the book when placed carelessly, thereby destroying vital information". The informal business people make use of basic features such as the calculator on their phones to calculate profit and also to give change to customers. Some of them also use the document feature in their phones as a back-up to take orders from clients. "When I have orders I place them in my phone so that if I were to lose my order book, I have a record in my phone," said one participant. This evidence suggests that an accounting application would assist informal businesses in generating and managing invoices and tracking expenses. Another possibly suitable application is the Mcash mobile phone cash register application, which allows product identities to be programmed into the system and maintains a record of sales. Applications such as these could positively affect businesses' efficiency.

It is likely that a few of these informal sector business people will move out of the sector to take up formal employment and a few informal businesses will grow to become formal businesses. Therefore, there is potential value in finding ways to enhance the ICT use in these businesses in their current state.

Most of the surveyed businesses would like to source information from the internet to learn how similar businesses operate and to check and compare prices of products. The relatively low cost (compared to voice or SMS) of using mobile phone applications – such as WhatsApp or BlackBerry Messaging Services – makes them attractive to informal businesses: "With ZAR0.30 you can write everything you want to say and still have money left that you can use the following day," said one participant. Some of the surveyed business people believe that they can increase their customer base through the judicious use of mobile applications. While most of the participants prefer to use their phones, a small number prefer the computer because, as one participant said, "it has a lot [more] information and tools than a cell phone does". Though most of the participants are enthusiastic about using their mobile phones and the internet for business purposes, at least two key challenges remain: a lack of data storage capacity on mobile phones and the lack of knowledge about the capabilities of mobile phones.

## Conclusions and recommendations

Despite the policy constraints on sector development and the associated regulatory bottlenecks, South Africa's ICT sector (in particular its mobile segments) remains dynamic. There has been significant growth in competition within the broadband internet market, with mobile broadband connections far exceeding those of fixed broadband. This competition, coupled with massively reduced international bandwidth prices as a result of competing undersea cables landing in South Africa and breaking the SAT3 monopoly, has resulted in broadband pricing declining significantly. Nonetheless, the cost of broadband access remains prohibitively high for most South Africans, with prepaid prices, particularly for low-use bundles, being considerably higher than in other parts of the continent.

Fixed-voice services have continued to decline, but this decline in revenues has been offset by growth in data services. Mobile services continue to thrive, although there has been a decline in ARPU. Mobile operators have managed to offset the decline in mobile voice revenue by introducing targeted data offerings for both low- and high-end users. As a result, data revenue now forms a significant part of overall revenue.

The supply-side data is confirmed by the demand-side data, which shows decline in the use of fixed lines and public payphones, confirming that fixed-to-mobile substitution is taking place. The mobile phone is the primary method of communication and, accordingly, there has been a growth in the use of mobile services. However, affordability of services remains a major limiting factor to further growth of the mobile market. And a gender gap persists (men on average are more advantaged than women) in access and use of the broad spectrum of ICTs, as a result of inequalities in education and income.

Operators' growth has outperformed the national growth rate of 3% and in some cases has doubled national growth, suggesting that South Africa has a dynamic ICT market. This dynamism is despite a range of regulatory and policy constraints impacting on the growth of the sector and the creation of competitive market segments. Legacy policy and regulatory factors, resulting from the policy of managed liberalisation, continue to plague the sector. Despite subsequent attempts to restructure the market through a horizontal licensing regime more suited to a converged environment, and liberalisation of the sector by the courts, the market remains structured around vertically integrated incumbents in the fixed and mobile market segments. These incumbents compete with downstream competitors which have enjoyed little wholesale regulation to assist them to compete effectively. As a result, wholesale prices remain high, making it extremely difficult for smaller players to compete and drive down prices or push up quality. The possible exception is in the area of mobile termination rates. Although the MTR glide path initially seemed to be too little, too late, the glide path's completion in March 2013 does seem to have finally had a positive effect on retail prices. Mobile late entrant Cell C adopted an aggressive pricing strategy and introduction of a flat rate of ZAR0.99 per minute for national calls (and international calls to select destinations), which led to a subsequent decline in prices by the incumbent operators in response to the price pressure and losses in subscribers. Nevertheless, the prices of incumbent operators Vodacom and MTN remain higher than Cell C and newest entrant Telkom Mobile and these two incumbents remain fully entrenched in the mobile market. Further, South African mobile prices remain high overall by African standards, with South Africa's lowest price from a dominant operator ranking only 26th out of 46 countries in the RIA Pricing Transparency Index: Prepaid Mobile.

Network competition, in particular, has been negatively impacted by the Vodacom-MTN dominance of mobile and by the second network operator Neotel's difficulty in seeking to compete against Telkom's dominance of the fixed-line market. In addition to Neotel's already-tenuous position being further undermined by the state's decision

to introduce a state-owned broadband infrastructure company (Infraco), other private network investments also lost momentum in the wake of the Infraco announcement – as operators awaited access to the promised price-controlled national broadband network. Infraco's business case was, however, also seriously undermined – by the delays to it being licensed and becoming operational – which led private operators to invest in their own broadband infrastructure.

Stakeholder perceptions of the South African telecommunications policy and regulatory environment remain negative, because of the aforementioned challenges and, in addition, delays in policy drivers (e.g. the absence of a comprehensive broadband strategy); delays in the allocation of much-needed spectrum for advanced long-term evolution of technology and advanced communication services; and delays in the migration from analogue to digital transmission of terrestrial television. These policy and regulatory shortcomings have been compounded by the leadership and competency crises in the Department of Communications and rapid turnover in the portfolio of Minister of Communications (with five different Ministers serving between 2009 and the finalisation of this report in August 2013).

In addition to the long-term, inter-generational issues of weak education and weak (particularly ICT) skills in the country (which also need to be addressed to some extent by education entities outside of the sector), demand stimulation through ICT skills development is a core policy issue for the ICT sector. Likewise, the funding of, and incentivising of, innovation and entrepreneurship in this sector also needs to be addressed in concert by the DoC and other arms of government, chiefly the Department of Trade and Industry. The need for the state to coordinate cross-cutting issues, and matters of ownership of state-owned enterprises, across different overly silo-oriented departments cannot be emphasised strongly enough.

In addition to cross-sectoral issues, there are a number of policy and regulatory bottlenecks within the ICT sector, particularly the bottlenecks underlying networks and services, that impact negatively on the growth and evolution of the entire ICT sector and indeed the national economy as a whole. There is an urgent need for an integrated strategy to implement the National Development Plan, which has articulated a vision for the ICT sector as a critical economic infrastructure in South Africa. Specifically, the National Development Plan requires a broadband strategy that addresses the low levels of broadband penetration and the needed speeds and quality of broadband access in the longer term. An effective broadband strategy will require a restructuring of the ICT market to promote competition; coordination of state enterprises and ICT across government; and a targeted universal service (including e-literacy) strategy to deal not only with the gaps in the broadband market but also to address demand-side stimulation of the market.

Likewise, there needs to be a review of the institutional arrangements for the sector, to ensure that the regulator ICASA has the necessary autonomy and required competencies and resources to: enable effective regulation of the dominant players in the market; adjust anti-competitive behaviour; and provide the regulatory certainty conducive to the large investments required for development of ICT networks, services, applications and content.

National data for the ITU's international ICT indicators, which inform most global ICT indices, need to be gathered regularly by ICASA and published. The new Stats SA ICT Satellite Account needs to be updated regularly in order to have current information on the value of the ICT sector in South Africa and its overall contribution to GDP. The DoC needs to take responsibility for a regular demand-side survey of the sector to understand the real points of policy intervention in terms of user needs, affordability and emerging trends. The institutional capacity of both the DoC and ICASA to deliver on their mandates needs to be strengthened.

Critical outstanding policy issues that are hampering growth of the market include completion and implementation of the broadcast digital migration strategy; allocation of spectrum to operators; and completion and implementation of a policy on LLU.

For South Africa's termination rates and associated retail rates to move up the African ladder of affordability, or even to be among the top 10 in Africa, ICASA should reduce the MTR to the cost of an efficient operator. ICASA also urgently needs to competitively allocate high-demand spectrum, so as to enable operators to respond to the changing demand for mobile services, to build new revenue streams, and to grow new value-added services and applications which can further drive demand.

The massive growth in mobile internet access, and in uptake of data services more generally, presents massive challenges for operators with backhaul networks dimensioned for traditional voice traffic. While operators explore feeding traffic off their networks onto the WiFi networks where available, public access to, at the least, public information sites should be considered, e.g. sites in municipal buildings. However, the larger needs – a national backbone and extensive broadband network to meet the demands of corporate and private citizens – require key policy challenges to be addressed. Central to these challenges is the question of what to do with Telkom. The behavioural remedies imposed by the Competition Commission on Telkom, through functional separation, are to be welcomed. If rigorously monitored and complied with, these remedies could be far more beneficial to the sector than the large fine, which was originally imposed for practices set in place under the previous stewardship of Telkom by SBC and Telekom Malaysia, both of whom made super-profits and then withdrew.

The massive decline of the primary backbone provider Telkom – its value run into the ground through poor business decisions and (when there was a possibility of a successful turn-around) political prevarication – does the country no service. In the absence of effective policy or regulation to drive infrastructure competition or to build a national champion in Broadband Infraco, a way needs to be found for the Telkom backbone to optimally service the ICT industry. However, functional separation at Telkom (as required by the Competition Commission) will not, on its own, achieve the necessary service provision to the sector. If functional separation is comprehensively implemented and monitored, it will create a fairer competitive wholesale environment for service providers, but what this does is merely (more rigorously, it is hoped), monitor, through regular reporting to the Competition Commission, the current separation requirements between Telkom's wholesale and retail functions. This separation was already required through account separation and access regulation (which Telkom was found to have breached).

If South Africa is to catch up to broadband penetration levels in other lower-middle-income countries or leading broadband countries in Africa, it will have to do something far more fundamental to the market structure. As policy has historically constrained real infrastructure competition in order to protect Telkom and then Infraco (and state-owned broadcast signal carrier Sentech), the solution might be to institute a full structural separation of Telkom's backbone and retail services – i.e. bundle Infraco into the Telkom wholesale network as an open access network to which all service providers, including a Telkom retail arm, would have independent access. This would change the anti-competitive incentives inherent in Telkom as a vertically integrated entity which, despite liberalisation of facilities provisioning, remains the main supplier to its downstream competitors. To maximise its efficiencies, Telkom Wholesale would be incentivised to get as many service providers on its network at the same price as it is charging Telkom Retail (or, if it is necessary for ICASA to intervene, at a regulated price). The competitive implications of this arrangement for Neotel would obviously need to be carefully considered. But Neotel's weak market presence, largely as a result of the state's failure to provide a pro-competitive licensing and regulatory framework to counter the



advantages of Telkom's incumbency, is unlikely to change sufficiently through existing mechanisms such as LLU or carrier pre-selection. Neotel is unlikely to be able, under current conditions, to present a competitive solution to South Africa's broadband crisis.

Exploring the option of Neotel's incorporation into the aforementioned national open access network model, as part of an ownership model more innovative than a state-owned or public company – e.g. the network could be owned by those who make use of the facilities (much like undersea cable consortia operate) – might be a way of positively dealing with the negative broadband policy outcomes confronting South Africa. Such a model could potentially overcome concerns about the history of inefficiencies and political interference (as opposed to providing an enabling legal environment and the necessary oversight and performance monitoring) associated with state-owned infrastructure providers in competitive environments.

Specifically, the following regulatory bottlenecks require urgent attention if the growth of the ICT sector – and particularly the mobile segment, which is the main conduit for services to the poor – is not to be further stunted.

- If backbone competition is not feasible, consolidate state-owned entities, unbundle backbone elements, and create an open access carrier network.
- Enable resale of fixed broadband (ADSL), for it to become cheaper and compete with mobile broadband.
- Ensure access to facilities at cost (including reasonable rate of return (ROR)) with favourable terms for co-location.
- Coordinate and schedule rights-of-way access at national, provincial, and local levels.
- Free up and release critical spectrum for wireless broadband use, through competitive evaluation and allocation of spectrum, and coordinate spectrum re-farming and migration.
- Encourage competition through service-neutral licensing and a cost-based interconnection regime.
- Pay particular attention to data wholesale access, e.g. IP connect, peering, and transit fees.
- Reduce costs and prevent unnecessary duplication through incentivising infrastructure-sharing.
- Remove special taxes and duties on ICT equipment and services, in order to bring down prices, grow services, and grow the general tax base.
- Use existing unused USAF levies to build out network into underserved areas through reverse-bidding to service areas and in support of demand stimulation strategies including e-skills development.

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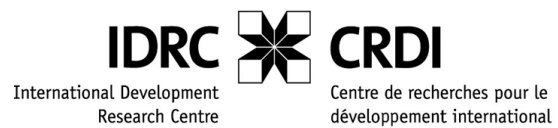
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