

South African 2004 ICT Sector Performance Review

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Annual South African ICT Sector Performance Review (SPR)

The annual South African ICT Sector Performance Review (SPR) seeks to monitor and assess policy in the telecommunications sector – and where it overlaps with broadcasting and IT – against policy outcomes in the sector, and in so far as they impact on the economy and society. It does so by examining the performance of the sector in terms of delivery against national policy objectives. The study draws on the methodology developed by LIRNE.NET, an international ICT policy and regulatory training and research collaborative now consisting of Danish Technical University, Technical University of Delft, London School of Economics, the Wits University LINK Centre and, most recently, LIRNEasia based in Sri Lanka. The first baseline study for South Africa was conducted by the LINK Centre in 2003 and was followed with baseline studies in nine other African countries, including Botswana, Cameroon, Ethiopia, Ghana, Mozambique, Rwanda, Uganda, Tanzania and Zambia. These studies were undertaken by members of Research ICT Africa! a network of African researchers at 14 African universities (see www.researchICTAfrica.net for more information on the network and the country SPR case studies).

Executive Summary

The telecommunications sector in South Africa continues to be characterised by growth, but growth accompanied by relatively high retail prices, super-profits, job losses, licensing delays and minimal new foreign investment in the sector. The overall growth of the sector in the last year which rose to a total revenue of R 74 billion -- and an increased GDP contribution of around 6% -- masks serious underlying problems in the sector.

These problems include the failure to extend affordable fixed-line services to the overwhelming majority of the population, and the negative impact on the economy of the high costs of telecommunications services – costs that have influenced inflation and reduced national economic growth. While telecommunications penetration continues to be extended through mobile telephony, the total household penetration figure of 47% remains marginally lower than the average of 49% for other lower-middle-income countries (Stats SA, 2003; ITU, 2003:189).

Despite the slowdown in losses of fixed-line subscribers from the incumbent Telkom's network over the past year, residential fixed-line penetration in particular continues to be poor by international standards, at 25,1 per 100 households in 2002, compared with an average of 49,8 per 100 households among lower-middle-income countries internationally (ITU, 2003: 189). This low residential fixed-line penetration has implications not only for voice-service penetration but also for Internet penetration and the creation of the critical mass necessary for the positive “network effects” associated with economic growth and development to come into play.

While mobile has passed the critical 40% threshold believed to be necessary for realising network-effect economic benefits, the high cost of mobile services and lack of availability of bandwidth at this stage make the platform a substitution for voice services only. The intention of MTN and Vodacom to launch third generation (3G) GSM networks within the next 12 months will certainly address some of the bandwidth issues on the mobile platform, but the high cost is still likely to militate against widespread or extensive usage.

South Africa's “e-preparedness” is still lagging behind many other lower-middle-income countries, with the number of South African broadband subscribers in 2004 -- specifically ADSL – lagging far behind countries at similar stages of economic development, e.g. Argentina, Mexico and Chile. At the beginning of 2004, South Africa's broadband penetration as a percentage of residential lines sat at 0,008%, significantly behind the average of 1,96% in other comparable countries in the lower-middle-income index. The continued decline of residential lines during 2004 and the jump in ADSL subscriptions in anticipation of the February 2005 liberalisation will adjust this figure upwards, but unless there is a quantum leap in the number of broadband connections South Africa will continue to lag significantly behind global broadband trends.

The high cost of telecommunications remains one of the major barriers to achieving the necessary critical mass for telecommunications to impact positively on economic growth. Fixed-line call charges have escalated at a Compound Annual Growth Rate (CAGR) of more than 21% since 1997, thwarting growth in vital new industries such as call centres and thereby on employment creation. These negative impacts prompted the National Treasury earlier this year to commission a study into regulated prices, a study which concluded that the telecommunications sector was subject to excessive pricing. Wholesale prices also remain high, and together with anti-competitive practices by the incumbent, continue to have a chilling effect on the Value-Added Network Services (VANS) segment of the market. Growth in the VANS sector, which provides the services and applications necessary for a

vital modern economy, has, with the exception of Telkom's expanding activity in this segment of the market, been minimal.

Despite a recommendation by the Competition Commission to the Competition Tribunal that Telkom face a penalty of up to R 3,7 billion for anti-competitive behaviour in the VANS market, the share price of the incumbent still went from strength to strength, rising from R 67,95 at the time of the Commission's announcement in February to a highpoint of R 101,50 in late 2004. Telkom announced a R 4 523 billion profit for the financial year ending 2004 and a dividend of R 0,90 to shareholders.

With the delays in the licensing of competitors such as the Second Network Operator (SNO) and the Under-Served Area Licensees (USALs), Telkom has continued to enjoy a *de facto* monopoly while the business case of its competitors has become increasingly marginal. After a more than two-year delay, ICASA issued four of the originally-planned 10 USAL licences in late November, but these are only likely to become operational in 2005. In September, the Ministry of Communications finally granted the SNO licence -- as part of a protracted process which started in 2002 -- but disputes within the SNO consortium over ownership and control have not been resolved. Furthermore, the business case of the SNO and the USALs was dealt a massive blow by the policy directives announced in September by the Minister of Communications, in which the Minister further liberalised the market.

The September directives, which have been hailed by industry, permit mobile, VANS and Private Telecommunications Networks (PTNs) to self-provide facilities and re-sell their excess bandwidth, optimising available capacity in the country and hopefully resulting in reduced prices and increased choice for users and consumers. The directives, due to take effect February 1, 2005, also further de-regulate public pay-phone provision and introduce a 50% "e-rate" discount for Internet connectivity to all public schools.

While these latter interventions seek to drive affordable access to communication services and encourage smaller entrants, there are concerns that deregulating public pay phones, still the primary source of access in remote areas where there may not be effective competition, may have a negative impact on the poor. Likewise, unless the "e-rate" discount is transparent and offset against Universal Service Fund levy or other mechanisms, the cost of the discount may well simply be passed on to the consumer, most probably the residential consumer, as that will be the least competitive segment of the market for some time to come.

Such unintended policy outcomes continue to plague the sector. Telkom has announced increases in its local call rates but decreases in its international and national rates - in market segments where it is likely to face the most competition under the "managed liberalisation" of the sector. The sector regulator ICASA is conducting a Telkom rate review in December 2004, for the first time with a Chart of Accounts and Cost Allocation Manual (COA/CAM) in place, which should provide ICASA with some basis to ensure that Telkom's prices are more cost-based - in spite of the obvious asymmetries of information that continue to exist between Telkom and ICASA.

One of the major challenges that exists for the sector is the capacity of the regulator to ensure a fair competitive environment. Even if the SNO does become operational in 2005, the incumbent has already optimised the strength of its monopoly position to entrench its dominance in the market. A courageous and innovative regulator will be needed to ensure the anticipated benefits of a competitive market are realised for users and consumers. There will need to be significant resourcing of the regulator, and removal of the current statutory limitations on the independence of the regulator -- specifically the powers of the Minister to veto regulations and to grant licences.

In addition, a policy regime more reflective of the realities of convergence between mobile and fixed services, between broadcasting and telecommunications, and between production and distribution, is likely to enable more effective licensing and regulation and create an environment more conducive to foreign investment, which has dried up significantly in the sector over the last few years. The proposed convergence legislation may well take care of some of these constraints but the real challenge will be to ensure the continued extension of the network into those areas regarded as commercially unattractive.

The Minister's new directives will unleash considerable potential in the market and go a long way to meeting pent-up demand. But policies and strategies to oblige network operators to service poorly-served areas will be increasingly difficult to enforce in a competitive environment in which new players receive previously-protected rights without obligations. The existing policy and regulatory confusion has resulted in new operators with universal access obligations (SNO, USALs) having the carpet pulled out from under their feet by the latest policy determinations, before they have even become operational. Alternative backbone delivery models, together with new funding and investment strategies, will need to be devised to meet this access challenge, and will require an integrated approach from the three institutions responsible for access delivery in the sector – the Department of Communications, ICASA and the Universal Service Agency (USA).

Telecommunications Environment

While telecommunications penetration continues to be extended through the growth of mobile telephony, household penetration of 46,9% is lower than the average for other lower-middle-income countries, where household penetrations average 49,4% (Stats SA, 2003; ITU, 2003:189). The latest 2001 Census figures indicate that 1,1 million households have only a fixed-line phone in the dwelling, while nearly 1,6 million have both a fixed-line phone and a mobile phone and just over 2 million have a mobile phone only. About 4,3 million households that don't have phones but are near a public pay phone, while over 670 000 households continue to have no real access to telephony (Stats SA, 2001). The Annual 2003 October Household Survey confirms that despite the increased access to telecommunications provided by mobile services, total household communications access remains racially skewed, with 37,3% of black households having regular use of a phone as opposed to 93,3% of white households. On average, 46,9% of households in South Africa have regular access to telecommunications, both fixed and mobile.

The communications sector, which includes telecommunications and postal services, grew dramatically from 1994 to 2002, and then began to flatten out (Quantec, 2004). Even so, with a growth rate of 14% between 2003 and 2004, telecommunications has grown at a much faster rate than many other sectors in the economy. The sector had estimated total revenues of R 74 billion for the year ending 2004 (for operations within South Africa). The sector contributed around 5,1% to the GDP in 2002, which represents a marginal decrease on the previous year's 5,4% (ITU, 2004; Quantec SIC 75). The combined Transport, Storage and Communications sector now exceeds both mining and agriculture in terms of GDP contribution at over 7% (Quantec, 2004). In the period 1994 to 2003 the combined Transport, Storage and Communications sector remained at the top of the value-add rankings, dropping from just above 7% of GDP in the period 1994 to 1998, to just below 7% from 1999 to 2003. This proportion of GDP is a third larger than the next sector, namely the Finance, Insurance, Real Estate and Business Services sector. Communications (telecommunications and postal) contributed 5,6% during the same period.

Investment

While the level of telecommunications investment per capita fluctuates significantly from year to year as major capital projects are begun or completed, the figures do provide an idea of the commitment of respective countries to expanding their networks and joining the "information society." There has been no major foreign investment in the South African telecommunications sector over the past year, due the interregnum in the regulatory and licensing environment. However, the September Ministerial policy directives should open up opportunities for investment in the services segment of the market. Investment in network extension and upgrading has been largely domestically-financed, with the mobile sector providing a combined estimated investment of R 3 700 billion compared to a total capital investment by Telkom of R 3 862 billion in the financial year ending 2004.

With investment reflecting the dynamism of the sector and providing an indication of progress towards creating the "infostructure" needed to service a modern economy, at US\$ 15,7 South Africa's telecommunications investment per capita is relatively low when measured against other middle-income countries such as Argentina, Mexico and Poland.

The combined Transport, Storage and Communication sector contribution to gross domestic fixed investment declined from 16% in 1994-1998 to 14% in the 1999-2003 period, but its ranking improved from being the third highest contributing sector to second, below Mining and Quarrying. Although these figures are bundled, the impact of the initial R 5,6 billion

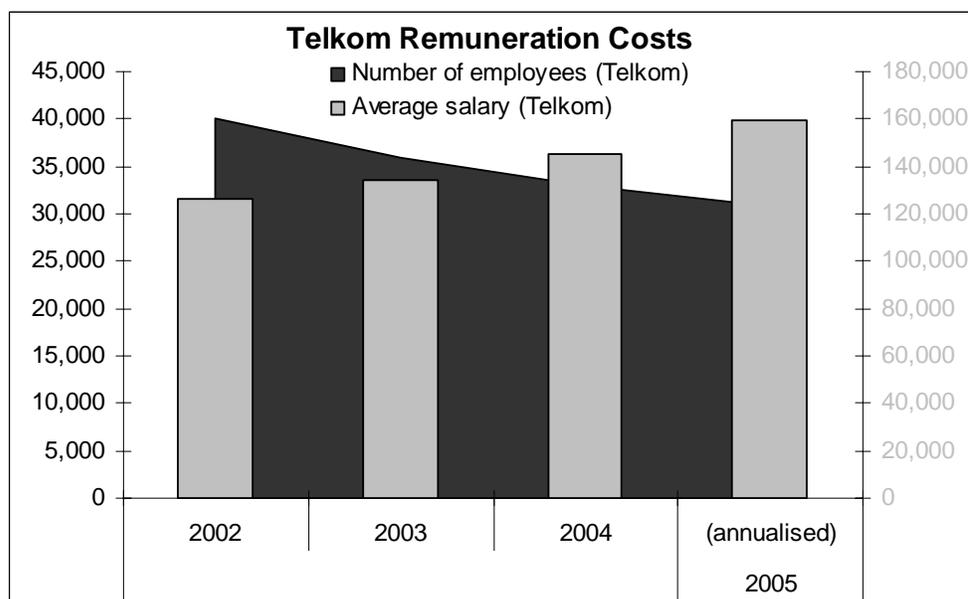
privatisation of Telkom and its R 50 billion capital expenditure up until 2003 must be at least partially responsible for the combined sector's high ranking (Quantec, 2004: SIC 75).

It should be noted, however, that with the exception of Mexico and Morocco, South Africa has significantly fewer total fixed-line telephone subscribers per capita than the other middle-income comparison countries, and one would therefore expect to see higher investment rates in order for this gap to be narrowed. The extent, quality and price of the backbone infrastructure are significant considerations for investors wishing to offer services exploiting the backbone, and indeed for investors in other sectors requiring high-volume, low-cost, guaranteed services (Gillwald, 2004a).

Employment and remuneration

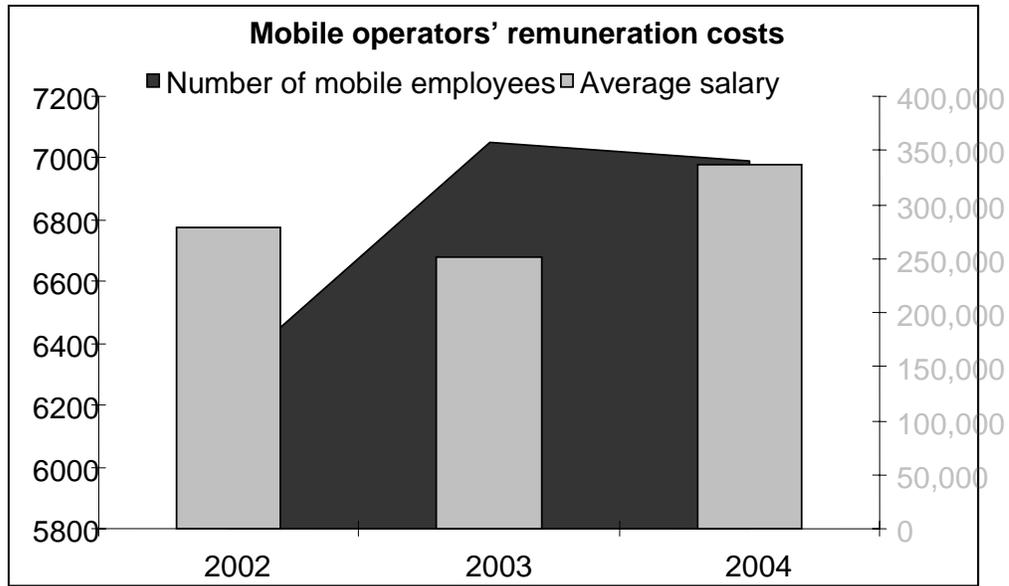
Employment in the communications sector (telecommunications and postal), after rising from about 85 000 jobs in the early 1980s to peak at about 110 000 in 1990, has steadily declined, falling below the 80 000 level in 2003. The rate of employment in the telecommunications sector plateau-ed in the early to mid-1990s, but fell sharply between 1997 and 1999 (Quantec, 2004: SIC 75). Although the drop reflects job losses in the entire industry, it does also coincide with the privatisation of Telkom and the cutting of over 23 000 Telkom jobs during that period (Gillwald, 2004b).

Figure 1. Telkom remuneration costs



The decline in employment numbers more or less follows the national employment figure, which rose to 8,2 million in 1990 but then declined sharply to only 7,4 million in 2003. However, the decline in job numbers in the telecommunications sector has not been as dramatic as in other sectors, and in fact diverges slightly between 1999 and 2002, buoyed no doubt by the growth in pre-paid use in the mobile industry and the introduction of further mobile competition with the long-awaited licensing of Cell C in 2001.

Figure 2. Mobile operators' remuneration costs



Note: Only MTN & Vodacom

The sharp decline in telecommunications job numbers that followed the modest rise between 1998 and 2002 reflects the continued efficiencies in the sector and the absence of anticipated new entrants. The number of fixed lines per employee at Telkom went from 83 in 1998 to 149 in 2004. Efficiencies inherent in mobile technology mean that mobile networks are far less labour intensive than fixed networks, and South Africa's mobile providers operated on average with 2 200 lines per employee in 2004.

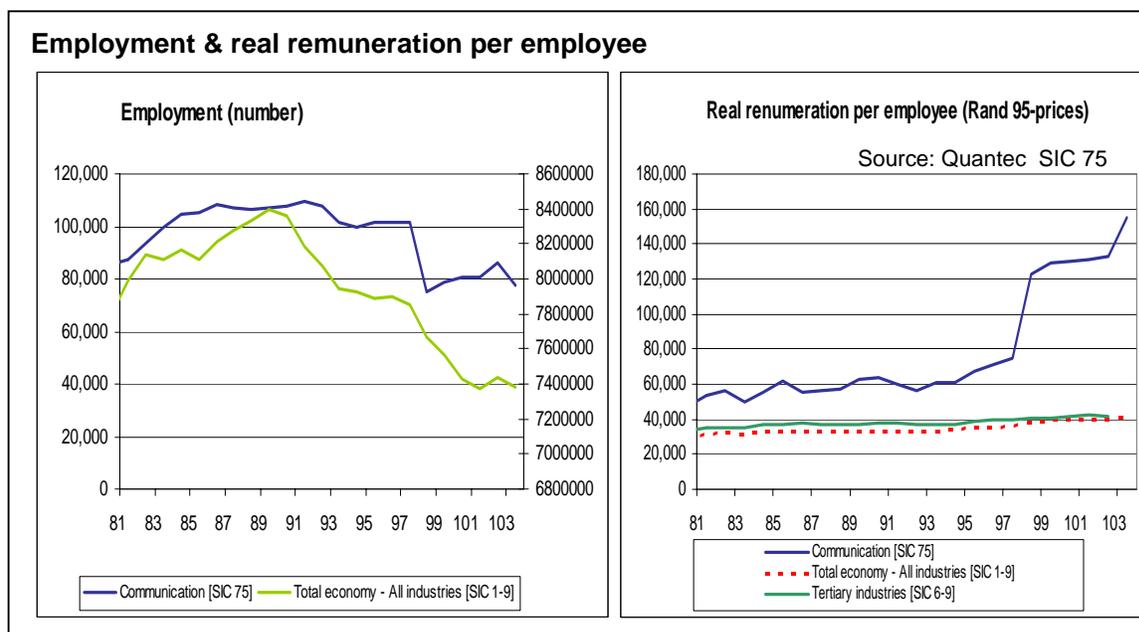
Remuneration for the sector, having remained constant in real terms for the best part of a decade, began to rise in 1994 with the entry of the mobile operators, Vodacom and MTN, into the market. This was followed by a sharp rise in remuneration between 1998 and 1999 (a result of the privatisation of Telkom), before a plateau until 2002, followed by another sharp rise in the past two years (Gillwald, 2004b)¹. Remuneration per employee in the combined Transport, Storage and Communication sector rose dramatically from an annual average of R 70 590 in the period 1994 to 1998 to an average of R 103 515 in the period 1999 to 2003, a rate considerably above the 6,26% average inflation rate for that period (Quantec, 2004).

The combined Communications sector category remains second highest on the labour rankings, with only Electricity, Gas and Water ahead of it. The dramatic decline in employment within the sector from 1997 to 1999 was mirrored by remuneration increases within the same period. And then both job numbers and salaries plateau'd from 2000 to 2002, followed by sharp job losses – and pay rises – from 2003 onwards. The correlation between job losses and remuneration increases can be seen in the graph below and reflects the increasingly skilled labour force required in the industry – not only in the obvious areas of engineering and IT but also in the specialised skills required to effectively regulate the industry. Such skills simply did not exist in the country prior to 1997 and are still in critically short supply. The under-supply of skilled economists, engineers and lawyers, especially from

¹ Efficient Research (2004) calculates that R43million was paid out to executive in Telkom in 2003-2004 (with top executive packages in MTN even higher) but this figures only represent less than 0,1% of the Telkom total salary and wages of R4,79billion excluding retirement, medical aid etc. benefits (Telkom Annual Report 2004).

historically-disadvantaged backgrounds, is a major reason for the dramatic increase in remuneration levels since 1997 (Gillwald, 2004b).

Figure 3. Employment & real remuneration per employee



The timing and sequencing failures in the introduction of new entrants to the telecommunications market, initially in mobile (Cell C) and now with the fixed operator (SNO), have meant that the strategy to mop up the anticipated job losses resulting from Telkom's privatisation has not been realised.

Market share and revenues

Poor fixed-line access has been compensated for in 2004 by continued mobile growth, with the total number of mobile subscribers now estimated to be 19 million², despite relatively high prices. Total revenues for the mobile sector grew at a rate of well over inflation in the financial year ending in 2004, with Vodacom and MTN declaring significant profits (EBIDTA³) of R 7 536 million and R 4 522 million respectively in their local operations (Vodacom, 2004; MTN, 2004)⁴. Total revenues for the mobile sector in the 2003-04 financial year grew at a rate of well over 20%.

A new trend, however, in this low Average Revenue Per User (ARPU) market is the emergence of declining margins. In the second quarter of 2004, Vodacom announced further subscriber growth but declining ARPUs from an average of R 177 to R 164 per month (ITWeb, 2004). A late entrant to the mobile cellular market in 2002, Cell C continues to make

² Though the total number of mobile subscribers has been estimated at closer to 14,5 million due to the different definitions of active vs. non active subscribers used by the mobile operators (Goldstuck, 2004).

³ EBIDTA – earnings before interest, depreciation, tax and amortisation

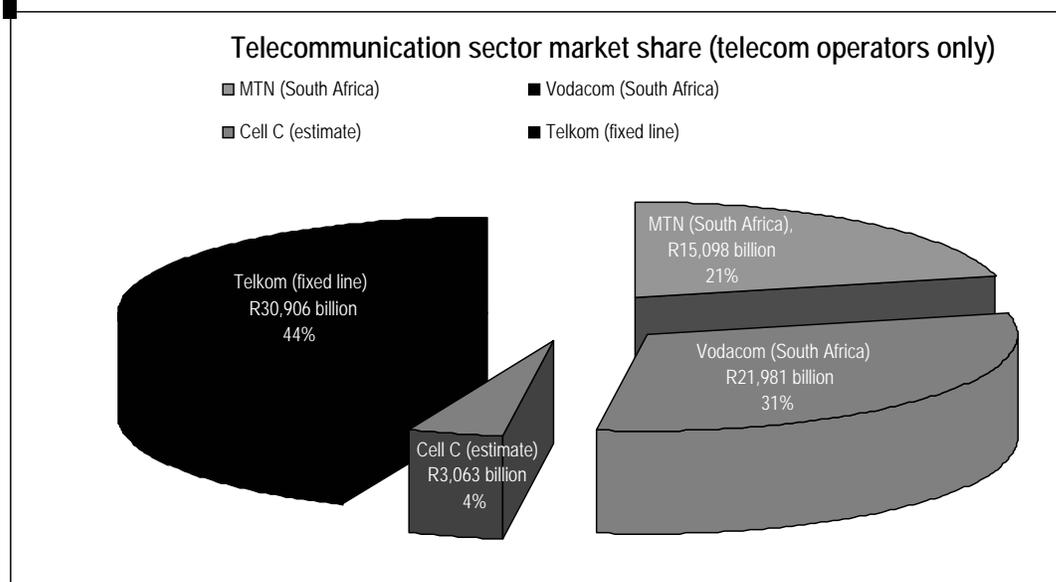
⁴ Mobile revenues from 2002 to 2004 for MTN and Vodacom (annual reports).

	2002	2003	2004
Vodacom (South Africa)	15 410	18 544	21 981
Vodacom (TOTAL)	16 151	19 779	23 478
MTN (South Africa)	9 982	12 298	15 098
MTN (TOTAL)	12 331	19 405	23 871

⁴ Argentina = US\$ 24 Mexico = US\$ 31,20 Poland = US\$ 35,40

gains, but with only just over 2 million subscribers it is unable to compete head-on with the incumbents.

Figure 4. Telecommunication sector market share



While the incumbent fixed-line operator Telkom announced super-profits of R 4 592 million and dividends for shareholders⁵, total fixed-line teledensity continued to decline, though at a slower rate than the previous year. Telkom's retaining the current 4 821 million fixed-line subscribers (2004) can partly be attributed to efforts by the incumbent to allay political anxiety around the loss of a further 80 000 subscribers in 2003, following a spike in the prices in 2002 -- officially the last year of Telkom's exclusive provisioning of voice services and facilities. This 2003 drop had been on top of a net reduction of 672 000 connections since 2000, when Telkom prices began to increase dramatically.

While high-pricing within the telecommunications sector is undoubtedly a drag on the overall economy, the South African telecommunications sector itself grew at an estimated rate of 14% between 2003 and 2004, with estimated total revenues of R 74 billion for the year ending 2004 (for operations within South Africa). The sector's contribution to GDP was 5,1% in 2002, which represents a marginal decrease on the previous year's 5,4% (2001). While some of the revenue rise may be a reflection of excessively high pricing, this sector's revenue growth is still significant, even by international standards, and represents a greater contribution to GDP than the telecommunications sector in several other middle-income countries including Turkey, Sri Lanka, Argentina, the Czech Republic and Mexico.

Competition & Regulatory Environment⁶

Anti-competitive behaviour by Telkom in the Value-Added Network Services (VANS) segment of the market continues to have a chilling effect on the growth of its competitors. While Telkom's portion of the VANS market appears to have grown significantly from R 3 496

⁵ Telkom announced net profits of R 4,5 billion and paid 90c a share in dividends (Telkom Annual Report 2004).

⁶ In line with global trends, and in compliance with World Trade Organisation (WTO) commitments, the South African telecommunications market has been overseen by a sector regulator since 1997 – the South African Telecommunications Regulatory Authority (SATRA) until 2000, and since then the Independent Communications Authority of South Africa (ICASA).⁶ While this body was mooted as the first step towards a converged telecommunications and broadcasting market, its structure and guiding legislation keep the two sectors relatively distinct.

million to R 4 114 million in the financial year ending 2004, anecdotal evidence from the VANS industry, which includes ISPs, indicates that there has been little non-Telkom growth in this competitive component of the market. With the innovative applications and services required for the information economy emerging from this segment of the value chain, any restraints on effective competition in this segment are of particular concern.

In February 2004, the Competition Commission decided that Telkom's behaviour towards other VANS providers was anti-competitive and referred the ruling to the Competition Tribunal for final determination. The Commission proposed that Telkom pay an administrative fine of 10% of its annual turnover, which could amount to more than R 3 billion⁷. However, as with past ICASA rulings against Telkom, the incumbent has indicated its intention to appeal the decision should the Tribunal concur with the Commission⁸. Whether the Competition Commission decision has modified Telkom's behaviour will only become apparent in the future, but it has the potential to impact positively on wholesale pricing and the speed of delivery of requested services, which should allow VANS to compete more fairly with Telkom in this market segment.

The VANS market segment should soon see further dramatic growth as a function of the Ministerial policy directives of September 2004, which take effect in February 2005. These directives permit VANS to offer voice services and to acquire their facilities from providers other than Telkom and the future SNO. Private Telecommunications Networks (PTNs) will also be permitted to re-sell their excess capacity, and mobile operators will be at liberty to utilise any facilities providers for their fixed links, or even to deploy their own fixed links. All of these changes should result in retail price reductions for consumers.

The official end to Telkom's fixed-line exclusivity was due in 2002, but by late 2004 the Second Network Operator (SNO) licence granted by the Minister of Communications was still not operational, following ownership and control disputes and the failure to attract a significant equity partner⁹.

Telkom's monopoly on access to the international data gateway was finally broken in 2002, with the granting of "multimedia" and international "carrier-of-carriers" licences to Sentech, the parastatal broadcast signal provider, which paid R100 million for these licences. The carrier-of-carriers licence permits Sentech to carry third-party traffic internationally, and the multimedia licence allows it to offer non-voice data services, including Internet, directly to customers. However, licensing and regulatory confusion emerging from the legislation that invoked these Sentech licences has meant that potential services have been slow to market.

At the local telephony level, operators in as many as seven of the 30 districts identified as having teledensities below 5% will soon be doing business with Under-Served Area Licences (USALs), bringing Small Medium and Micro Enterprises (SMMEs) into the market.

⁷ The matter follows the Commission's investigation into complaints lodged in 2002 against Telkom by the SA VANS Association (SAVA) and others. An earlier complaint on a set of similar matters lodged by SAVA and the Internet Service Providers Association (ISPA) with ICASA was taken on review by Telkom following ICASA's ruling against it. At the time of going to press, the courts still had not yet ruled on this matter.

⁸ "The Commission's investigation revealed that Telkom has abused its dominant position by engaging in a pattern of anti-competitive practices. These include Telkom imposing unreasonable conditions for it to provide telecommunication services to the VANS. Telkom refuses to provide these facilities unless the VANS providers conclude contracts which subject them to Telkom's dictates. As the VANS cannot operate without these facilities and must obtain them from Telkom, they have no choice but to subject themselves to Telkom's dictates." Competition Commission Case Reviews, <http://www.compcom.co.za/resources/newsletter%20-%20June%202004/html%20version/8%20Case%20Reviews.html>

⁹ The SNO is 30% owned by parastatals Transtel and Eskom Telecommunications, with 26% shared between CommuniTel and Two Consortium, 19% in the hands of black empowerment shareholder Nexus Connection and the unallocated 25% "warehoused" by government, with equity interest in this portion from Old Mutual and J&J the company of the former Minister of Communications Jay Naidoo.

In November 2004, four USAL operators were granted full licences, while a further three USAL operators were granted conditional licences subject to ownership issues being resolved. The four full licences issued by ICASA went to Bokone Telecoms (to operate in Limpopo's Capricorn District); Thinta Thinta Telecoms (KwaZulu-Natal's Ugu District); Kingdom Communications (KwaZulu-Natal's Zululand District); and Ilizwe Telecoms (Eastern Cape's O.R. Tambo Municipality).

In late 2003, a draft Convergence Bill (Government Gazette No 3382 of 2003) was tabled by the Department of Communications in acknowledgement of the need to restructure the market and licensing regime to better accommodate converging and liberalising markets. While the intentions of the draft Bill were welcomed, the product was viewed as flawed and lacking policy direction. The Bill is being revised by the Department.

The failure to licence the second national fixed-line operator (SNO) and the *de facto* continuation of Telkom's monopoly, both in retail fixed services and in wholesale facilities provisioning, have caused concern in the highest levels of government – concern that telecommunications charges, amongst other input costs, were contributing negatively to the cost of business in the country. This concern prompted the commissioning by Treasury of a comprehensive report on administered and regulated prices, a report which concluded that there might be excessive prices in sectors such as telecommunications.¹⁰

Policy Framework

Telkom

In 2003-2004 the state has continued to pursue its policy of “managed liberalisation,” with emphases on optimising the value of state assets and seeking to secure investment through protectionist incentives. Following the statutory end of the incumbent Telkom's monopoly in May 2002, the state focused its attention on the initial public offering (IPO) of a further 25% of the company and the creation of conditions that would maximise its share price.

After much delay in the IPO, in March 2003 Telkom was valued at R 15,6 billion (US\$ 1,486 billion¹¹), considerably lower than its R 100 billion (US\$ 9,5 billion) valuation a few years previously, before the steep fall in the industry's stock market value. At R 28 (US\$ 2,67) a share, the IPO earned R 3,9 billion (US\$ 370 million) for government. This was less than half of the R 10 billion (US\$ 950 million) the government had stated in 2002 as its target for revenues from major privatisations.

In June of 2004, Thintana Communications, the incumbent's initial strategic investor, announced its intention to reduce its stake in Telkom from 30% to 15,1%, through the selling of over 80 million of its ordinary shares. The remaining 15,1% held by Thintana (SBC of the U.S. and Telekom Malaysia) is open to the highest bidder. A consortium led by former Director-General of the Department of Communications (DoC) Andile Ngcaba and former

¹⁰ Statement on Cabinet meeting issued by the Government Communication and Information System, 6 October 2004: “It was agreed that a system would need to be put in place to address these issues, including:

- * strengthening of regulatory capacity, where applicable, with better analytical expertise and reliable and timely information;

- * price-setting should take into account inflation targets for the period ahead, as well as efficiency, equity objectives, long-term demand and supply and other policy considerations; and

- * there should be a regular review of underlying costs and productivity trends, and monitoring of service delivery outcomes and financial performance of public utilities.

- * An ‘administered price index’ to monitor trends in this component of the consumer price index will be introduced, and in due course StatsSA will make the necessary announcements in this regard.”

¹¹ Using an average exchange rate for 2002 of 10,5 SA Rands to the US Dollar

TransNet director Gloria Serobe, with support from Presidential spokesperson Smuts Ngonyama, is the preferred bidder. The consortium was not initially able to access the necessary funding, which led to the Public Investment Commission (PIC) stepping in as interim funders until suitable financial partners have been found.

SNO

Two major investment opportunities in the country's telecommunications sector have been severely undermined, not only by the downturn in the global economy and the global telecommunications sector, but also by the negative perceptions of political and regulatory risk arising from controversies around the licensing process for the third cellular operator Cell C (which was finally licensed in 2001 after a protracted, controversial process).

The SNO has been delayed for over two years due to the failure to find a suitable strategic equity partner (SEP). Finding an SEP has been undermined by the mandatory shareholding of the company. The state set aside 30% of the licence for Transtel and Eskom Telecommunications, the communications arms of the country's transport and power parastatals. A further 19% of the licence was set aside for empowerment purposes and was awarded to Nexus by ICASA in 2003. The remaining 51% was to go to a strategic equity partners but the regulator rejected all the applicants, in two rounds of licensing, on the grounds that the bidders failed to meet the minimum thresholds set by the Minister. The Ministry of Communications then took over the licensing process and made several changes to the strategic equity arrangements, after the consortium failed to agree on the management and control structures for the company. The Ministry then announced that 26% of the remaining portion of the licences would be held by SEBCO (a company controlled by the two applicants from the last round of licensing, Two Consortium and Communitel), and that the other 25% would be offered to a strategic equity partner. The two companies short-listed for this stake are Old Mutual and Indian company Tata Communications. The actions of the Ministry to resolve the impasse around the management control of the SNO, and resultant delays in getting the licence operational, have incurred the wrath of the 19% empowerment player Nexus. Having already instituted legal action against the Ministry for failing to finalise the licence, the latest intervention by the Ministry has left Nexus feeling even further marginalised. Nexus has reinstated legal proceedings.

VANS

Despite being dominated by Telkom, the Value-Added Network Services (VANS) market in South Africa is both large and varied, with a market value of roughly R 3,3 billion (2004), not including Telkom's operations in this segment. Telkom's 2004 Annual Report states that its data business revenues were R 4,1 billion, putting the total value of the South African data market (most of it VANS provision) at about R 7,4 billion – equal to the size of the total telecommunications market in 1992 when the process of liberalisation began. While Telkom's data business line item in its Annual Report may not correlate exactly with its VANS activities, a 58% share of the revenues generated in the data services market would indicate that its value-added services market share is significant and increasing faster than the share of the independent VANS operators.

The VANS segment, critical to the development of a knowledge economy and enabling innovation, is highly dependent on affordable bandwidth to flourish. Affordable bandwidth, when combined with high-level skills, can generate significant value-added applications – in call centres, for example -- which create significant job opportunities.

Under-Serviced Area Licensees (USALs)

The focus on the SNO licensing process has been at the expense of the awarding of the planned initial 10 Under-Serviced Area Licences (USALs), which are intended to provide services to areas with less than 5% teledensity. Although bidders in eight of the first round of 10 demarcated areas were granted licences by the Minister in June¹², only four of the operators received unconditional licences from the regulator ICASA in November, with a further three getting licences conditional on clarification of ownership issues.

Initially unable to tap into the Universal Service Fund (USF), these licensees have subsequently received a promised grant of R 5 million upon licensing from the Universal Service Agency (USA) and commitments of interest-free loans of up to R10 million from the USA over the first three years. The basic capital needs of a single local USAL network are estimated to be around R 20 million, based on an international average cost per fixed-line of US\$ 1 000 (currently R 6 000). This figure could be reduced significantly if USALs were able to share satellite platforms and software for services and billing.

Even with the belated funding arrangements put in place by the USA, the business cases of the USALs may still be doomed, not just by the delays in getting to market, but also by ICASA's withdrawal of the proposed asymmetrical termination rate regime for USALs. The termination rate is the charge to other networks to terminate traffic that originates on the other network. An independent consultant proposed to ICASA at its public hearings on USALs that without a termination rate of as much as 50-70% and the ability to share facilities, the USAL licensees would not be viable and would therefore be unlikely to attract sufficient investment.¹³ The USALs' tenuous business case was further weakened by the Ministerial policy directives of September 2004, which come into effect February 1, 2005. Much-needed as these policy interventions are by the general industry and the economy, they remove the few remaining advantages the USALs had by allowing mobile operators and VANS to self-provide networks. Some USALs had built their revenue projections on being able to offer alternative network infrastructure -- to the mobile operators and VANS -- in under-serviced areas. Other USALs had built their business cases on the provisioning of public pay telephones, a service that has also been deregulated by the September policy directives.

Another major anticipated revenue stream for USALs was the provisioning of services to schools, clinics and municipalities. The requirement in the Telecommunications Amendment Act of 2001 that the establishment of a Private Telecommunications Network for public schools be investigated was the first potential blow to this revenue model. The September directives added further uncertainty with their mandating of a 50% discount on all Internet access to public schools. This "e-rate" undermines a potential major USAL revenue stream, putting USALs in a position of having to potentially provide Internet traffic to schools at tariffs that are below cost. Unlike other established operators, USALs are unlikely to be able to cross-subsidize from more lucrative business services or wealthier residential areas.

Policy, Regulatory & Market Outcomes

The primary objectives of telecom reform in South Africa have been to increase affordable access and to accelerate network modernisation. The intended platform to achieve this was the Telkom Public-Switched Telecommunications Network (PSTN), which was granted a five-year monopoly. While the objective of network modernisation may have been realised to some degree with the complete digitisation of the network and the introduction of new services – though these have been very slow to market in the monopoly fixed-line

¹² Weidemann, R (2004) in IT-Web, <http://www.itweb.co.za/sections/telecoms/2004/0406031010.asp?S=IT%20in%20Government&A=ITG&O=FRGN>

¹³ For detailed cost study see African Ventures (2002) 'Financial Assessment of USALs,' commissioned by IDRC.

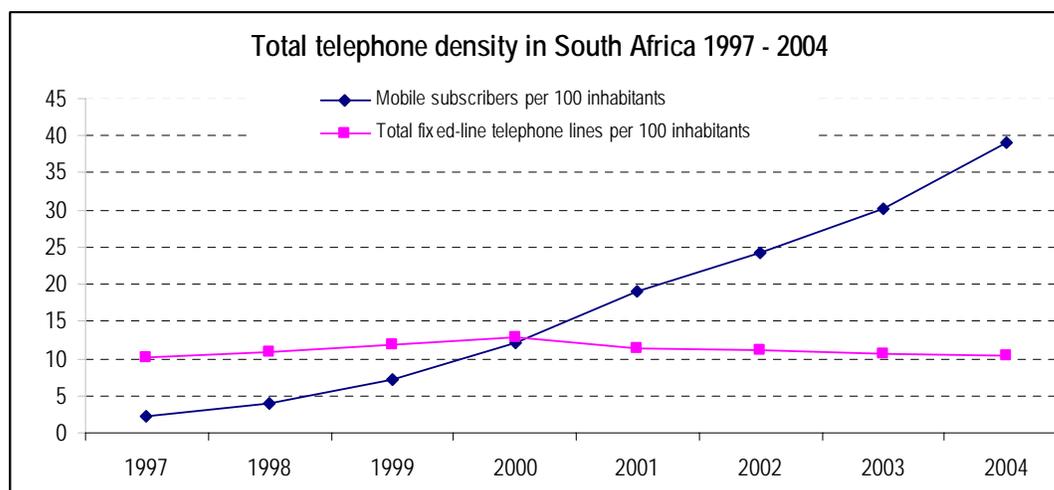
environment – the central objective of affordable access has not been achieved through this strategy. This shortfall has been compounded by the failure to introduce PSTN competition (from the SNO) in May 2002 – at the time of the official end of Telkom’s exclusivity on voice services and facilities-provisioning. The delayed licensing of the USALs has also undermined the affordable access objective.

Access

With only 4,844 million fixed-line subscribers in 2003, the market was clearly far from saturated going into 2004. Yet the number of fixed-line subscribers continued to decline – albeit at a slower rate than the previous two years -- to 4,821 million. Residential fixed-line penetration in particular performs very poorly by international comparison, with South Africa’s fixed-line residential density sitting at 25,1 per 100 households in 2002 compared to an average of 49,8 per 100 households across all lower-middle-income countries (ITU, 2003: 189). While part of the reason for this low fixed-line residential penetration is that customers have “churned” to more convenient mobile services (now over 19 million¹⁴ mobile subscribers estimated), the price of mobile services remains high by international comparative standards, making it clear that Telkom’s high prices for local residential calls have also been part of the negative trend in fixed-line penetration.¹⁵

Creative marketing and packaging of services by Telkom and reduced prices have the potential to change this negative situation but even with Telkom’s introduction of pre-paid fixed-line in 1998 (the first in the world), the incumbent had only been able to draw 856,000 subscribers to this service by the end of the 2003-04 financial year.

Figure 5. Total telephone density



Source: Telkom Annual Reports

Cellular pre-paid service roll-out, prompted by the threat of competition to the incumbent duopoly (Vodacom and MTN) in 2001, have been a key driver in retaining and attracting mobile cellular customers. According to market research firm BMI-TechKnowledge (2003),

¹⁴ The total number of mobile subscribers has been estimated by some observers as being closer to 14,5 million, based on an analysis of the definitions of active vs. non-active subscribers used by the mobile operators (Goldstuck, A. in Stone, L (2004) ‘SA’s cellphone operators caught making calls with inflated numbers,’ Business Day, Friday 3rd December 2004.

¹⁵ The E-Access & Usage Index just completed by the LINK Centre and Research ICT Africa! indicates that even if more lines were available but the price remained the same, nearly 80% of respondents would not apply for a fixed-line. Nearly 60% of respondents that previously had a phone but no longer do cited “billing problems” and high cost. A further 15,9% cited mobile telephony as a viable alternative to a fixed-line.

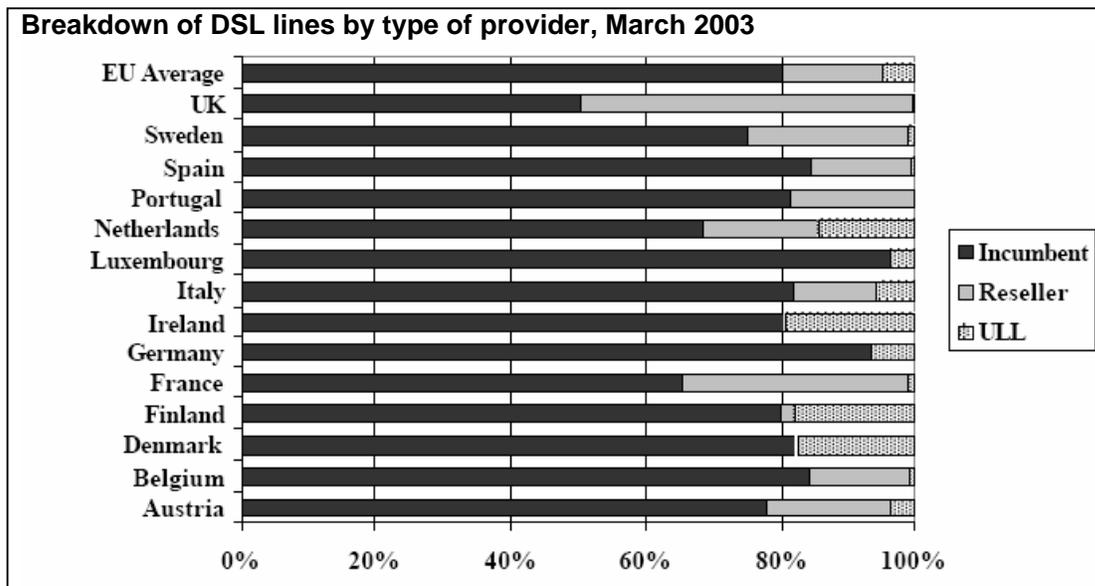
today the pre-paid market in South Africa makes up over 75% of cellular subscribers, and more than 90% of new connections are pre-paid. Indeed, new mobile entrant Cell C estimates that 98% of its subscribers are pre-paid users. These figures are in line with the experience throughout Africa where BMI-T estimates that between 90% and 95% of cellular customers are pre-paid.

Broadband

In comparison to other lower-middle-income countries, South Africa does not have a broadband market to speak of. Lack of competition and Telkom's fear of cannibalising its ISDN service offerings has made the incumbent slow to introduce vital new technologies. ADSL was only introduced in anticipation of competition in 2002, though it is understood to have been deployable by Telkom well before then. With just over 36 000 Telkom ADSL customers signed up since 2002, compared to an average of just under 3 million in other middle-income countries, South Africa performs poorly in this vital indicator of preparedness for e-commerce (ITU, 2003). The effects of Telkom's aggressive marketing of ISDN can be seen in the strong growth of the ISDN market. Between 2002 and 2004, and with significant price reductions in the last year, there has been an average growth of over 40% to a total ISDN subscriber base of 656 000. Despite a considerably higher growth rate in the ADSL market than in the ISDN market over the past six months, ADSL subscriber numbers, working off a much smaller base, are still only expected to sit at about 75 000 in March 2005, compared to the expected ISDN subscriber total of just under 750 000.

ADSL line provision is only likely to increase with the introduction of competition. The lesson learnt from Europe is that the "[i]ntroduction of competition has been adopted in nearly every nation which today has significant broadband penetration"¹⁶. Even though a significant percentage of the local loop remains owned by the incumbent, broadband penetration levels dramatically increase.

Figure 6. Breakdown of DSL lines by type of provider

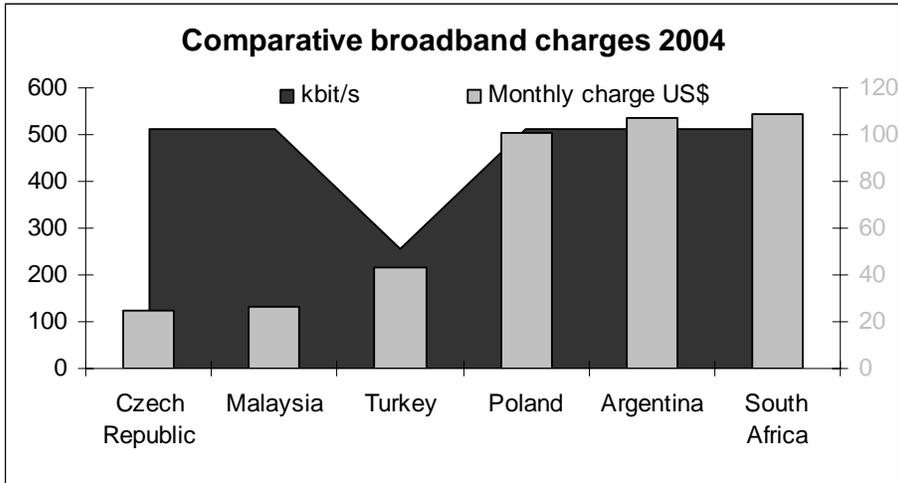


Source: Telecom Regulatory Authority of India, April 2003. Broadband India: Recommendations on Accelerating Growth of Internet and Broadband Penetration

The impact of competition is primarily felt in pricing, an area in which South Africa lags significantly behind in comparison to other lower-middle-income group countries.

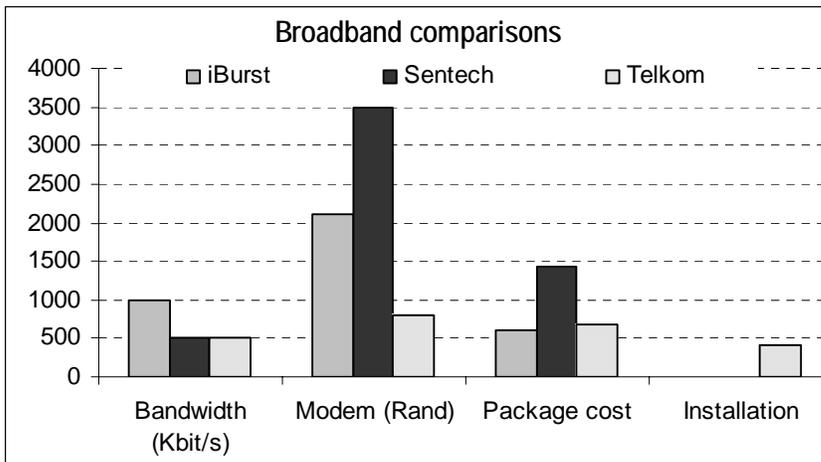
¹⁶ Telecom Regulatory Authority of India, April 2003. Broadband India: Recommendations on Accelerating Growth of Internet and Broadband Penetration. Page 21-22

Figure 7. Comparative broadband charges



The introduction of the iBurst service to the market in late 2004, by Data-Switch Telecommunications Network (DSTN) operator Wireless Business Solutions (the same company that runs the data network for the national lottery), should have some impact on the market, by undercutting the incumbent broadband operators, Sentech and Telkom, and providing high-speed mobility.

Figure 8. Broadband comparisons



The appropriate model for broadband is very similar to that in South Africa's mobile industry, where competition (even in an effective duopoly situation) has generated far greater responsiveness to consumer demand. Though slightly behind some of the global leaders, Vodacom and MTN will be introducing third generation (3G) cellular services in 2005.

Interconnection

Interconnection	2004
Cost of call from Telkom to mobile operator	R 1,84
Cost of call from mobile to mobile (average retail)	R 2,70
Mobile to mobile (peak) - payment between mobile operators	R 1,23
Mobile to Telkom (peak) - payment from mobile operator to Telkom	R 0,29
Telkom to mobile (peak) - payment from Telkom to mobile operator	R 1,40

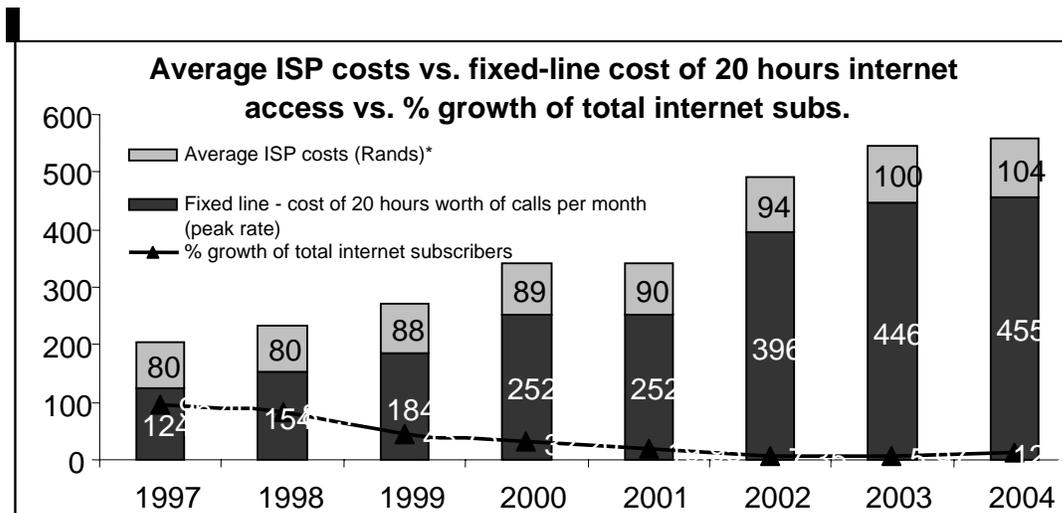
According to the current interconnection agreement, the mobile operators pay Telkom 29 cents per minute, while Telkom pays the mobile operators R 1,40 per minute. The declining fixed-line network means that there will continue to be increased substitution of fixed-line by mobile calls. The asymmetry in interconnection rates means that consumers will continue to pay higher call costs to mobile operators because the interconnection rate is substantially higher between mobile operators than between Telkom and a mobile operator.

Nevertheless, the convenience associated with mobile phones in terms of coverage and ability to monitor costs (or even to have zero monthly costs and just use free services such as the Call Me feature) means that there is an increasing number of people on the mobile network rather than the fixed-line network, regardless of the higher cost associated with mobile telephony. The challenge for ICASA is therefore to assess the validity of these interconnection asymmetries and to ensure that services are cost-based.

Internet

Internet penetration in 2004 (compared to 2003) continued to plateau, with penetration only increasing by 6% to an estimated 1,1 million dial-up subscribers (Goldstuck, 2004). South Africa's Internet penetration has, in some respects, followed the standard path of technological adoption, which is weak initially until a critical mass is achieved, followed by a subsequent explosion in growth, which then slows as the market gets saturated. But the plateau-ing in South Africa coincided precisely with the dramatic increase in Telkom fixed-line tariffs in 2000. Nielsen NetRatings (2001) attributed the fairly short time spent on-line by South Africans relative to countries with similar penetrations to the relatively high Internet access charges. Of the total basket of costs that a South African consumer pays for Internet access, around 85% of the costs go directly to Telkom in the form of dial-up access call charges¹⁷.

Figure 9. Average ISP costs vs. fixed-line cost



The effective doubling of the local-call price by Telkom since privatisation has had a huge impact on the cost of Internet services, and global evidence suggests that as long as dial-up costs remain this high, Internet penetration will be stunted. In terms of broadband prices as a percentage of monthly income, South Africa is listed as less favourable than other middle-income countries such as Argentina (3,98%), Mexico (4,56%) and Sri Lanka (4,81%). Out of

¹⁷ <http://www.internet.org.za/costs.html>

the 61 countries listed, South Africa is at 48th position (meaning its broadband access is more costly than in 47 other countries) with broadband prices making up 7,95% of monthly income¹⁸.

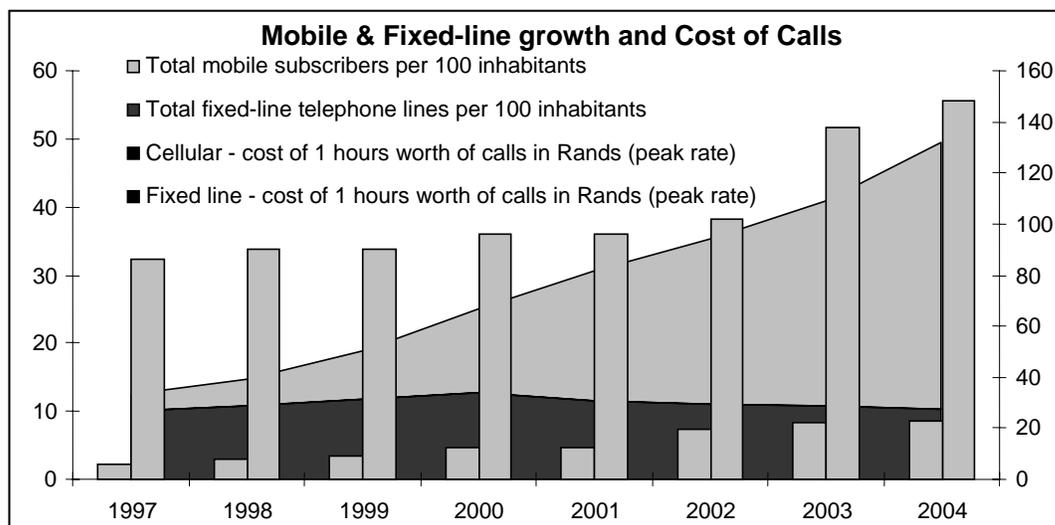
Collective access points

There are currently 981 collective access points such as cybercafés, MPCCs, post offices, digital villages and telecentres now available with variable usage in South Africa. (Thomas, 2004). With fixed-line prices so high, cyber cafés have not penetrated throughout the country. The high price of fixed-line access translates into an average cost per hour in commercial cyber cafés of around R 27 (Thomas, 2004).

Affordability

Reform initiatives across the globe have seen prices becoming more reflective of costs. Improved productivity and lower prices have reduced the input and production costs of user industries, as well as providing lower prices and greater product choice for consumers. But these changes have more often been associated with liberalisation than privatisation. Telkom's fixed-line call charges have escalated at a CAGR of more than 21% since 1997, thwarting growth in vital new industries such as call centres¹⁹. The failure to bring on-line the second national fixed-line operator (SNO) and the *de facto* continuation of Telkom's monopoly -- both in retail fixed services and in wholesale facilities provisioning -- are cause for concern. Local call prices have nearly doubled since the privatisation of Telkom, despite significant efficiency gains within the incumbent resulting in it nearly halving its labour force to 32 934 since 1997 (Telkom, 2004).

Figure 10. Mobile & fixed-line growth



Sources:
 Fixed line costs: 1997 - 2000: ITU World Indicators Report 2003; 2000 - 2004: Telkom Annual Reports
 Cellular costs: 1997 - 2002: ITU World Indicators Report 2003; 2003 - 2004: Vodacom, MTN and Cell C websites
 Fixed line and mobile subscribers per 100 inhabitants: Telkom Annual Reports

Special case studies have been devoted to the impact of the reform processes in the telecommunications sector. In Australia, Albon (1998) focuses on productivity growth only, reviewing the measurements of productivity growth following restructuring of the

¹⁸ ITU Internet Report. *Birth of Broadband*. September 2003.

¹⁹ Riley, C. in ITWeb *High telecoms prices cost country the loss of thousands of jobs*. July 8th, 2004.

telecommunications sector in that country. Interestingly, the productivity growth rate is used in Australia to feed into the fixed-line tariff Price-Capping model, in the same way as in South Africa. The difference is that the productivity factor in South Africa is currently set at 1,5% for Telkom while Australia uses a much more realistic 7,5% (van Seventer *et al.* 2004:23). The Price-Cap Formula as it has been applied in South Africa has not only underestimated sector productivity increases; it has also been based on skewed calculations of the impact of inflation on the incumbent. For instance, on top of declining technology cost globally, the appreciation of the Rand has meant that Telkom is experiencing rapidly declining unit costs in its technology purchases – a phenomenon that should be included in South Africa's use of the Price-Cap.

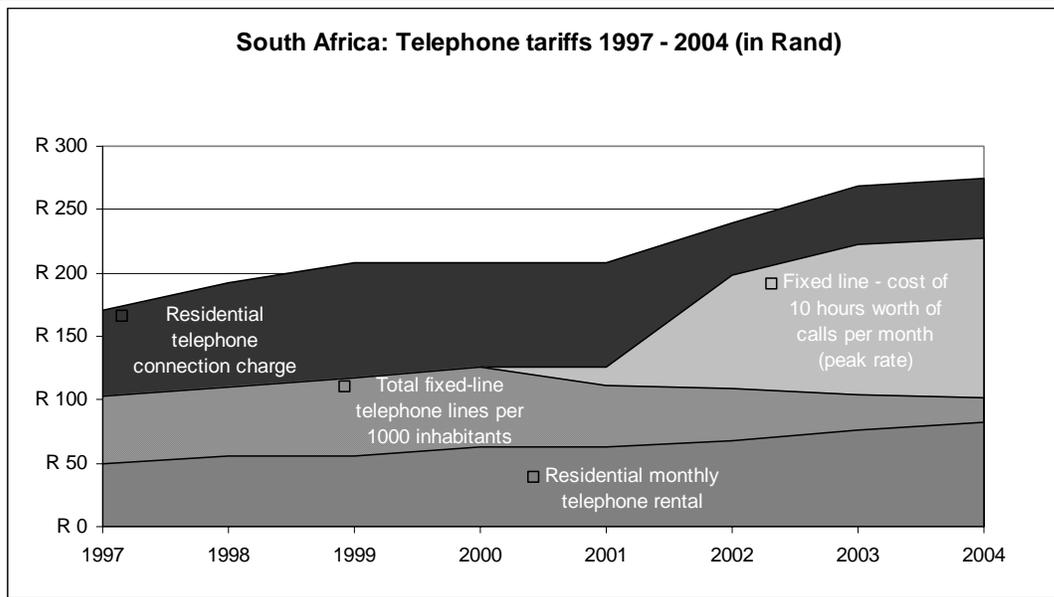
The productivity factor of 1,5% used by ICASA would seem to be extremely low given international practice and Telkom's productivity improvements in recent years. For example, the productivity factor for British Telecom was set at 7,5% during the 1990s, and is currently set at 6,5% in the US, 7,5% in Australia, and 3,0% in Mexico (Intven, 2000, 4-26). The rapid growth in Telkom's productivity as compared to the figure that is used in South Africa's Price-Cap regulations means that Telkom has been able to increase its rates at a significantly greater rate than a competitive market would allow. The central premise of the Price-Cap Formula is that it must mimic a competitive market, to ensure that gains from productivity increases are distributed fairly between both consumers (in the form of lower prices) and the monopoly operator (in the form of profits).

Albon has shown how an incumbent's productivity improvements can be passed on as price reductions to business and residential users, thus increasing the profitability of other industries and/or reducing the prices of their outputs. Further positive impacts are then felt downstream on incomes and costs of production (van Seventer *et al.*, 2004:23). For instance, input-output data from the Australian Bureau of Statistics suggests that telecommunications services represent about 3,4 percent of the cost of inputs to Australian production. If telecommunications services prices fell by 10 per cent as a consequence of regulatory reform, overall input costs would then fall (in the first instance) by around 0,34 per cent. (van Seventer *et al.*, 2004: 24)

The finalisation of the Chart of Accounts and Cost Allocation Manual (COA/CAM) for Telkom in June 2004 should provide the regulator with a stronger basis for intervention in the December 2004 rate review. The mobile operators' COA/CAM was also finalised in 2004 and should also provide a better understanding of their pricing structures and indeed of the real costs behind the continued highly asymmetrical interconnection arrangements in their favour that have characterised the mobile industry across the world²⁰.

²⁰ See Oftel ruling in 2001 that mobile termination rates in the UK were substantially in excess of costs and that an immediate reduction of 15% be effected and that a price cap of RPI – 14% be implemented over a three year period.

Figure 11. Relation between fixed-line telephone charges, churn and mobile growth



Sources:

Residential monthly telephone rental:

1997 - 2001: ITU World Telecommunications Indicators Report 2003; 2002 - 2004: Telkom Annual Reports

Residential telephone connection charge:

1997 - 2001: ITU World Telecommunications Indicators Report 2003; 2002 - 2004: Telkom Annual Reports

Cost of 10 hours worth of calls: 1997 - 1999: ITU World Telecommunications Indicators Report 2003

2000 - 2004: Telkom Annual Reports; Total fixed-line telephone lines per 1000 inhabitants: Telkom Annual Reports

Concern that telecommunications costs, amongst other input costs, were contributing negatively to the high cost of business in South Africa prompted the commissioning by the Treasury of a comprehensive report on administered and regulated prices, a report which concluded that there might be excessive prices in sectors such as telecommunications.²¹ An independent international comparison of prices commissioned as part of a study on Telkom by its unions found that telecommunications prices were excessively high in South Africa, particularly after adjustment for purchasing-power parity, and as such were a major obstacle to economic growth, wealth creation and employment generation (Efficient Group, 2004: iii)

High pricing and anti-competitive behaviour by Telkom in the wholesale market have also had a chilling effect on sector growth, particularly on the market segment most critical to innovation in a modern economy – the Value-Added Network Services (VANS) segment. While Telkom's portion of the VANS market appears to have grown significantly from R 3 496 million to R 4 114 million, the non-Telkom portion of the VANS market remains rather static at R 3 300 million. (BMI-T, 2004; Gillwald & Esselaar, 2004)

²¹ Statement on Cabinet meeting issued by the Government Communication and Information Services, 6 October 2004. "It was agreed that a system would need to be put in place to address these issues, including:

- * strengthening of regulatory capacity, where applicable, with better analytical expertise and reliable and timely information;

- * price-setting should take into account inflation targets for the period ahead, as well as efficiency, equity objectives, long-term demand and supply and other policy considerations; and

- * there should be a regular review of underlying costs and productivity trends, and monitoring of service delivery outcomes and financial performance of public utilities.

An 'administered price index' to monitor trends in this component of the consumer price index will be introduced, and in due course StatsSA will make the necessary announcements in this regard."

Empowerment

USALs

The focus on the issuing of the higher-profile SNO and Sentech licences has come at the expense of the Under-Served Area Licensees (USALs), who were supposed to come on-line at the time of the planned end of Telkom exclusivity in 2002. These small business operators are entitled to offer facilities to VANS operators, PTNs and mobile operators in their areas, and to offer voice services, with a particular emphasis on Voice over Internet Protocol (VoIP). Under the restrictive policy environment that existed before the Minister's policy directives announcement in September of this year, the USALs' special rights were believed to provide them with considerable competitive opportunity. But the Minister's directives, which come into effect in February 2005, substantially diminish the USALs' business case, by opening up the market.

November 2004 finally saw the licensing of 4 USALs by ICASA, with three other USALs getting provisional licences.

IPO

The Telkom IPO of March 2003 represented South Africa's biggest attempt to spread share ownership amongst the black majority in an economy still dominated, 10 years after the end of apartheid, by white capital. Historically-disadvantaged individuals were offered a 20% discount on the IPO share-offering price, through the Khulisa share scheme. In addition, Khulisa share-buyers who hold onto their shares for two years will qualify in March 2005 for a loyalty bonus of one extra Telkom share for every five shares they own. All other South African citizens were allowed to buy shares at a 5% discount to the offering price (Gush & Ginsberg, 2003).

However, the Khulisa offer was rejected by the biggest trade union coalition, COSATU, which contended that "for working people, the costs of the commercialisation and privatisation of Telkom far outweigh the largely illusionary benefits of a discounted share offer. Put bluntly, the vast majority of people earning under R 5 000 [US\$ 662²²] a month simply cannot afford any part of the Khulisa offering.... At the same time, commercialisation and privatisation have greatly increased the cost of living for working people. In telecommunications, in particular, the commercialisation of Telkom has led to soaring costs for low-income households, although rich consumers enjoy better services and lower tariffs" (Gush & Ginsberg, 2003).

This union stance did not deter the government, which has hailed the IPO as a triumph, with the share price soaring to over R 70 (US\$ 10,29²³) a share in early 2004 (and increasing to R 95 by the 8 December 2004), allaying fears ahead of the April 2004 national elections of a loss in the share price. The IPO raised about R 3 828 billion (US\$ 500 million at 2003 rates) for the South African government, on top of the R 5,6 billion (US\$ 1,22 billion) that SBC and Telekom Malaysia paid the government in 1997 for a 30% stake.

However, the boom in the Telkom share price came too late for empowerment consortium Ucingo, who were meant to be the beneficiaries of a 3% shareholding in the initial privatisation. They raised R 565 million (US\$ 65,55 million²⁴) from funders to pay R 33,90 (US\$ 3,93) per share for the 3% holding in 2001, in anticipation of the price soaring when the company listed. With the collapse of the telecom sector globally and the resultant delays in the listing, the value of the stock plummeted and the share price was finally set at around R 28,00 (US\$ 2,67) for the listing two years later in 2003. Ucingo, unable to service its soaring

²² Using an average exchange rate for 2003 of 7,55 SA Rands to the US Dollar

²³ Using an average exchange rate for 2004 of 6,80 SA Rands to the US Dollar

²⁴ Using an average exchange rate for 2001 of 8,62 SA Rands to the US Dollar

debt, had to pull out, negatively impacting on a string of pension investment funds which had been guaranteed returns of 30% (*Mail & Guardian*, 2004). A further 5% of Telkom that was supposed to be warehoused by the National Empowerment Fund at the time of the initial privatisation has also not materialised (Gillwald, 2004).

ICT Charter

The third draft of the ICT Black Economic Empowerment (BEE) Charter released in August 2004 included Multi-National Corporations (MNCs) in the requirement that at least 25% of ownership must be in black hands by 2010 (the mid-term target). Equity ownership, for the purposes of the Charter, was defined as the “% share of economic benefits as reflected by direct shareholding by black people.” This third draft of the Charter was meant to be the final one, but after intense lobbying from MNCs – who claimed that the 25% BEE requirement would prevent investment in SA (amongst other consequences) – a fourth draft was initiated.

The fourth-draft ICT Charter increased the BEE equity to 30%, but included a provision that MNCs could avoid selling off any equity by being granted a certificate of non-compliance. An MNC can qualify for a non-compliance certificate if there are legal, technological or policy barriers which are “incompatible with the sale of equity in the ordinary course of events.” (It is not clear what technological barriers may exist that prevent equity ownership.) The MNC will apply to the ICT BEE Council for the non-compliance certificate, which will only be granted after “after a rigorous analysis to establish that selling equity would cause some inherent commercial harm.” The final ICT charter, released in November 2004, maintains this “Certificate of Permitted Non-Compliance” for MNCs.

The provision of this “escape clause” for MNCs is not without its problems, however. There is likely to be some debate over what precisely is a legitimate reason for the awarding of a Certificate of Permitted Non-Compliance. And there is the question of how rigorous and transparent the BEE Council’s analysis of applications for the exemption is going to be.

New Policy Developments

In September 2004, the Minister issued policy directives that move South Africa one step farther along the path towards full liberalisation. The Ministerial determinations specified a date (February 1, 2005) on which the telecommunications market would be further liberalised. Though provision for this announcement had been made in the 1996 Telecommunications Act, the Minister had been resisting calls (starting more than two years ago) to liberalise. Speculation is that the Minister had been protecting the state’s assets (namely Telkom), but that it was eventually decided that the cost to the economy of this protection had become prohibitive. The directives, while still situated within a context of “managed liberalisation,” signal a shift away from the protectionist approach to inducing investment and securing network extension, an approach which has hampered the development of the sector over the last decade.

Once the directives come into force, they are likely to impact positively on Internet Service Providers (ISPs), licensed as VANS in South Africa, who should be able to reduce their facilities costs. Before these new directives, VANS providers could only acquire their facilities from Telkom. But the additional directive requiring a 50% “e-rate” discount on Internet access services to all public schools may have the unintended consequence of pushing up Internet prices, as the cost of the subsidy may be transferred onto ordinary consumers.

While difficult to quantify, all the evidence suggests that had South Africa adopted a more open market structure sooner, with an effective competition-based regulatory regime that exposed Telkom to competition (producing the associated efficiency gains), the net benefit to this critical sector of the network economy would have been greater, and the national policy

objectives of accelerated network development and affordable access would by now have been more fully-realised.

The key to South Africa's policy of "managed liberalisation" of the sector was the privatisation in 1997 of 30% of Telkom, with the dual purpose of contributing to affordable access and to accelerated network development. In return for the R 5,6 billion purchase price and a R 50 billion capitalisation of the network, the Thintana consortium received an extended monopoly of five years: Thintana-managed Telkom received revenue protection through limitations on voice service offerings by other operators and through regulations forcing VANS and mobile operators to lease Telkom facilities.

While Telkom has succeeded in fully digitalising the network, it has failed dismally in relation to the universal service policy objective of 6 million fixed-lines. Moreover, the lack of competition and Telkom's fear of cannibalising its existing service offerings have slowed the introduction of vital new technologies, particularly broadband, into the market.

Competition

Given the sluggishness to date in the vital-service segment of the market, there should be considerable growth in this segment following implementation of the Ministerial policy directives of September 2004. The Ministerial determinations permit VANS, from February 2005, to offer voice services and to acquire their facilities from providers other than Telkom or the future SNO. According to ICASA's interpretation of the directives, any operator (VANS or mobile) may self-provide facilities, as long the equipment they purchase is from a registered ICASA equipment supplier. This does not mean that the equipment supplier must be incorporated in South Africa. Rather, the equipment supplier (for example, Nokia, Siemens, etc.) must simply be registered on the ICASA database as an equipment supplier (as stipulated by the 1996 Telecommunications Act). Ensuring that all equipment is type-approved ensures consistent infrastructure standards in South Africa.

However, the 1996 Telecommunications Act states that only fixed-line operators have rights-of-way in terms of laying down telecommunications infrastructure in South Africa. Mobile operators can lay down fixed-line infrastructure for their own use, but are not fixed-line operators (that is, cannot sell access to these lines to retail customers). ICASA has recognised that the Act will need to be amended to be brought into line with the September directive on facilities self-provision, but this will not be possible by 1 February 2005, leaving the issue unresolved for the time being. Reading between the lines, ICASA seems to be waiting for the forthcoming new draft of the Convergence Bill to address this issue. There is also the possibility that, based on the lack of clarity on fixed-line rights-of-way, new infrastructure roll-outs will rely on wireless.

The ability of VANS operators to self-provide in the new dispensation will also mean that they need new licensing agreements. ICASA's stated intention is that the new licensing framework for VANS will be finished prior to the 1 February 2005 deadline.

The directives have no impact on the current licensing framework for mobile operators.

Voice over Any Protocol (VoAP) providers (such as VANS) will be subject to several conditions, all still to be made public at a later date. Specifically, VoAP providers will be required to link to the emergency services system and provide quality-of-service information to consumers. ICASA will be issuing new interconnection guidelines (the entire interconnection framework is currently being reviewed) as well as new numbering guidelines, all of which will take the new regulations into account. ICASA expects the new interconnection framework to be complete by 28 February 2005, after a public consultation process in January.

ICASA has given a liberal interpretation to the Minister's September 2004 determinations. The pathway for mobile operators and VANS to bypass the Telkom monopoly has been created. The stimulus of competition should contribute to significantly lower bandwidth costs. Similarly, lower Voice over IP (VoIP) costs (through the provision of voice by VANS) should encourage lower fixed-line voice-call charges. The impact of this has already been seen through Telkom's proposed 28% reduction in tariffs for international calls – the area where VANS can be expected to compete strongly with VoIP offerings. Meanwhile, in the area where Telkom does not have the stimulus of imminent competition, namely local call charges, Telkom is proposing a 5,5% hike²⁵. The SNO was to have played a major role in stimulating competition to Telkom in the local loop, but the lack of any major telecom investors in the SNO has meant that the opportunity for creating a major alternative to Telkom has been lost. The SNO is likely to initially focus on the corporate market.

Once the directives come into force, they are also likely to impact positively on Internet Service Providers, who will be able to reduce costs by having a choice of how to gain access to facilities. Until now, ISPs had to get facilities from Telkom. However, as stated earlier, the additional directive requiring a 50% discount on Internet access services to all public schools may have the unintended consequence of pushing up prices for ordinary consumers, as the cost of the subsidy is transferred.

It is clear that the directives of September 2004 signal a shift away from the protectionist approach to inducing investment and securing network extension which has fettered the sector over the past decade. There is now considerable local evidence to suggest that the protectionist policies emerging from the privatisation of Telkom did not serve the sector well, and that maximisation of the value of state assets occurred at the expense of the ICT sector and indeed the national economy. In recent scenario-modelling commissioned by the communications union Solidarity, it is suggested that if Telkom had increased its prices in line with the average of a set of 11 developed and developing countries since 1997, South African inflation could have been about 1% lower in 2002 (the reported inflation rate in December 2002 was 12,4%). According to this scenario, the interest rate could also have been driven downward (Efficient Group, 2004: 50).

Policy Outcomes

The problem with protectionist policies, particularly when they result in private monopolies or duopolies, is that the high prices they tend to induce militate against meeting the massive demand for low-cost services, especially in developing countries. In South Africa, monopoly and duopoly conditions in key market segments, combined with the low success rate of ameliorative access measures such as telecentres, have left half of all South Africans without reasonable access to a full range of communication services. For years, observers of the ICT sector in South Africa have argued for the lifting of the protectionist restrictions on the deployment of low-cost technologies and applications such as Voice over Internet Protocol (VoIP), and the lifting of the restrictions on facilities self-provisioning and re-sale, on the grounds that such restrictions inhibited the ability of service providers to affordably meet the pent-up demand in the country for affordable communications services.

From February 2005, VANS operators will be able to offer voice services while Private Telecommunications Networks (PTNs) will be permitted to deploy their own facilities, and both will be permitted to re-sell their excess capacity. This opening-up should certainly have the effect of driving down wholesale prices, with knock-on benefits for retail customers. A

²⁵ Telkom has already presented its proposed tariff increases to ICASA, even though this is in advance of the ICASA ruling on tariff increases expected by mid-December 2004.

range of low-cost services and applications not feasible at current bandwidth costs should become available. Longer-term positive impacts should include greater innovation in the sector, as bandwidth becomes a less scarce and cheaper resource, allowing the country to be more competitive in the global economy.

Whether the effect of these reforms will result in prices affordable to the majority of South Africans is another matter, a matter that will need to be closely monitored by the regulator. While mobile services have grown exponentially in the absence of fixed services or flexible billing arrangements for fixed services, the price of mobile telephony remains exceptionally high. And while mobile-voice has clearly become a substitute for fixed-voice services, the high cost and bandwidth limitations of mobile make its use for Internet access impractical at present for the majority of mobile users. From a policy perspective, the danger of this is that while the "voice divide" is being addressed by mobile, a new, more significant divide in relation to the global network economy is being created with regard to data services -- as the need for affordable broadband services is not being addressed. While it is true that new digital technologies and applications generally reduce network and transmission costs, they also invariably require high-cost intelligent receivers, whether those be digital televisions or high-end mobile phones. While significant un-met demand can now be served through more competitive services, it is also true that for some time to come, a significant number of citizens in South Africa will require assistance in achieving access to the kinds of communication services they need to participate effectively in the network economy and society.

In this regard, the possibility announced by the Minister of entirely de-regulating public pay-phone provisioning needs to be carefully considered. While small public-access phone operators have burgeoned in the absence of widespread public access in the country, the prices charged by such entities are often exploitative, with charging from the time of the handset being lifted at "per second" rates several times in excess of any reasonable mark-up. With the poor being the main users of such services -- and until the services become genuinely competitive and widely available -- ensuring that the charges are cost-based might become an important goal, but a difficult one to enforce.

The 50% "e-rate" Internet discount for all public schools also demands close scrutiny. While the positive intentions of such a policy directive are to be applauded, the unintended outcomes of such discounts need to be carefully considered. With sufficient application of this kind of effective subsidy, distortions to market can occur, with the cost of the subsidy being passed on to the ordinary consumer, thus inhibiting the extent of price reductions one would hope to see through the introduction of further competition in the market (as facilitated by the other September 2004 directives).

These "social interventions" -- de-regulation of public pay-phone provision and the "e-rate" -- will require efficient monitoring and evaluation to ensure their objectives of providing affordable access are met and that they do not result in negative, unintended outcomes or distort the gains arising from potential market efficiencies that are likely to arise from the latest reforms. Particular attention will have to be paid to the performance of the Under-Serviced Area Licensees (USALs), who may well be the most negatively-affected players in the new dispensation beginning February 1, 2005.

While the new dispensation should allow market forces to drive down prices with positive effects on the cost of business in South Africa, it will be important in the next phase of regulation, and indeed of policy formulation, for the ICT sector to consider where the real bottlenecks in the incumbent networks are, and to innovatively devise ways of ensuring access to those. The duplication of certain aspects of the network is simply not financially viable and a regime of fair-access to network infrastructure needs to be ensured. In addition, entry to the market by those historically excluded from it will require the assistance of a skilful

regulator that can enable their entry in a way that impacts positively on the sector and ultimately the end-users. An intensive review of the role of the Universal Service Agency in this new environment is essential to allow it to leverage the Universal Service Levy not only to provide welfare (and therefore traffic on the networks), but also to assist with the innovative entry of new, smaller players and the expansion of the sector to traditionally uneconomic areas.

For the benefits of the February 2005 reforms to be realised, a fair playing field will be required, facilitating the entry of new entrants to compete in the new markets effectively, driving a more efficient allocation of resources, and ultimately lower prices and greater choice. The key to this will be an effective regulator, well-resourced and highly-skilled. Good intentions will simply not be enough in this increasingly complex environment.

The new policy reforms are a positive move towards the development of the information infrastructure required for a modern economy seeking to overcome developmental legacies and to become effectively integrated into the global economy. It will be up to the regulator and the industry to work together on the fulfilment of the expectations of greater efficiency, choice and quality in the sector, and to ensure that these are matched by measures that increase equity and redress.

Regulatory challenges

Competition

The potential benefits of the September 2004 directives are dependent on the establishment of a fair competitive environment. It is important to remember that the directives assume the existence of a Second Network Operator to provide facilities-based and service-based competition. Even if the SNO does eventually materialise, Telkom's dominance in the market will require special regulatory attention, to ensure that the benefits of competition are realised. The reality is that the asymmetry of information access between the incumbent and the regulator – an asymmetry inherent in regulation of a vertically-integrated incumbent – creates a regulatory dynamic requiring huge resources and high levels of skill and experience on the part of the regulator. This has presented an often-insurmountable hurdle, even in more mature economies with the kinds of regulatory resources and skills not usually available in developing countries.

Interconnection

The Ministerial determinations of 3 September 2004 allow VANS to offer Voice over IP (VoIP) to retail customers in competition with plain old telephone services (POTS) -- Telkom, the SNO -- and mobile operators. The existing interconnection framework will consequently have to be re-worked. ICASA has made a commitment to review the entire interconnection framework by 28 February 2005, including new regimes for mobile, fixed-line and VANS operators. One of the challenges facing ICASA is the existing asymmetrical interconnection agreement between Telkom and the mobile operators.

Access and affordability

With the high rate of "churn" (subscribers moving off the network or being disconnected) from the Telkom network, it would seem that there is at least some "substitutability" of voice services between mobile and fixed services. Given the high mobile-call tariffs in comparison to fixed-line rates, the apparent rise of mobile at the expense of fixed services may initially seem contradictory – all the more so when one considers that it was with the introduction of expensive premium-rated, pre-paid air-time services that saw mobile growth rates increase exponentially. But despite the high cost of these services, the convenience and flexibility of pre-paid mobile services (lack of credit checks, a pay-as-you-go system) have clearly

spurred adoption on a massive scale. When fixed and mobile growth are combined, South Africa's figures showed impressive annual growth during the key reform period, with 95% of this growth generated by the increase in mobile subscribers.

However, despite the huge impact made by the mobile cellular telephony, the number of fixed lines will continue to be an important developmental measure – because fixed-line connections offer more affordable capacity. This is especially true for access to the Internet, because the relatively high cost of GSM cellular and the limitations on its capacity mean that GSM is not currently viable for full Internet connectivity. Policy-makers must ensure that in monitoring the gap between those who have access to basic voice services and those who do not, they do not lose sight of another potentially more significant divide -- between those with access to the enhanced broadband services necessary to participate effectively in the economy and society, and those without broadband.

It then becomes critical to understand the reasons for the declining number of fixed-line subscribers and to determine, from a policy and regulatory point of view, what can be done to ameliorate this decline. Clearly, the strategy of promoting the delivery of affordable and universal service through granting an exclusivity period to the fixed-line incumbent in exchange for it doubling the network, together with a dedicated fund (USF) and agency (USA) to subsidise services to the poor, has failed. The decline in Telkom's fixed-line network has severe implications for the development of widespread affordable access to a full information infrastructure, and this level of access is essential to overcoming the country's digital divide (Gillwald, 2004).

Pricing

Clearly a major factor in the high cost of retail telecommunications services in South Africa is Telkom's continued monopoly. In the absence of effective competition, particularly in the residential market, the regulator will need to regulate prices more effectively. Despite the enormous efficiency gains with regard to capital, technology and most importantly labour, Telkom has continued to exploit its monopoly position by continuing to increase prices -- well after the period of WTO-mandated tariff re-balancing -- with its local three-minute call prices effectively doubling over the period of exclusivity since 1997. Telkom has exploited the delay in the introduction of competition – supposed to be in place in 2002 -- by increasing its prices by over 25% in real terms over the past two years. The high cost of Telkom's basic fixed-line telephony services has been accompanied by the high facility-leasing and interconnection tariffs it charges VANS providers and PTNs. While raising prices above cost is incentive-compatible for an incumbent required to extend the network and given a monopoly precisely to ensure revenues from such activities, this has impacted negatively on the VANS sector, a sector that is critical to the development of a fully-networked economy.

Telkom's tight control of access to international data bandwidth, and the relatively high prices VANS providers are charged for access to this bandwidth, have persisted despite the intention of the policy and law to include regulation of these wholesale prices. The negative impact has not only been felt by users and consumers. High data communications costs impact on the economy more generally, and are a major consideration in companies' determination of investment destinations, even for non-telecommunications activities.

Empowerment

Entry to the market by those historically excluded from it will require the assistance of a skilful regulator that can enable their entry in a way that impacts positively on the sector and ultimately the end users. As mentioned above, a serious review of the role of the Universal Service Agency in this new environment is essential.

Integrated 'infostructure'

The penetration levels of next generation infrastructure and services are indicators of the preparedness of a nation to engage in the information economy and of a nation's competitiveness. Lack of competition and fear of cannibalising its own services has made Telkom slow to introduce vital new technologies, especially broadband. South Africa has only 25 000 ADSL customers, compared to an average of just under 3 million in other middle-income countries (ITU, 2003). Competition in the mobile industry, even as an effective duopoly, has seen far greater responsiveness to consumer demand, with cellular 3G services expected within the next year.

Human resources

Perhaps the greatest challenge to the development of the sector is human capital. For the benefits of ICT to be realised, state policies need to be focused on developing knowledge entrepreneurs, knowledge workers and knowledge consumers. The sector has a critical shortage of engineers and economists, contributing to the high cost of these skills in the country.

Capacity development is also required in the public entities responsible for strategic decision-making within the sector, including the Parliamentary Portfolio Committee on Communications, the Department of Communications and the regulator ICASA.

Policy and legislative challenges

While some of the negative developments in South Africa's telecommunications sector have been viewed as the inevitable birth pangs of institutional and market reform, the negative impact on the performance of this critical sector should be of serious concern to national strategists and those responsible for taking the country into the global information economy, with the associated national developmental benefits.

Overall, there seem to be larger growth effects from telecommunications development in developing countries than in developed countries. The indirect effects -- i.e., the gain in productivity that other sectors experience as a result of development in the telecommunications sector -- are more significant in developing countries, which might explain the large growth effects found in countries when reform is affected. Vital to realising these benefits, however, are a certain policy environment and an effective regulatory regime. The regulatory mechanisms must be able to create and maintain a fair competitive environment, with cost-based pricing, that can induce investment and usage of services, can spur innovation, and can increase penetration of the range of services required for effective participation in the e-economy. A penetration threshold level must be reached, a threshold level at which "network effects" kick in.

In the case of South Africa, policy priorities can include:

Integrated national ICT policy framework

Although the centrality of ICT to economic growth and poverty alleviation has been widely articulated, and although various departments have initiated ICT policy visions, and although Presidential commissions and national strategies have been established over the last few years, currently no integrated ICT policy framework exists for the country. Until this framework exists, ICT policy will be uncoordinated, *ad hoc* and often undermined by duplication.

New sector vision

To find a broad national vision, a review of policy and strategy in the telecommunications sector is required, a review that will need to be integrated far more systematically into other national policies in the areas of innovation, research and development, education, health,

and e-government. Global, sectoral and national conditions have changed dramatically during the past eight years of telecom reforms since 1996, and there is now evidence emerging as to which policies are having their intended outcomes and which ones are not.

While the introduction of the draft Convergence Bill in 2003 acknowledged the evolution in thinking since 1996, the absence of an accompanying policy and strategy limited its coherence and utility. Clearly a fundamental re-think is needed of the current market structure, including a reassessment of the natural monopoly elements of networks and ways of ensuring access to them. The anti-competitive tendencies in the current market structure need to be unpacked and the safeguards for existing investments (some of which are not yet even operational) examined. Identification of the routes to securing critical new investment in network extension, and the optimisation of existing capacity, is required. Technological distinctions and traditional licensing/regulatory frameworks, both of which are severely challenged by new Internet Protocol-based services, need to be revised in a way that enables the market to improve services and drive down costs.

Resourced regulator

As indicated above, the opening up of the market to greater competition in order to meet pent-up demand and drive down prices, while a necessary condition for improved pricing, is not sufficient. Without a knowledgeable and skilled regulator to establish fair interconnection, pricing and spectrum regimes, the benefits of the liberalised policy environment will not be realised. Investors increasingly prioritise effective regulation as a key determinant in decisions on market entry.

Removal of structural conflicts of interest

There is little the regulator ICASA can do to create an environment conducive to investment and fair competition while structural conflicts of interest exist in policy and legislation. For instance, as long as the Ministry remains a significant shareholder in the incumbent and responsible to the state for its value, while at the same time being the entity responsible for broader sector policy (including licensing) -- and therefore responsible for the conditions under which the incumbent operates -- perceptions of conflict of interest will persist. In addition to exogenous factors such as global telecommunications market trends, this political situation has undoubtedly contributed to the lack of stability and predictability within the sector in South Africa, and has impacted negatively on the investment climate. This situation needs to be rectified, possibly in the proposed new Convergence legislation. The Ministry should be made responsible only for providing the policy vision to the sector, through the consultative and transparent processes required by the Constitution, while drawing on the extensive expertise in the industry and the growing expertise in the regulator.

Direct and indirect state support for job creation and economic development

Due to the labour efficiencies associated with new technologies, telecommunications is unlikely to be a direct source of major job creation in the current environment. However, the pending network licences, should they come into being, may mop up some of the jobs shed by Telkom over the next few years. And the new Ministerial directives announced in September are likely to spur activity in the VANS sector, including the ISPs. But much of this activity is likely to result in re-shuffling of highly-skilled workers as opposed to drawing unemployed people into the workforce.

There is some potential for the new environment to be an enabling one for the increasing number of small and micro entrepreneurs wishing to exploit the anticipated lower costs of Internet provisioning. These firms are, however, likely to be one- or two-person shows, with the number of new jobs directly created likely to be in the hundreds or possibly thousands, but not in the tens of thousands. Policy initiatives such as the Under-Served Areas License (USAL) scheme have the potential to bring SMMEs, particularly those from historically-disadvantaged communities, into the sector, but these SMMEs will require a far more

supportive regulatory, licensing and tax regime than that which currently exists. In fact, without the technical and financial support provided in other jurisdictions that have successfully introduced small entrants into the sector, these SMME operators are likely to fail. If, however, they are entrepreneurially successful and able to survive the initial financially-draining start-up process – through providing other services, such as finance and insurance, as some are planning to – each USAL may be able to employ as many as 200 people directly, with the associated multiplier effects on the communities in which they operate.

If there is a competitive environment in facilities-provisioning, and telecommunications prices decline significantly, then real opportunities do exist for the creation of a significant number of jobs through telecommunications-based services such as call centres. With the exception of its high telecommunications costs, South Africa has often been cited as ideally suited for international call centre operations.

If South Africa wishes to see the kind of growth achieved in South Korea or Singapore, where telecommunications and ICT have driven the development of globally-competitive economies, then more ambitious investment in telecommunications infrastructure and human capital development will be needed. Such investments could initially include public-works-type programmes to build out infrastructure, but in the longer-term would require large numbers of skilled workers to operate networks. With the failure of traditional telecommunications infrastructure investment strategies to attract competitors, and with the low saturation levels that are reached on vital IP-based services due to their high cost, alternative investment and infrastructure delivery models need to be investigated. Broadband metropolitan networks, power-line telecommunications networks, high-speed wireless rural networks and a national common carrier network are all alternatives that have the potential to overcome the impasse South Africa currently finds itself in.

References

African Ventures (2002), 'Financial assessment of Under-Serviced Area Licences,' commissioned by IDRC, Johannesburg.

BMI-TechKnowledge (2003) *Communication Handbook*, Johannesburg.

BMI-TechKnowledge (2004) *Communication Handbook*, Johannesburg.

Cell C (2004) Company information requested from Cell C by LINK Centre (Katharina Pillay)

Competition Commission (2004) *Telkom Complaint Referred to Tribunal*, Case Reviews No 16, Competition Commission, 16 June 2004
<http://www.compcom.co.za/resources/newsletter%20-%20june%202004/html%20version/8%20Case%20Reviews.html>, accessed September 2004.

Department of Communications (2004) *Policy Announcement by the Minister of Communications, Dr Ivy Matsepe-Casaburri*, press statement, Department of Communications, Pretoria, September 2003.

Efficient Group (2004) *An International Comparison of South African Telecommunications Costs and the Possible Effect of Telecommunications on Economic Performance and Report on Telkom's Financial Statements and Comparison with Selected Local and International Companies*, Efficient Group, Waterkloof

GCIS (2004) 'Statement on Cabinet meeting,' Government Communication and Information System, Pretoria, 6 October, <http://www.gcis.gov.za/media/cabinet/041006.htm>, accessed December 2004.

Gillwald, A (2004a) *Stimulating Investment in Network Extension: The Case of South Africa*, World Dialogue on Regulation, Lyngby, Denmark, http://www.regulateonline.org/index2.php?option=content&do_pdf=1&id=214

Gillwald, A (2004b) *Impact Analysis of Telecommunications Sector on Growth and Poverty Alleviation in South Africa*, report commissioned for the South African Presidency and ComMark, Trade and Industrial Policy Strategies (TIPS), Pretoria, <http://www.tips.org.za/events/sectorworkshop2004/telecommunications.pdf>

Goldstuck, A in Stone, L (2004) 'SA's cellphone operators caught making calls with inflated numbers,' *Business Day*, Johannesburg, 3 December.

Gush, G & Ginsberg, J (2003) 'South Africa raises \$500 Mln in Telkom IPO,' New York University, <http://pages.stern.nyu.edu/~igiddy/cases/telkomsa.htm>

ICT Empowerment Charter Working Group (2004) *The ICT Charter: Final Document*, ICT Empowerment Charter Working Group, Johannesburg, November, 2004, <http://www.ictcharter.org.za/content/The%20ICT%20BEE%20Charter%20Nov04.pdf>, accessed December 2004.

IOZ (2003) *Cost of Internet Access in South Africa (1993-2003)*, Internet.org.za, Johannesburg, <http://www.internet.org.za/costs.html>, accessed August 2004.

ITU (2003), *Birth of Broadband*, ITU Internet Report, International Telecommunication Union, Geneva.

ITU (2004) *The Portable Internet*, Internet Report, International Telecommunication Union, Geneva.

ITU (2003) *World Development Indicators Report*, International Telecommunication Union, Geneva.

ITU (2004) *African Telecommunication Indicators*, International Telecommunication Union, Geneva.

ITWeb (2004) 'More customers for Vodacom,' *ITWeb*, Johannesburg, 28 July 2004, <http://www.itweb.co.za/office/vodacom/0407281044.htm>, accessed August 2004.

Mail & Guardian (2004) 'True empowerment is no privatisation party,' *Mail & Guardian*, Johannesburg, 16 March 2004.

MTN (2002) Annual Report, Mobile Telephone Networks, Johannesburg, <http://www.mtn.co.za/pdfFiles/ar2002.pdf>, accessed November 2004.

MTN (2003) Annual Report, Mobile Telephone Networks, Johannesburg, http://www.mtn.co.za/pdfFiles/ar2003_busrep.pdf, accessed September 2004.

MTN (2004) *Annual Report*, Mobile Telephone Networks, Johannesburg, http://www.mtn.co.za/pdfFiles/ar2004_busrep.pdf, accessed September 2004.

MTN (2004) Interim Results to 30 September 2004, Mobile Telephone Networks, Johannesburg, <http://www.mtn.co.za/default.aspx?pid=213359>, accessed November 2004.

Quantec (2004) South African Industry Indicator Database, Quantec Research, Pretoria.

ResearchICTAfrica, (2003) *Fair Access to Internet Report (FAIR)*, ResearchICTAfrica.net, Johannesburg, available online at <http://www.researchictafrica.net/images/upload/FAIR%2018.03.04%20v17.pdf>, accessed September 2004

ResearchICTAfrica (forthcoming) *E-Usage & E-Access Index*, ResearchICTAfrica.net, Johannesburg.

Riley, C (2004) 'High telecoms prices cost country the loss of thousands of jobs,' *ITWeb*, Johannesburg, 8 July, <http://www.itweb.co.za/office/notebook/0407080757t.htm>, accessed September 2004.

Stats SA (2001) *Census 2001: Key Results*, Statistics South Africa, Pretoria, http://www.statssa.gov.za/census01/html/Key%20results_files/Key%20results.pdf accessed October 2004.

Stats SA (2003) *General Household Survey July 2002*, Statistics South Africa, Pretoria, <http://www.statssa.gov.za/publications/P0318/P03182002.pdf>, accessed August 2004.

TRAI (2004) *Broadband India: Recommendations on Accelerating Growth of Internet and Broadband Penetration*, Telecom Regulatory Authority of India, New Delhi,

<http://www.trai.gov.in/Recommendations%20on%20Internet%20and%20Broadband%202004-04-29%20FINAL.pdf>, accessed October 2004.

Telkom (2002) *Telkom Group Annual Report 2002*, Telkom SA Limited, Pretoria, http://www.telkom.co.za/pls/portal/docs/page/annualreports/annual_report2002/Telkom%20AR%2026370.pdf, accessed January 2004.

Telkom (2003) *Telkom SA Limited Group Annual Report 2003*, Telkom SA Limited, Pretoria, <http://www.telkom.co.za/pls/portal/docs/page/IR/docs/Telkom%202003%20AR%2029066.pdf>, accessed November 2004.

Telkom (2004a) *Group Annual Report 2004*, Telkom SA Limited, Pretoria, <http://www.telkom.co.za/pls/portal/docs/page/ir/docs/Final.pdf>, accessed July 2004.

Telkom (2004b) *Group Interim Results for the six months ended September 30, 2004*, Telkom SA Limited, Pretoria, http://www.quickreport.co.za/unreleased/telkom_interim_2004/downloads/telkom_interim_2004_complete.pdf, accessed November 2004.

Thomas, R (2004) *The Internet Café Industry in South Africa*, presentation, NETucation, Johannesburg. <http://www.ispa.org.za/iweek/presentations/Ramon.Thomas.ppt>, accessed November 2004.

Van Seventer, D, Goode, R, Steyn, G, Gillwald, A (2004) *Determining an Appropriate Methodology for an Economy-Wide Study of the Impact of Restructuring and Privatisation on the South African Economy*, paper commissioned by the Department of Public Enterprises, Trade and Industrial Policy Strategies (TIPS), Pretoria.

Vodacom (2002) *Vodacom Annual Report 2002*, Vodacom Group (Pty) Limited, Midrand.

Vodacom (2003) *Vodacom Annual Report 2003*, Vodacom Group (Pty) Limited, Midrand, <http://www.vodacom.co.za/about/Vodacom%20Group%20Annual%20Report%20Year%20Ended%202003.pdf>, accessed September 2004.

Vodacom (2004a) *Vodacom Group Annual Report 2004*, Vodacom Group (Pty) Limited, Midrand, <http://www.vodacom.co.za/about/Vodacom%20Group%20Annual%20Report%20Year%20Ended%202004.pdf>, accessed July 2004.

Vodacom (2004b) *Group Interim Results For the six months ended September 30, 2004*, Vodacom Group (Pty) Limited, Midrand, <http://www.vodacom.co.za/about/Vodacom%20Interim%20L%20-%2032031.PDF>, accessed November 2004.

Weidemann, R (2004) 'USAL process makes headway,' *ITWeb*, Johannesburg, 3 June <http://www.itweb.co.za/sections/telecoms/2004/0406031010.asp?S=IT%20in%20Government&A=ITG&O=FRGN>, accessed July 2004.

Wray, R (2004) 'Ofcom forces 30% price cut on mobile firms', *The Guardian*, 2 June 2004, <http://www.guardian.co.uk/mobile/article/0,2763,1229494,00.html>, accessed December 2004.