

2006 South African ICT Sector Performance Review<sup>1</sup>

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## 1. Executive Summary

Despite the continued overall growth of the telecommunications sector in South Africa, the full potential of ICT to contribute to the growth and development of the country is not being realised. The descent by the country down international scales for competitiveness and e-readiness raises serious questions about the failure of the policy and regulatory strategies which aim to propel South Africa into the global knowledge economy through the development of a participatory information society. South Africa now lags behind many of its traditional competitors on key indicators of access and affordability and is rapidly being caught up to and overtaken in a number of areas by African states which historically it has dominated. Morocco, for example, has more fixed broadband connectivity than South Africa (325,000 compared to less than 200,000)<sup>2</sup> and the Tunisia mobile market is the fastest growing in Africa, besides the island states.

This fourth South African ICT Sector Performance Review (SPR) seeks to measure and assess some of these market developments against national policy objectives such as access to services, cost of usage and competitiveness. It is not a conventional market analysis. These tend to be concerned with overall growth or growth of different market segments and the profitability of companies. This study is concerned with such data only as indicators of delivery on national objectives. So, for example, while the overall ICT sector in South Africa has continued to grow significantly in the last year, this review considers how this relates to improvement in penetration rates and costs of telecommunications to consumers and users and as a major business input, and to the introduction of new services for effective participation in the global economy. A critical aspect therefore of the methodology is identifying appropriate indicators to measure policy outcomes.

A critical tool of the review is the use of benchmarking. While this is a blunt tool, it is used internationally to track the progress and performance of countries against a set of key indicators, and on the basis of increasingly transparent and shared methods. This SPR collates a series of data on penetration and pricing of various services from around the world, particularly from the lead organisations in this field, the Organisation for Economic Co-operation and Development (OECD) and the International Telecommunication Union (ITU). Data from the OECD provide an international context, and points of reference against which South Africa

has traditionally compared itself in the last decade, such as the statistics on Mexico, Poland, Turkey and South Korea. But while the OECD provides perhaps the most comprehensive measure of telecommunications indicators, with the focus on the economically developed economies, benchmarking South Africa in this context requires careful consideration of the methods used.

Another key source of data is the Research ICT Africa! (RIA) Network – data that compares South Africa against the rest of the African continent. Data from RIA provides a regional and continental context to South Africa's policy progress and, increasingly as ICT growth takes off across the continent, real benchmarks. Another main data set used is the World Bank's, and South Africa's position in the world is also established with reference to the World Economic Forum's (WEF's) network readiness and competitiveness indices.

This Sector Performance Review begins with an analysis of global policy and regulatory trends. The dynamic ICT sector is powerfully influenced by rapidly changing technological and economic developments. From a technology perspective, the move towards IP (Internet Protocol)-based platforms is revolutionising both the cost of provision as well as the scale and scope of services that it is possible to offer consumers. The convergence of technologies has fundamentally revised the ICT value chain, enabling personalised, bundled multi-play services.

Within the context of global governance of the sector and a brief consideration of South Africa's now long-standing World Trade Organisation (WTO) commitments, the paper moves from the international context to the national policy and regulatory environment. To a large extent, South Africa's WTO commitments in telecommunications, unrenewed due to the breakdown in global trade negotiations, formalised policy trends already taking place in the mid-1990s and played an important role in the institutional structure that characterises the ICT sector and that is characterised by the policy of "managed liberalisation" that South Africa has followed. This policy reflects the hesitancy of the state to adopt competition, which has been the driver of multilateral reform globally, as the primary mechanism of service delivery and innovation. As a result, over the last decade, the South African market has only been opened up incrementally, with few opportunities to see the benefits of lower prices, service and billing innovation, and choice of services associated with open markets in other parts of the world.

With the unintended policy outcomes of the last decade within the sector and particularly in the

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<sup>2</sup> See Southwood (2006a).

context of South Africa's new economic policy, the Accelerated and Shared Growth Initiative for South Africa (ASGISA), there has been increased emphasis within national and sectoral policy on the role of the state: specifically on the use of public enterprises to drive economic growth and redress. To a large extent, this approach is driven by frustration at the slow progress of transformation and the perceived inability of the market to deliver on key national policy objectives of employment creation and poverty alleviation.

The section on market structure examines the impact of managed liberalisation and the increased role of the state, not only in creating the policy and legal framework as the government of the day, but also through increased ownership and operational control in the sector. This is of concern in light of the difficulties the state is experiencing in delivering even in core areas of public delivery. Capacity and capabilities shortages in the public sector have been highlighted by the Presidency as the major risk to effective public service delivery.<sup>3</sup> In the telecommunications sector, however, it is precisely in those core areas of the market where there has not been competition that the result has been limited extension of networks and services and/or monopoly pricing.<sup>4</sup>

The impact of this market structure on the development of the sector is assessed in terms of penetration and pricing. While fixed-line growth is negligible, the growth of data services, particularly through the introduction of ADSL, has been significant, despite the high costs associated with these services. Although these costs have come down in the last few months, they continue to be far above other lower to middle income countries and even developing countries such as Morocco.<sup>5</sup>

Despite some critique of the subscriber numbers and the methodologies used to calculate them, there is no doubt that the mobile market continues to grow astronomically, with subscriber figures of over 30 million for the country. The slow introduction of broadband services in the fixed market, the inability to meet demand, and the possibility of introducing costly broadband wireless services competitively as a result of the high cost of fixed broadband services, have also resulted in significant growth in the early introduction of mobile HDPSA services. Independent wireless access providers such as iBurst have also been able to lever-

age the prevailing conditions to their advantage and improve the competitive take-up of data services.

Interconnection and facilities leasing continue to be significant bottlenecks in the introduction of a fair competitive market and major contributors to the high input cost of telecommunications in business. The annual cost of 2 mbit/s of leased-line capacity, despite having come down significantly in the last year, remains magnitudes of scale higher than in other lower middle income countries.

The exclusivity Telkom has over the SAT-3 landing station, as a result of its membership in the consortium, has allowed it to extract monopoly rents, making international bandwidth cost considerably more than its real cost.

The final section provides a brief list of regulatory challenges facing South Africa in light of the previous analysis. It assesses the potential of the new Electronic Communications Act (ECA) to address some of the areas of under-performance within the sector, and concludes with recommendations on how public policy objectives may be better met.

## **2. Global Trends**

At the global level, the ICT sector is characterised by increasingly high levels of uneven integration, with some areas providing valuable nodal points to an international communications backbone while others remain marginalised from participation in the global economy. The degree to which national and even smaller units such as metropolitan networks connect to the global network, and the cost at which this occurs, are key determinants of global competitiveness and, in an increasingly globalised world, also determinants of a country's ability to deliver on its own developmental objectives.

The creation of policy and institutional frameworks that enable the deployment of new cost-effective, sometimes rapidly-deployable, technologies, and encourage investment in the relatively large, long-term sunk investments associated with critical network development in developing countries, is a necessary condition of successful global inclusion.<sup>6</sup> This section looks at several trends across the globe that should inform national strategies.

### **2.1. Investment trends**

The global ICT sector has recovered from the after-effects of the bursting of the dot.com bubble in 2000/2001. That period resulted in a dramatic decline in investment, particularly in the telecommunications sector, and followed a spike in telecommunication companies' defaults in 2001 and 2002.

<sup>3</sup> See Mbeki (2006) State of the nation address, 3 February, <http://www.dfa.gov.za/docs/speeches/2006/mbek0203.htm>

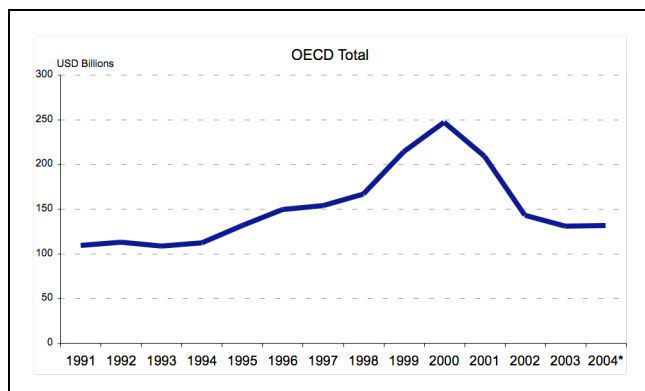
<sup>4</sup> See section 6.3 on ADSL below.

<sup>5</sup> As of June 2006, Morocco was rated by Balancing Act as providing the cheapest broadband on the continent. See Southwood (2006a).

<sup>6</sup> See Mahan & Melody (Eds.) (2005).

The number of defaults has subsequently declined, and investors are recovering their appetite for investment in the sector.

Figure 1: OECD telecommunications investment



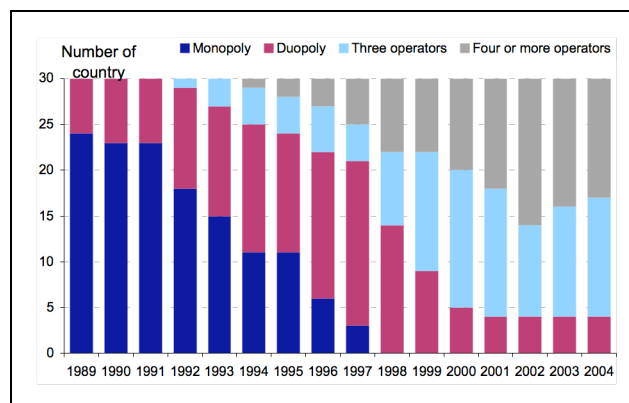
Source: OECD, 2005

The recovery in investment has been driven by economies of scale and by the convergence of technologies. IP-based platforms allow for cost reductions that can only be taken advantage of through economies of scale as well as multiple service offerings. The result is heightened merger and acquisition activity across the globe, where operators are attempting to provide a complete communications solution. For example, Deutsche Telekom's strategy is to maintain, through consolidation, its position as Europe's largest operator by revenue.

## 2.2. Competition

Trends towards increased liberalisation over the last decade have been associated with declining state involvement in the ICT sector, particularly through privatisation of state-owned entities.<sup>7</sup> In the OECD countries, for example, the trend has been to increasingly open up the telecommunications sector to competition, with increased provision of ICT services by the private sector. In the mobile sector, the trend between 1996 and 2004 has been towards opening up the sector to four or more operators.

Figure 2: Trends in telecommunication competition



Source: OECD, 2005

Even within the fixed-line sector, traditionally the sector with higher barriers to entry in terms of capitalisation, the trend has been a continued reduction in state involvement and increasing competition.

Countries, such as Australia and France, which had laws requiring the state to maintain majority ownership of their incumbent fixed-line operator, have now rescinded these laws and have made it clear that they are willing to reduce state ownership below 50% and in certain cases have made commitments to privatise completely (OECD, 2005: 35).

The introduction of competition in OECD countries has driven down prices, grown subscriber bases, and diversified the range of services (OECD, 2005). In addition to declining state ownership and increased competition, there is a trend in developed markets towards increasingly looking at legislation aimed at enabling the convergence of IT, telecoms and broadcasting and the establishment of Next Generation Networks (NGNs). Countries are increasingly looking at a services definition of markets as opposed to the traditional infrastructure-dominated definitions, and technology- and service-neutral licences are being seen as a way of enabling entry and reducing regulatory burden.

## 2.3. Global policy and regulatory trends

Tariffs, customer service, consumer choice and curbing monopoly power are some of the primary issues driving sector regulation in developed economies. But, for developing economies, critical infrastructure shortages, low-income profiles, skills scarcity, generally poorly-run state operations and the lack of competitive market conditions remain critical issues requiring policy and regulatory intervention. The size and value of markets often limit competitive entry, even where there are not policy constraints inhibiting the role of competitive market forces. With a few dominant players in many markets, often with cross-holdings by the state, effec-

<sup>7</sup> See OECD (2005).

tive regulation is needed most where institutional arrangements and incapacity have often most hindered it, resulting in poor enforcement of public service commitments, restricted access and high prices.

The higher growth potential and lower incremental investment costs of mobile compared to fixed infrastructure, and increased opportunities to compete with often inefficient incumbents, have attracted private-sector investors. As a result, mobile is the main means of voice communication in Africa today. It is estimated that there is still significant untapped mobile market potential in Africa, driven by slowly growing or stagnant fixed-line network roll-outs. Forecasters expect mobile penetration on the African continent to reach 20% by 2010, from around 9% today (fixed line: 3%), illustrating the potential continued strong growth in the mobile sector in developing countries.<sup>8</sup> As mobile operators have become the new incumbents and state-owned fixed operators struggle to raise public or private investment in order to extend and modernise their networks, important questions for policy and regulation are raised.

## 2.4. Converged services

Some 55% of ICT infrastructure providers provide triple play (voice, data and video) in the OECD area. Nearly 90% of ICT infrastructure firms provide double play (voice and data).<sup>9</sup> As voice revenues decline, so firms are moving towards alternative offerings to sustain growth. In the OECD, the trend is for cable firms to offer triple play, and for telecommunications firms to lag behind.

Cable and fibre providers are more likely to offer triple-play services than other ADSL providers. Nearly 66% of the 29 cable networks examined in the OECD offered triple-play services. In contrast, only 44% of the 50 surveyed telecommunications networks had triple-play offers. Of the eight fibre optic providers, seven (88%) had multiple-play offers (OECD, 2006: 6).

Since South Africa does not have cable or fibre players, the driver of triple play will have to come from somewhere else. The OECD sees the delivery of multiple play as a two-stage process. The first stage is offering multiple play over a particular infrastructure. In the OECD area, this started over fibre and cable and moved onto ADSL, but in South Africa this is more likely to take place over wireless technology, given the existence of some competition in this sector as compared to fixed-line and given Telkom's own intentions to provide

broadband over a multi-service fixed and wireless offering (Telkom, 2006b). The second phase is for multiple play over any network – the so-called “Next Generation Network (NGN)”. In phase two, it does not matter what the underlying infrastructure is, as long as it is IP-enabled. While the move towards triple play has already occurred in the OECD area, it is becoming increasingly common to offer quadruple play which consists of data, voice, video and mobile, all in one package. This has fundamentally changed the traditional communications value chain.

## 2.5. Changing value chain

The impact of converged services can best be illustrated by comparing the traditional value chain to the integrated value chain characteristic of converged services. Traditionally, value was added to the fundamental transmission functions of the infrastructure through the layer of network services that makes possible the routing of calls and management of traffic. With the technological revolution of the 1980s, another value-added layer was added to the chain, known quite literally as the value-added network services (VANS), which provided applications to access or manage data and information services in addition to basic voice. In broadcasting, this included text services to complement and substitute for audio-visual information services. These limited TV text services have almost entirely given way to enhanced IP-based data services. With the rise of the Internet, content provision extended from electronic broadcasting content and simple data services to a wide range of customised content offered across traditionally distinct platforms.

Even with the introduction of competition in the services sector, the market continued to be structured around a vertically-integrated incumbent, often the exclusive provider of facilities to, and competing in, the liberalised market segments.

With the trend towards the integration of voice and data services, broadcasting and telecommunications, and fixed and mobile services – with a single integrated receiver and number that allow the subscriber to move seamlessly between networks – a range of new service and service bundling opportunities have emerged.

Through dynamic developments in the unregulated IT services sector, combined with the liberalisation of communications infrastructure and services, a complex and integrated value chain has supplanted the classically linear value chain. The services still originate from the infrastructure but the infrastructure can be composed of multiple and distinct networks that seamlessly integrate to create a modern information backbone.

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<sup>8</sup> See ITU (2004).

<sup>9</sup> See OECD (2006).

Most recently, the emergence of uniform Internet Protocol (IP) standards has fuelled the demand for IT and telecoms services. While digitisation allowed for the convergence of broadcasting and telecommunications services through reduction of data into bits that could be carried across any platform, it is through new IP-based networks that seamless communication across integrated networks can be realised. Such networks are generally referred to as Next Generation Networks (NGNs) and allow for lower-cost, IP-based services such as Voice over IP (VoIP) and IP Television (IPTV) to be transmitted over single platforms. These developments require that any value-chain analysis of operators, services or ICT companies be dynamic, flexible and open-ended.

A major implication arising from these trends is the huge increase in available capacity, historically a scarce resource. This effectively means that the marginal cost of the network capacity that is required to provide carriage services is insignificant and may even be approaching zero. Network infrastructure is increasingly being characterised as a fixed cost. The implication of these trends for the global telecoms industry is that networked business models will increasingly be based on services supplied. In conjunction with the changing dynamics of the telecoms industry, the role of regulation has extended from concentrating on consumer disputes, universal service issues and price-setting to a much broader role of regulating the sector to enable competition.

## 2.6. Benchmarking South Africa

The South African government continues to emphasise the importance of ICTs and their contribution to the country's economic growth, specifically in the broad framework for economic policy as set out in the Accelerated and Shared Growth Initiative of South Africa (ASGISA). In the current version, the action plan includes the goal to bring down the cost of ICT by developing high-speed national and international broadband capacity.

However, South Africa continues, despite the overall growth of the ICT sector, to lag behind in international comparisons, and while the incremental movements down international scales are not dramatic, they certainly indicate an inability by the country to harness the potential of ICTs for economic growth and development as articulated in various national policies and strategies. The World Economic Forum (WEF) presently ranks South Africa at 45th for overall economic competitiveness, having fallen from 40th position (see Table 1 below).

*Table 1: WEF Global Competitiveness Report 2006*

Country	Rank	Score	Rank 2005
Lithuania	40	4.53	34
Hungary	41	4.52	35
Italy	42	4.46	38
India	43	4.44	45
Kuwait	44	4.41	49
South Africa	45	4.36	40
Cyprus	46	4.36	41
Greece	47	4.33	47
Poland	48	4.30	43
Bahrain	49	4.28	50
Indonesia	50	4.26	69
Source: World Economic Forum, 2006a			

The WEF also measures the "networked readiness" of countries, which is a measure of ICT capability. South Africa was ranked 37th in 2005, having fallen from 34th in 2004 (see Table 2 below).

*Table 2: WEF Networked Readiness Index 2005*

Country	Rank	Score	Rank 2004
Malta	30	0.51	28
Spain	31	0.47	29
Czech Republic	32	0.36	40
Cyprus	33	0.36	37
Thailand	34	0.35	36
Slovenia	35	0.34	32
Tunisia	36	0.33	31
South Africa	37	0.30	34
Hungary	38	0.27	38
Qatar	39	0.25	-
India	40	0.23	39
Source: World Economic Forum, 2006b			



While the absence of improvement in South African competitiveness and e-readiness are concerning, they are not surprising considering the absence of change to the fundamental market structure and institutional arrangements that failed to deliver on policy objectives in the first two reform rounds – the first round starting in 1996 with the Telecommunications Act, and the second starting in 2001.

The market remains structured around vertically-integrated incumbents (a number significantly owned by the state), and ineffectually regulated in several critical areas, partially as a result of structural conflicts of interest in the institutional arrangements of the state, particularly the Ministry of Communications – which has responsibility both for protecting and growing state assets in the sector and, paradoxically, for developing the competitive policy framework. The combined effect is a sector committed in principle to reaping the benefits of competition through use of the market to efficiently allocate resources, but which in practice is not characterised by effective market operations and is in fact currently marked by increased concentration of state ownership, market distortion and indeed, significant limitations on competitive entry.

## 2.7. Compliance with WTO commitments

The table below broadly outlines South Africa's commitments to the WTO.

Before 2003	Liberalise re-sale services.
End 2003	End monopoly supply and introduce a competitor in public switched, facilities-based services including voice, data transmission, telex, fax, private leased circuits and satellite-based services. Review feasibility of allowing additional suppliers of public switched services.
In addition	Duopoly supply of mobile cellular telephony. No limitations on the number of suppliers of paging, personal radio communication and trunked radio systems. Foreign investment in telecoms limited to 30%. Also to uphold the commitments in the Reference Paper on regulatory principles.

Although Telkom was given exclusivity for fixed-line voice services, the commitments indicated that the monopoly was to terminate by 31 December 2003, after which a duopoly was specified. In fact it is an open question whether Telkom met its roll-out obligations by the end of 2002, which would have entitled it, in terms of its licence, to exercise an option to extend the exclusivity by another year. In any event, Telkom chose not to exercise this option and legally, the 2001 Telecommunications Amendment Act made competition possible from the end of 2002. However, several failed licensing

rounds and delays in the granting and issuing of the second network operator (SNO) licence have meant that the second public switched telecommunications network operator, Neotel, only became operational with the launch of limited wholesale services in September 2006.

Although South Africa's commitments extended Telkom's monopoly to both circuit- and packet-switched data transmission services, both in terms of cross-border supply and commercial presence, to the 2003 date, Vula Communications, subsequently Wireless Business Solutions, was granted a switched data network licence in 1997, in competition with at least some aspects of Telkom's business. Vula (Wireless Business Solutions) was, however, still required to get its fixed facilities from Telkom. Private leased circuit services also fell into the bundle of Telkom monopoly services. Similar restrictions existed with regard to telex and facsimile services and satellite-based services.

Although limitations on the bypass of South African facilities for routing of domestic and international traffic were specifically mentioned with regard to electronic mail, the regulator ruled in 1997 that Internet services fell outside of the monopoly PSTN bundle – though the telecommunications facilities required to offer these services would still have to be obtained from Telkom until the end of its exclusivity period.

In relation to mobile cellular services, reference was made to these being supplied on a duopoly basis with a commitment to an additional licence within two years (from 1998). In fact, the law required the regulator to assess the feasibility of further mobile licences, which it did in 1998, proposing two new licences to the Minister of Communications. The then-Minister subsequently only called for one licence which, following protracted disputes from applicants around the regulator ICASA's preferred bidder on the grounds of political interference and corruption, was only granted to winning bidder Cell C in 2001. At the time of the commitments, mobile operators were required to get their fixed links and cross-border supply from Telkom. An international gateway and carrier-of-carriers licence was granted to Sentech in 2001, enabling it to transport mobile traffic internationally. Since its licensing in 2005, the second PSTN operator Neotel has also been allowed to do this.

Foreign investment limits for all service suppliers are restricted in terms of the commitments to 30%, and S52 of the 1996 Act further allowed the then-regulator, SATRA, to restrict ownership and control. In terms of this provision, the merged telecommunications and broadcasting regulator, ICASA, prescribed regulations in 2003 prohibiting any foreign

person from having a controlling interest in under-served area licences (USALs), issued in terms of the 2001 Telecommunications Amendment Act.

With regard to the GATS Annex on Telecommunications, South Africa is listed as making additional undertakings in terms of Article 5(a) on non-discriminatory and reasonable access to public telecommunications transport networks, but Section 44 of the Telecommunications Act requires that licensees holding a public switched telecommunications service licence make that service available on reasonable request, so this does not extend South Africa's commitments beyond what is required of Members in Article 5(a).

Although no agreements at the time were made on audio-visual, this segment was supposed to come up in the next round. With the collapse of that round, no commitments were made. However, certain market access restrictions, foreign and cross ownership limitations and local content rules are relevant to broadcasting in South Africa, and would be pertinent to such negotiations.

The Annex also refers to Sentech being permitted to carry international traffic not terminating in South Africa. In fact, Sentech now has a carrier-of-carriers and international gateway licence, and a multimedia licence, in terms of the 2001 Amendment Act.

Although South Africa has technically fulfilled its WTO commitments, the realities on the ground are vastly different. The fixed network has been a de facto monopoly, with a recently licensed second network operator that is yet to launch full services to become truly competitive. VANS operators struggle to compete against the de facto sole supplier of facilities and broadband access, though with the recent launch of Neotel's introductory wholesale services, the door on competition has opened.

Tracy Cohen's (2001) review of South Africa's compliance with its GATS commitments argues that the lags in implementation are attributable to the specific conditions in South Africa and some more general weaknesses of the Reference Paper. These weaknesses would include the vagueness of the competition and interconnection clauses; the voluntary nature of commitments; and the ability to resist market reform by camouflaging non-compliance behind universal service goals and other developmental objectives. But Cohen quotes others who argue that South Africa's compliance has ensured that its commitments are subject to international dispute settlement, providing investors with a level of predictability and certainty.

### **3. Policy and Regulatory Environment**

#### **3.1. Institutional arrangements**

Responsibility for policies for telecommunications and communications broadly lies with the Department of Communications (DoC).

A combined broadcasting and telecommunications regulator, the Independent Communications Authority of South Africa (ICASA), receives its powers from the ICASA Act of 2000 as recently amended in 2006. The mandate of the Universal Service and Access Agency of South Africa, which accounts to the Department of Communications, was also revised and renewed in the Electronic Communications Act (ECA) of 2005 (which came into effect in 2006).

In 2006, the Department of Communications announced a three-year strategic plan. The focus areas the plan identifies are:

- Achieving higher rates of investment in the economy;
- Increasing the competitiveness of the South African economy;
- Broadening participation in the economy;
- Improving the capacity of the state to deliver; and
- Contributing to a better world.

The DoC's plan identifies an "Economic Investment and Employment Cluster", for which the DoC will be required to oversee:

- Development and implementation of a Broadband Strategy;
- Development of a Broadcasting Digital Migration Strategy; and
- Implementation of the ICT BEE Charter.

In particular, the plan's strategic goal 2.1.2 is to "enable the reduction of the cost to communicate".

The actual mechanism to achieve these outcomes is not clear from the strategy document and the strategy's relationship to either the e-Strategy Task Team, a statutory body created by the Electronic Communications and Transactions (ECT) Act of 2002 (and required to report within two years of its establishment but which has not) or the Presidential National Commission on the Information Society and Development (PNC-ISAD) is not clear. Although the new Electronic Communications Act has the potential to address some of the problems identified above, in the absence of a policy framework in which to locate the Act, there is no clear vision for the sector, nor any overarching ICT policy framework for the country.

#### **3.2. Policy framework**

The last decade has been characterised by numerous policy interventions to reform the telecommu-

nications market in South Africa, in an attempt to meet the needs of a modern economy and a transforming society. These interventions have not always resulted in the intended outcomes. While the policy intention was to promote affordable access to communications through the privatisation of, and extension of the monopoly of, the fixed-line incumbent Telkom, improved access to voice communications actually came through the introduction of pre-paid mobile services (though mobile was intended initially for the high end of the market). This is despite relatively high mobile prices by comparison with other lower middle income countries, and even with neighbouring countries such as Botswana and Namibia, who do not share the same economies of scale as South Africa. The intention to review mobile pricing by the regulator, ICASA, resulted in some price adjustments, but these were largely related to on-net calls and off-peak discounts.

While mobile is widely accepted as the future for extending voice services, the limited expansion of the fixed network has significant implications for the roll-out of the enhanced and broadband services dependent on it. In an age where social and economic participation are increasingly dependent on access to global communications, growth in personal Internet access in South Africa has almost flattened out entirely. Demand for fixed-broadband services, despite very high prices, simply cannot be met and this pent-up demand has been compounded by recent price decreases following a regulatory review of ADSL pricing.<sup>10</sup> Penetration continues, however, to be considerably lower than in other lower middle income and even historically poorer-performing African countries, such as Morocco, while prices remain significantly higher.

The negative implications of these trends have been highlighted by President Thabo Mbeki in his State of the Nation addresses over the last few years, and President Mbeki has particularly identified the negative impact of high telecommunications input costs on business and on business process outsourcing opportunities for the country. The state response to these negative policy outcomes, which were already evident after the first reform round, has been to increase state involvement in the operations of the sector. Although this is out of line with global trends for the telecommunications sector, it aligns the sector with the state strategy of driving economic growth and employment through public infrastructure development, a strategy now formalised in the latest national economic framework, ASGISA, as introduced in 2005.

This approach has constrained the liberalisation of the sector as envisaged in the Telecommunications White Paper of 1996, which engineered the initial consensus around the reform framework and which anticipated a far more rapid opening up of the sector and, by implication, less not more state involvement in the sector.

However, since the beginning of the second round of reform in South Africa, as ushered in by the 2001 Telecommunications Amendment Act, the state has pursued a path of “managed liberalisation”, moving far more slowly on the liberalisation timetable, with market restructuring increasingly entailing the statutory inclusion of the state. Government has recently indicated that the broadcasting signal distributor, Sentech, despite being drastically under-capitalised and under-performing since being granted multimedia and carrier-of-carriers operator status by statute in the 2001 Act, will be the driver of wireless broadband penetration for consumers.

In her budget speech of May 2006, the Minister of Communications stated that “[i]nvestment in ICT broadband infrastructure is central to achieving the objectives” of meeting the 2014 development objectives encapsulated in ASGISA. Following a cabinet *legotla* later in the year, the Minister announced that discussions on an appropriate funding model that would enable Sentech to give full effect to its licences, including voice service provision, were underway, though the outcome of these discussions has not been made public.

Arising from the same 2001 Amendment Act, the communications networks of the national power company Eskom and transport company Transtel, were deployed in the second network operator (SNO) licence introduced by the Act, with 30% of the equity being set aside for Eskom and Transtel before the bidding process started. But delays in the licensing process meant that Neotel, the eventual second network operator, only became operational with a very limited corporate service offering in mid-2006. As a result, the potentially competitive benefits of market reform are not evident three years on, as South Africa’s monopoly wholesale and retail pricing continue to constrain the competitive services segment of the market and access and usage at the retail level.

Apparently frustrated by these negative policy and regulatory outcomes, government, through the Department of Public Enterprises, which is responsible for spearheading the use of state enterprises to drive growth and job creation, announced without any public consultation and with no apparent reference to the sectoral policy direction – unclear as it had become in the communications sector – the

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<sup>10</sup> See *Sunday Times* (2006)

establishment of a state-owned entity, Infraco, to provide low-cost broadband facilities, in the absence of these being available affordably elsewhere.

At the sector level, attempts to respond to unintended outcomes, and the challenges of regulating this dynamic, globalised sector, resulted in the third round of legislative reform in a decade. Without a revised policy framework, and after several unsuccessful attempts to get earlier iterations of the legislation through Parliament, and nearly three years after its inception as the Convergence Bill, the Electronic Communications Act (ECA) was finally ratified by President Mbeki in July 2006. The Act replaces the 1996 Telecommunications Act (and its 2001 Amendment Act), and seeks to create a regulatory framework and licensing regime better suited to the convergence of broadcasting and telecommunication infrastructures and to Next Generation Networks and services.

The Act's attempt to shift from the vertically-integrated operators that have characterised the market structure to more horizontal service layers is reflected in the licensing regime. This more horizontal framework is likely to be more suited to the IP-based networks that are likely to dominate communication in future and the seamlessly integrated "infostructure" necessary for a modern economy. There is also a provision allowing for foreclosure on competition on new infrastructure to induce investment into such networks. The Act further tacitly acknowledges the bottleneck created by the exclusivity to the SAT-3 landing station possessed by the consortium that owns it – and the potential bottleneck in the local loop – and clearly enables ICASA to regulate consortium member Telkom in this regard.

In order to provide accessible and affordable broadband access, the government has acknowledged the importance of local loop unbundling. A local loop unbundling committee has been established by the Department of Communications.

The Electronic Communications Act broadly seeks to regulate the market in line with current technological and economic developments, and has the potential to address some of the current bottlenecks in the market if implemented boldly and innovatively. However, implementation is highly dependent on the capacity of the regulator ICASA to prescribe and oversee the more than 200 regulations required in the next couple of years to make the legislative and regulatory framework operational. The recent changes to the composition of ICASA's decision-making Council compound the capacity and capability challenges that have plagued the regulator in recent years. Such challenges are per-

haps the biggest risk to the effort to get the sector structure to work optimally.

As mentioned above, major feature of the new Act is the creation of horizontal licensing structures. The old licensing arrangement, which reflected the vertical integrated market structure that existed, has been done away with completely, and there are now just four basic categories of licences, each of which can be licensed in three ways (see Table 3 below).

*Table 3: New licensing framework and likely licence categories for existing players*

	Individual	Class	Exempt
Electronic Communications Services (ECNS) licences	Cell C MTN Sentech Telkom Vodacom		
Electronic Communications Services (ECS) licences		VANS	
Broadcasting licences	SABC eTV	Community broadcasting	
Radio Frequency Spectrum (RFS) licence	Cell C MTN Sentech Telkom Vodacom	Wireless local loop	Very low power, less than 10 kw.

One of ICASA's major tasks will be to prescribe conditions for the categories of licences and allocate existing licence-holders to these categories. If the existing vertically-integrated operators are simply licensed under current conditions, the window of opportunity to enable competition, to reduce the onerous licensing and regulatory obligations of the regulator, and to reduce the regulatory transaction costs for service providers, will be lost.

While the Electronic Communications Act has the potential to address some of the policy and regulatory barriers that have hampered the growth of the sector over the last decade, the other part of the (in essence) omnibus legislation, the ICASA Amendment Act of 2006 – which deals with the institutional arrangements between the Ministry and the regulator ICASA and its operational framework – is less forward-looking. On the positive side, the structural conflict of interest present in the earlier legislation – in the institutional arrangements arising from the power of the Minister to veto ICASA regulations, while the Ministry as representative of the state remained the major shareholder in the incumbent Telkom – has been removed. However, a new structural conflict of interest has been created with the powers of appointment to ICASA's decision-making Council (on the basis of Parliamentary shortlisting), having been removed from the President and given to the Ministry. This

change fails to take cognizance of the perception of potential political interference that can be created by a Ministry role in ICASA Council appointments, and the resulting implications for investor risk assessment.

Globally, the move away from state involvement in the operational side of the sector, to a state role in determination of the policy framework only, has accompanied increased competition and been associated with improved penetration of ICT services – and, in effectively regulated environments, with reduced prices.<sup>11</sup> Where the state has been an effective mobiliser of ICT development, such as in the Asian Tiger nations, the state has been characterised by a highly-skilled bureaucracy, and deep state pockets – or the ability to mobilise private capital to deliver on sophisticated and integrated development plans. With the challenges of human capital necessary to deliver on core state functions highlighted within government itself, and the benefits of shifting investment risk from the public to the private sector under conditions of increased competition widely documented, the ability of the state to deliver better than the market is open to question.

#### 4. Regulatory Challenges

##### 4.1. Telecommunications Regulatory Environment (TRE) survey

The Telecommunications Regulatory Environment (TRE) survey is essentially a regulatory perception assessment. The assumption is that perception of the effectiveness of the regulator is more likely than the actual legal and institutional arrangements in place to affect operator confidence and to impact on investment in the sector and sector development. The survey is intended as a quick indicator, to provide a rough and ready indication of how the regulator is managing perception in the sector.

The survey covered five categories which are listed below in Table 4 (with explanations):

Table 4: TRE categories

Dimension	Aspects Covered
Market Entry	Transparency of licensing: applicants should know the terms, conditions, criteria and length of time needed to reach a decision on their application. Licence conditions and exclusivity issues.
Scarce Resources	Timely, transparent and non-discriminatory access to spectrum allocation, numbering and rights of way. Frequency allocation, telephone number allocation, site rights.

Interconnection and Facilities	Interconnection with a major operator should be ensured at any technically feasible point in the network. Quality of interconnection comparable to own like services offered. Reasonable charges for interconnection rates, interconnection is unbundled, interconnection offered without delay. Sharing of incoming and outgoing IDD (international direct dial) revenue. Payment for cost of interconnection links and switch interface, payment for cost of technical disruption of interconnection. Timely provision of facilities by service providers. Provision of facilities at the same cost to subsidiaries/downstream businesses.
Tariff Regulation	Regulation of tariffs charged to consumers.
Regulation of Anti-competitive Practices	Anti-competitive cross-subsidisation. Using information obtained from competitors with anti-competitive results. Not making available to competitors on a timely basis technical information about essential facilities and commercially relevant information. Excessive prices, price discrimination and predatory low pricing. Refusal to deal, vertical restraints, technical disruption of interconnection, sharing of towers and facilities by parent company and subsidiaries/downstream businesses in different segments of the market.
Universal Service Obligation (USO)	Administration of the Universal Service Fund in a transparent, non-discriminatory and competitively neutral manner.

The survey was based on a five-point Lickert Scale, as outlined in Table 6 below:

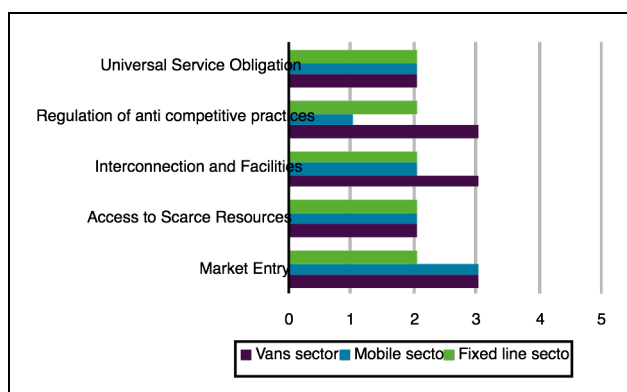
Table 6: Lickert Scale

	Category
1	Highly ineffective
2	Ineffective
3	Neither ineffective nor effective
4	Effective
5	Highly effective

The results were then collated and the median response for each category was determined. There was no category where the median response rated the regulator as effective or highly effective.

<sup>11</sup> See OECD (2005).

Figure 3: Results of the TRE survey



Within each stakeholder sector, the most common median response was that the regulator was ineffective. In the mobile sector, the category of regulation of anti-competitive practices by the regulator was rated as highly ineffective. As this is cited as a competitive sector not requiring regulation in terms of foreclosure regulation, this clearly raises some important competition and regulatory issues.

## 4.2. ICASA

The regulatory environment is seen as a major stumbling block to doing business in South Africa. There are three key components to the regulatory environment: market entry, competition and the regulation of public resources such as spectrum. South Africa has adopted a managed liberalisation programme that only allows a very limited number of entrants into the telecommunications and broadcasting sectors. Clearly the barriers to entry here are high.

In the TRE survey, respondents rated the fixed-line market entry as ineffective. Under the regulation of anti-competitive practices, respondents rated the regulation of the VANS sector as neither effective nor ineffective, but rated mobile as highly ineffective and the fixed-line sector as ineffective. Under the regulation of public resources, spectrum was singled out as the most restrictive and its regulation was rated as ineffective in the VANS, mobile and fixed-line sectors. This finding was supported by interviews conducted as part of a recent survey of major players in the industry for a Trade and Industrial Policy Strategy investigation into trade strategies for South Africa. Suppliers argued that South Africa has one of the longest waiting times for spectrum allocation in Africa.

According to some, South Africa is good on the principle, but it is in the execution that the country falls behind. The idea that South Africa's ICASA was the most sophisticated regulator on the continent was widely rebuffed: "Regulatory environment is not a challenge in Africa, in fact it's the opposite; it's a challenge in South Africa" (Mobile equipment

supplier and manufacturer based in Johannesburg). And according to another respondent: "Nigeria is a case in point: Whenever you mention Nigeria the first thing you think of is corruption. Ironically, the way they have managed their spectrum is squeaky clean – it's absolutely above-board. You can get onto the NCC website and see who has got what licence, when it expires, and what they paid for it... This should also be available in South Africa" (International equipment manufacturer and supplier based in Johannesburg) (Gillwald, Esselaar & Naidoo, 2006).

## 4.3. Competition Commission

While ICASA's incapacity is seen as a stumbling block in South Africa, the recent finding by the Competition Commission against Telkom in its bid to take over Business Connexion (BCX), a software services company, has been hailed as an important precedent in the sector.<sup>12</sup> The Competition Commission argued that the combined entity could use its market power (derived from its dominance in the network infrastructure market) to force higher prices on customers, and that on this basis, the merger was anti-competitive.

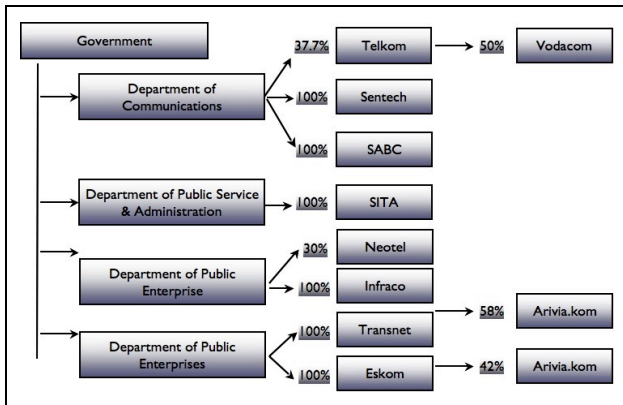
The precedent established by the Competition Commission could provide the basis for a more interventionist approach by the Commission to the ICT sector, though this is, in turn, dependent upon greater cooperation between the Commission and sector-specific regulator, ICASA. ICASA possesses (or should possess) superior industry-specific knowledge, while the Competition Commission is new to the sector. Closer cooperation between the two should ensure better regulation of the sector.

## 4.4. Ownership and market concentration

The state is a significant owner of players in the ICT markets and is represented by several departments, as outlined in Figure 4 below:

<sup>12</sup> See Mawson & Guest (2007).

Figure 4: Government holdings in the ICT sector

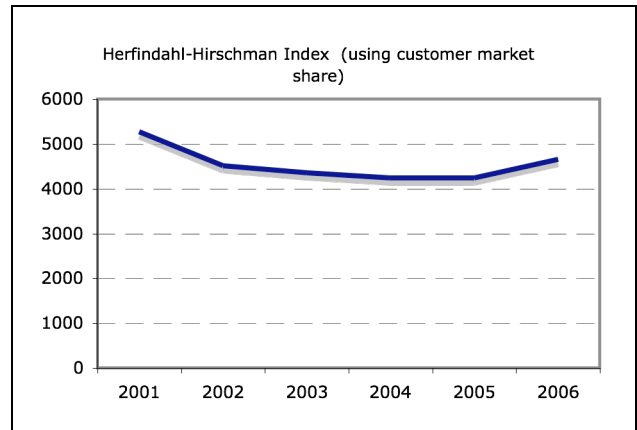


To further complicate matters, some of these companies also bid for and supply services to the government, to state-owned enterprises, and to related agencies. The government is one of the largest customers in the IT market. Overall, this situation creates the potential for conflicts of interest and even collusion. It is far from being ideal for competitive markets.

#### 4.5. New policy developments

The neo-classical economists' appeal to perfect competition as the ideal model of economic competition is the counterpoint to complete state ownership or state-owned monopoly. Neo-classical theory argues that allocative efficiency is best achieved in a perfectly competitive market and that inefficiency is highest in monopolistic markets. While South Africa's fixed-line sector (regardless of Neotel's presence at this stage) is obviously inefficient, the mobile sector presents a more interesting case, because it is an oligopolistic market that, as a result, must suffer from some levels of allocative inefficiency. With this model in mind, it is evident that the starting point of any analysis must be the structure of the market. One of the most useful measures is the Herfindahl-Hirschman Index (HHI), which measures market concentration. Prior to 2002 when Cell C entered the market, the HHI measured market concentration at over 5,000. With Cell C's introduction in 2002, the HHI score reduced to the mid-4,000s (still very high by international standards).

Figure 5: Herfindahl-Hirschman Index (HHI)



The most concerning aspect, however, is the increase in the market concentration levels to the upper 4,000s as a result of Cell C losing subscribers and Vodacom's strong subscriber growth.<sup>13</sup> In short, the South African market is increasingly concentrated, with increased market power for incumbents.

The significance of market concentration is its impact on consumers. Collusion amongst powerful firms is, of course, difficult to establish, particularly with the information asymmetries inherent in the market and the difficulties of extracting what, in some instances, should be public information. There are increasing levels of anxiety amongst telecommunications operators around information dissemination, based on the increasing interest in phone charges by the public. With this in mind, an indirect mechanism for measuring collusion has been chosen. An earlier report by the Research ICT Africa! (RIA) Network entitled *Towards an African e-Index*<sup>14</sup> argued that the South African mobile market is an immature market, in that it is based on brand competition rather than price competition. An indication of the efforts by mobile operators to divert attention away from pricing and towards brand can be found in the number of packages available to the South African consumer. There are currently 108 different packages available to the consumer (both contract and pre-paid) across all mobile networks. The pricing of the packages is of such a complex nature that it is not possible for ordinary consumers to be able to determine which package is the most cost-efficient.

The effect of this complexity and opacity is that the South African consumer is unable to make a rational decision about which mobile operator to choose, and the consumer is highly constrained

<sup>13</sup> Though it must be pointed out that Vodacom's subscriber numbers are dubious.

<sup>14</sup> See [www.researchictafrica.net](http://www.researchictafrica.net) for more information.



anyway by long-term contracts (not permitted in many other jurisdictions) – contracts which have limited the effectiveness of number portability introduced by ICASA late in 2006. In a study produced by the ESRC Centre for Competition Policy in 2005,<sup>15</sup> the authors found that complex, non-linear tariffs and “decision noise” produce the effect of irrational decisions by consumers, where packages are chosen that lead to financial losses rather than gains. The regulatory consequences are quite clear and will form part of the Conclusions and Recommendations section of this paper.

#### 4.6. Investment trends

In Africa, the effect of the bursting of the late-1990s dot.com bubble was a relative scarcity of cheap capital for investments. Rapidly growing African markets with low penetration, and thus significant potential for growth and new revenues, have since attracted the attention of global investors looking for superior returns to shareholders. Low fixed-line teledensities and monopoly fixed operators unable to meet the demand for telecoms services have fuelled the growth of mobile in Africa. Except for in South Africa, more developed services such as broadband are scarce. Despite the perceived political and regulatory risk in many countries, some of whom are even at war, operators are prepared to pay a premium, e.g., Vodafone recently acquired a 15% stake in Vodacom for R16-billion, increasing its shareholding from 35% to 50%, thus giving it joint control of the operator. This values the whole of Vodacom at R107 billion (Mochiko in *Business Report*, 2005), a price that works out to roughly US\$924 per subscriber.

Following the events of 11 September 2001, cash-flush Middle Eastern investors and operators have also been looking for new investment opportunities outside of the developed world, and are increasingly bidding for communications licences in Africa, at significantly higher prices, e.g., MTC recently acquired Celtel International for US\$3,4 billion. The price paid for Celtel’s 5 million subscribers at the end of 2004 works out at roughly US\$680 per subscriber. Prior to the sale, analysts estimated Celtel’s value at closer to US\$2 billion if it had undertaken its anticipated IPO (Telegeography, 2004).

These investments are characteristic of the decline of greenfield investments in the mobile sector in Africa and the beginning of a push towards growth through acquisition. One of the other major players in the mobile sector, Vodacom, has recently been released from a shareholder agreement that prevented any meaningful expansion in the African

market: “Vodafone will not stand in our way in pursuing opportunities in Africa, and they have encouraged us to go forth and conquer. I don’t think there is much we couldn’t afford” (Knott-Craig quoted in Stones, 2006: 21).

With the delay that Vodacom faced in its restrictive shareholder agreement, the other operators have rapidly expanded and there are now few small mobile companies available to purchase. The added pressure of having to compete in Africa against MTC and MTN means that Vodacom might have to look to purchase a regional player.<sup>16</sup>

On the other hand, attracting investment in fixed-line operators, even incumbents, has been difficult. Privatisations in Zambia and Nigeria have failed to attract strategic equity partners or have needed to go several rounds to do so. South Africa struggled to attract any credible investors for the second fixed network operator licence five years ago, with two unsuccessful bidding rounds followed by the licence being awarded by the Ministry to a hand-picked company, Tata.

#### 5. Market Structure

The market is structured around traditional vertically-integrated PSTN operators (a duopoly but with the new entrant only offering limited services); three mobile operators but with two dominants incumbents; a multimedia network operator Sentech which has an international gateway and carrier-of-carriers licence; seven licensed under-serviced area licensees (USALs), of which six are operational;<sup>17</sup> and over 344 value-added network service (VANS) licencees, including around 250 ISPs.

Table 5: Licensees according to the 2001 Telecommunications Amendment Act

Operator	
PSTN	Telkom Neotel
Mobile Communication Network Operators	Vodacom MTN Cell C
Multimedia and international carrier-of-carriers operator	Sentech

<sup>16</sup> See Stones (2006).

<sup>17</sup> See Lisa Thornton Inc. (2006).

<sup>15</sup> See Wilson & Waddams Price (2005).



Operator	
USAL	Ilizwe Telecommunications Amatole Telecommunications Services Bokone Telecoms Kingdom Communications Thinta Thinta Telecoms Karabo Telecoms Bokamoso Consortium
VANS	344 operational

Until the new Electronic Communications Act was passed in 2006, all network licences and associated services were restricted to licensed incumbents. Telkom has an effective monopoly over the PSTN market despite Neotel being licensed over a year ago. Vodacom and MTN remain dominant in the mobile market, not leaving Cell C any competitive room to manoeuvre. The outcomes of this uncompetitive market structure, with entrenched vertically-integrated incumbents, have been limited access to services and high prices associated with monopoly rents.

In its submission to ICASA for the mobile price hearings, the Competition Commission argued that the Structure-Conduct-Performance (SCP) paradigm is useful in determining the effects of inefficiency created by the concentration of ownership or dominance of players in the market, state-owned or not. The SCP paradigm, simply put, states that the structure of an industry determines the conduct of its constituent firms, which in turn determines their performance. In a market with a high level of market concentration, collusive behaviour is encouraged, which gives rise to monopoly pricing, tendencies of which are evident in South Africa as indicated previously.

The telecommunications market is made up of several key players, which will be profiled here primarily because of their impact (potential or actual) on the South African market. The important points to be brought across are

- the link between government and operators; and
- the link with international operators.

Government's involvement in the telecommunications sector is large and getting bigger. And in the broadcasting sector, government ownership is dominant in that market, through the SABC. Basically, the trend is towards increased state involvement in the sector, rather than the declining state involvement that is the international trend.

The introduction of Neotel into the South African market introduces a link to a major global tele-

communications operator, VSNL. Like Vodafone of the UK, India's VSNL is driven primarily by global economies of scale and sees the South African market as one with healthy margins and continued state involvement that is likely to guarantee future profits and reduce capitalisation. This means that South Africa is not seeing an increased opening up of the market with new players bearing the financial risk traditionally carried by the state and investing in enabling new services and network, but instead a consolidation of ownership and growing market dominance. This raises the strategic issue of national champions, which was the implicit strategy of protecting telecom to deliver on national policy objectives, primarily affordable access to services. The experience with the US firm SBC (former Telkom strategic equity partner) in the early part of this century suggests that South Africa is not able to successfully negotiate with global operators to achieve stated policy aims of affordability and increased access, and that the state has not performed the role of national champion, which is questionably doable in this moment in this sector in an increasing globalised economy and governance structure.

### 5.1. Neotel

The strategic investor in Neotel is Tata. Neotel is made up of the following groups:

State-owned enterprises (30%)

- Eskom
- Transnet/Transtel

Nexus Connexion (19%)

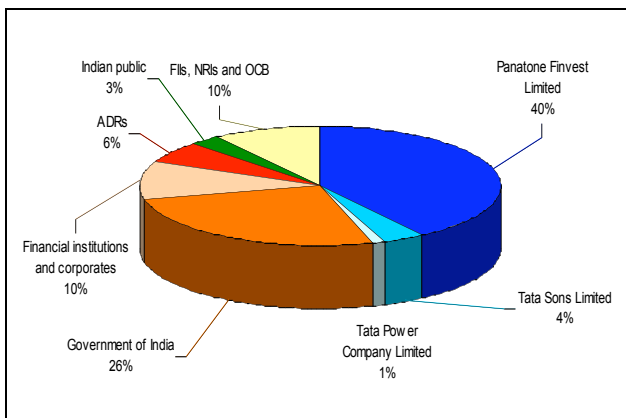
SEPCO (51%)

- Tata Group/VSNL (51%)
- Two Consortium (24.5%)
- Communitel (24.5%), a consortium comprising:
  - MKhonto We Sizwe Military Veterans' Association (MKMVA)
  - Telecom Namibia
  - Premier Contracts Agency LLC

After a long search, a "strategic investor" was found in Videsh Sanchar Nigam Ltd. (VSNL). VSNL is the former state monopoly provider of international telecommunications in India. In 2001, the Government of India announced its intention to sell from its holding the equivalent of 25% of the outstanding equity of VSNL to a strategic partner through a process of competitive bids. In February 2002, Panatone Finvest Ltd., a subsidiary of Tata Sons Limited, was selected as the purchaser. In

June 2002, Panatone Finvest Ltd. purchased a further 20% of the shares via an open tender offer. Figure 6 shows the ownership of VSNL, with three holdings by the Tata Group:

Figure 6: Capital structure of VSNL at 31 March 2006



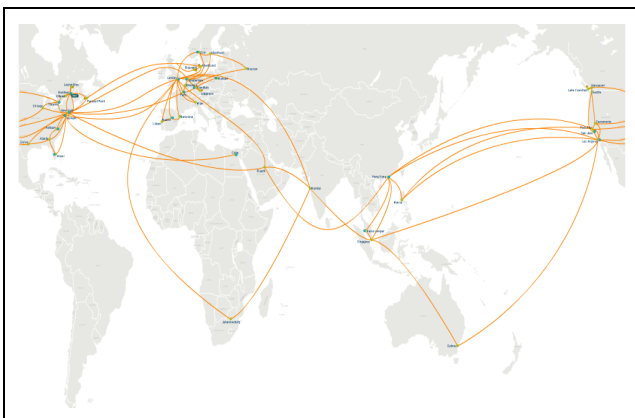
Source: VSNL, 2006

The Tata Group is an old and very complex conglomerate based in India. Established by Jamsetji Tata in the second half of the 19th Century, the Group has grown into the largest conglomerate in India. Through VSNL, the Tata Group has also acquired:

- o Telelobe International Holdings Ltd for US\$239 million; and
- o Tyco Global Network for US\$130 million.

These acquisitions give VSNL the capability to collect traffic from many parts of the world in order to supply the call centres and business outsourcing centres run in India by the Tata Group. In this, VSNL has a formidable partner in Tata Consulting Services (TCS), founded in 1968. VSNL competes in the global telecommunications services and international carrier services markets.

Figure 7: VSNL International network



Source: VSNL, 2006

Over the protracted period of the formation of Neotel and the preparation to launch services, its business plans appear to have altered considerably. It seems likely to focus on certain markets where it can provide added value, rather than engage in full-scale price competition with Telkom. Neotel holds both PSTS and VANS licences. It purchased the network assets from Transnet and has leased the network assets of Eskom from Infraco.

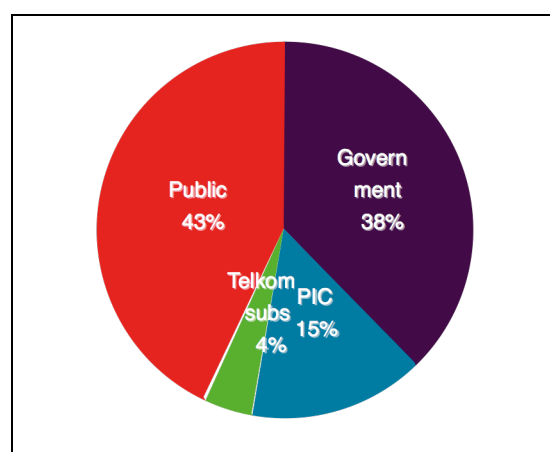
On 31 August 2006, Neotel launched its first commercial offerings: wholesale international voice services for VANS and MNOs, plus a global IP transit service for ISPs. Both use the VSNL International network. announced it would offer domestic leased lines from December 2006 and international leased lines "soon", which appears to mean sometime in 2007.

What this means for the South African consumer is not clear. However, Neotel has stated that it does not intend to engage in a price war with Telkom. Thus, the likelihood of lower prices and increased penetration is unlikely in the short-term for consumers. On the other hand, business might see a substantial impact on international bandwidth costs, as Neotel provides wholesale access.

## 5.2. Telkom

Telkom SA is listed on the JSE and NYSE. The government retains a stake of 38.3%. The 30% holding of Thintana (a consortium of SBC and Telekom Malaysia), was split, with half being sold on the JSE and the other half purchased by the Elephant Consortium, a shareholding which is currently being warehoused on Elephant's behalf by the PIC.

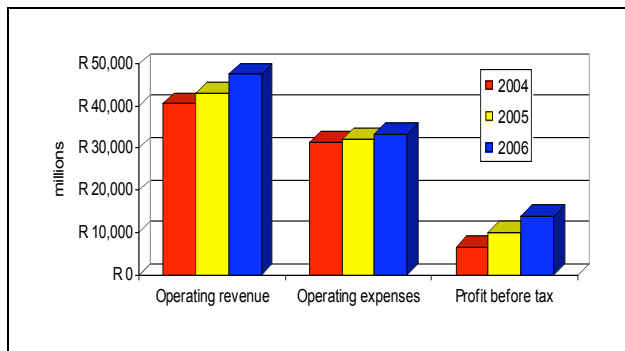
Figure 8: Telkom's shareholding



In African terms, Telkom is a substantial operator with large revenues and increasing profits. Globally, it is only of low to middle ranking, a national operator of a reasonable size. A significant part of the revenues and profits arise from Vodacom, its joint venture with UK firm Vodafone. Telkom's 50% ownership of Vodacom contributes over 35%

of its total revenues and just over 30% of its operating profit. Telkom has reported steadily increasing revenues and profit before tax.

Figure 9: Telkom's revenues and profits



Source: Telkom, 2006a

In terms of its share price, since its highs in March 2006, the Telkom share price has shown a steady decline. There are several factors that account for the decline:

- the entry of Neotel into the market;
- negative EBITDA growth;
- increasing operational expenses, out of line with revenue growth; and
- the general slowdown in the national economy.

Telkom's overall revenues increased by 7.3% compared to expenses that increased by 9.7% (based on Telkom's interim results of September 2006), and Telkom announced last year a massive capitalisation programme of R30 billion in the next five years.<sup>18</sup> A declining revenue base and increasing expenses would go some way to explaining Telkom's recent share price drop.

Figure 10: Telkom's share price



Source: Telkom, 2006c

<sup>18</sup> See INet-Bridge (2006).

In its 2006 interim results, Telkom reported an 11.5% decline in its local fixed-line revenues. In a declining fixed-line market, Telkom is attempting to expand out of its traditional infrastructure business and into the information technology services market. Telkom's proposed takeover of Business Connexion (BCX) is currently before the Competition Tribunal after the Competition Commission released a recommendation to the Tribunal prohibiting the takeover, citing concerns over dominance in the managed data services market and possible vertical foreclosure.<sup>19</sup>

Figure 11: Telkom revenue growth

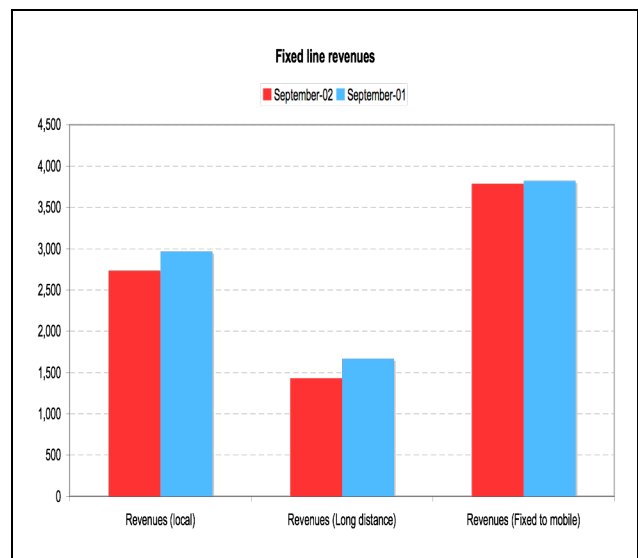
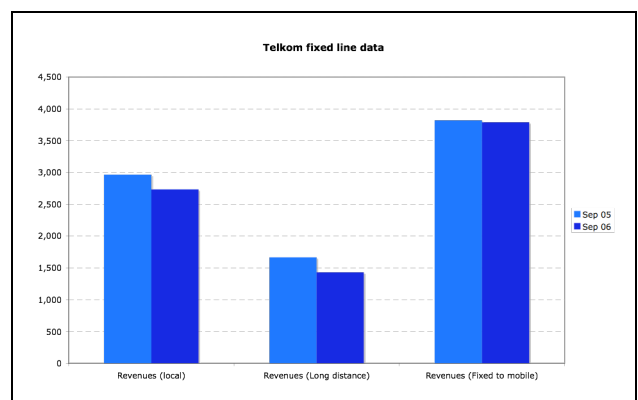


Figure 12: Telkom traffic volumes



### 5.3. Mobile

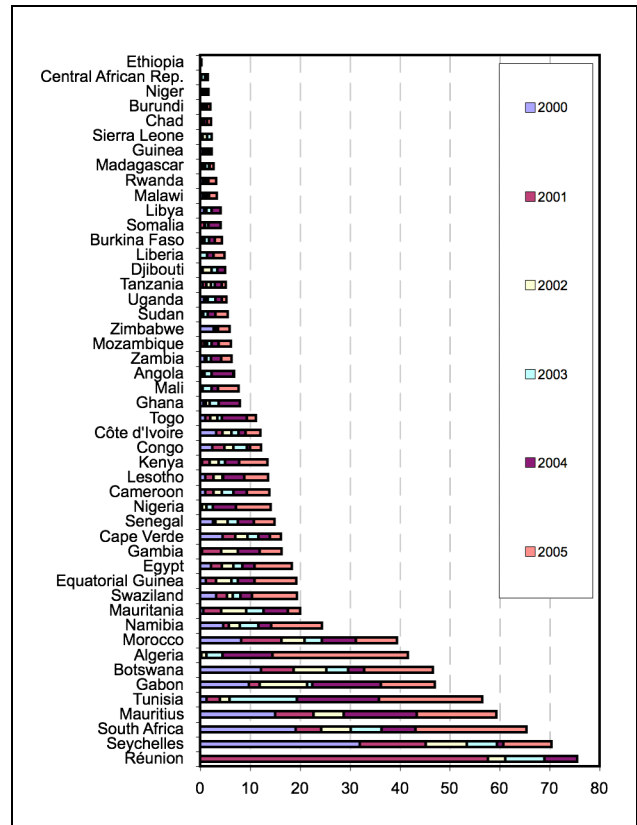
While the policy and regulatory environment might not have been conducive to investment in fixed network licences in South Africa, global telecommunications companies clearly see South Africa as the gateway into the rest of Africa, particularly in

<sup>19</sup> See Crotty (2006).

mobile. And South African mobile companies have built significant continental businesses. They have the skills and experience necessary to succeed in difficult environments, and are used to operating under conditions that developed country operators would find far too risky. However, it is the combination of attractive returns provided by mobile operators such as Vodacom and MTN, fixed-mobile convergence and convergence within the telecommunications and broadcasting sectors that could drive the industry in South Africa in the future, perhaps towards the types of services Vodacom's parent Vodafone is pursuing in Egypt.<sup>20</sup>

There is widespread and expanding use of mobile services. In Africa this now amounts to some 76 million customers, or a mobile teledensity of 9%.<sup>21</sup> Many countries have seen significant growth in the last few years and this will continue (see Figure 13). South Africa has long prided itself on its high mobile penetration rate, which officially stands at over 30 million subscribers.

Figure 13: Mobile subscribers



Source: ITU, 2005

In fact, mobile operators have maintained that a benchmarking comparison against the OECD and EU countries is spurious because the operating conditions in South Africa are so different.<sup>22</sup> What the Figure above tries to demonstrate is that South Africa's position is increasingly under threat in Africa. Discounting the islands (such as Reunion, Seychelles and Mauritius), several other countries are showing high penetration levels and growth. For example, as can be seen in the Figure, countries with much lower GDPs per capita such as Algeria showed impressive growth in 2005. Tunisia has penetration levels of over 55% (compared to South Africa's of around 65%) and Gabon and Botswana have penetration levels in the high 40s, with considerably fewer economies of scale.

Vodacom's shareholding has had a large impact upon the mobile sector in South Africa. It is 50% owned by Vodafone, while 50% is owned by Telkom. Its shareholding agreement with Vodafone has prevented it from expanding into the Northern half of Africa as aggressively as MTN has. But Vodacom has been generating massive amounts of free cash flow that it has to use to generate growth

<sup>20</sup> Vodafone, the joint owner of Vodacom with Telkom, is taking a more active role in the strategic direction of Vodacom. Globally, Vodafone's strategy is to drive multi-play. It remains to be seen what Vodafone's strategy might be for South Africa, but some of its intentions can be gleaned from its behaviour in Egypt, where it is driving multi-play offerings. It recently purchased a controlling share of Vodafone Egypt from Egypt Telecom. As part of the purchase agreement, Vodafone Egypt and Telecom Egypt will work together to develop service propositions for customers shared by TE Data (Telecom Egypt's retail Internet and data arm) and Vodafone Egypt I3. It is possible that Vodafone is undergoing similar discussions with Telkom with the purpose of driving converged services on Telkom's network at a substantially reduced cost. The recent lifting of Vodafone's restrictions on Vodacom operating in the South of Africa and Vodafone focusing on the North signal a more flexible and expansive approach from Vodafone.

<sup>21</sup> See ITU (2005).

<sup>22</sup> See, for example, Vodacom (2006a): Vodacom's submission to ICASA as a result of the mobile pricing discussion paper released by ICASA in 2005.

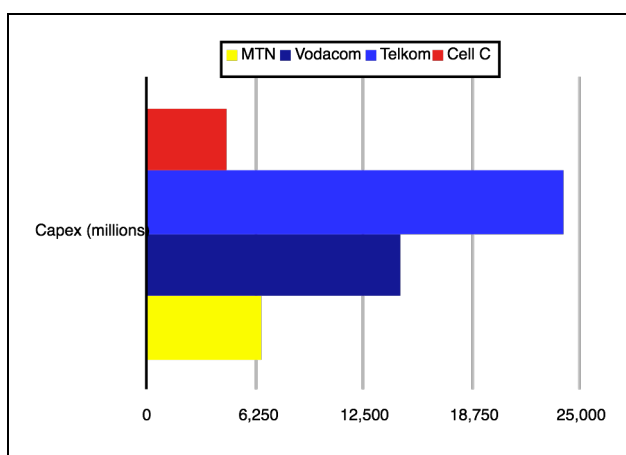
in some way. With the avenue into Africa partially closed, it has had to adopt a strategy of continued high growth in its home market, South Africa. To some extent, this is informed by Vodafone's own strategy to enhance its position in present markets, experiment with and create new products while adding value to existing products, and reduce competition by raising entry barriers and altering the technological base of competition (Strategic Direction, 2004).

Vodacom has been at the forefront of technological innovation in the South African market. It was the first operator in the Vodafone group to introduce HSDPA, which allows for download speeds of around 1.8 mbit/s – comparable to what Telkom is offering on ADSL.<sup>23</sup> Vodacom's strategy is based on Vodafone's intention to "... extend our reach into the home and the office to deliver richer business applications and integrated fixed and mobile services, such as higher speed Internet access. We will use technologies such as HSDPA, DSL and WiFi to do this" (Vodafone 2006b: 10).

Vodacom's revenues from data grew by 65% between 2005 and 2006, and have grown by 149% since September 2004.<sup>24</sup>

As of November 2006, Vodacom's restriction on aggressively expanding North has been lifted by Vodafone. The only problem is that most countries in Africa and the Middle East already have competition, making Vodacom's choices either a very expensive regional purchase or continued investment in converged services. In contrast, MTN has been spending more money outside of South Africa. This has meant that Vodacom has more than doubled MTN's cumulative capital expenditure since 2002.

Figure 14: Operators' capital expenditure (cumulative since 2002)



<sup>23</sup> See MTN (2006b), March interim results.

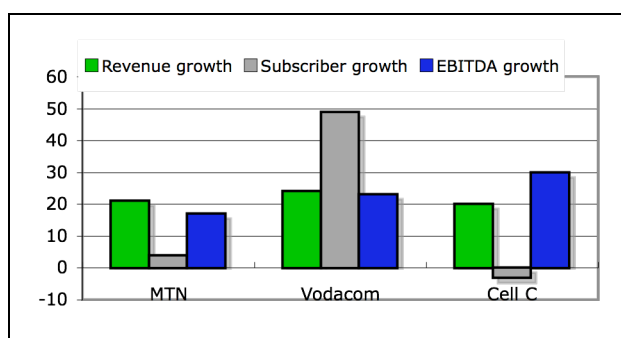
<sup>24</sup> See Vodacom (2006c) September interim results.

Sources: Operator Annual Reports

## 5.4. Market share

Vodacom's larger investment goes some way to explaining its massive growth in subscriber numbers in South Africa, of 59%, between March 2005 and March 2006. In comparison, MTN reported subscriber growth of 28% between March 2005 and December 2005 and 11% for the six months between December 2005 and June 2006. As Figure 15 below illustrates, higher capex, however, cannot go all the way to explaining the difference in subscriber growth. As some analysts have commented, mobile operators must be overstating their subscriber numbers by some percentage – there is a seeming contradiction between Vodacom's stated high levels of subscriber growth and the statement of its major competitor, MTN, in its Annual Report presentation, that it had claimed 4% market share from Vodacom in the same time period.<sup>25</sup>

Figure 15: Operator revenue, subscriber and EBITDA growth



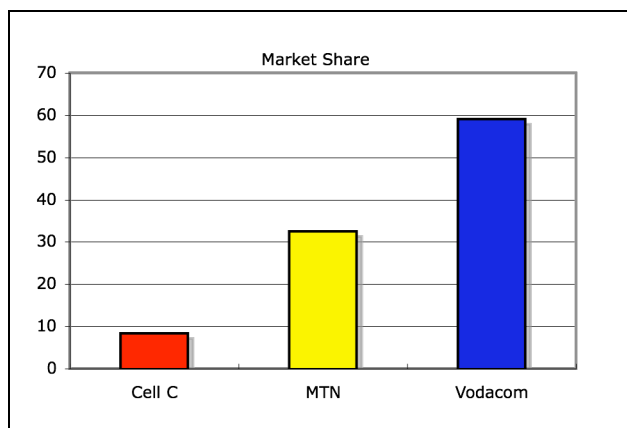
Sources: Operator Annual Reports

Nevertheless, the claimed higher subscriber growth on the part of Vodacom would mean that it has 59% market share. Together MTN and Vodacom have over 91% of the mobile market in South Africa. Cell C's market share has declined, primarily as a result of disconnections of unprofitable lower-end customers.

<sup>25</sup> See MTN (2006c), interim results presentation for 2006.

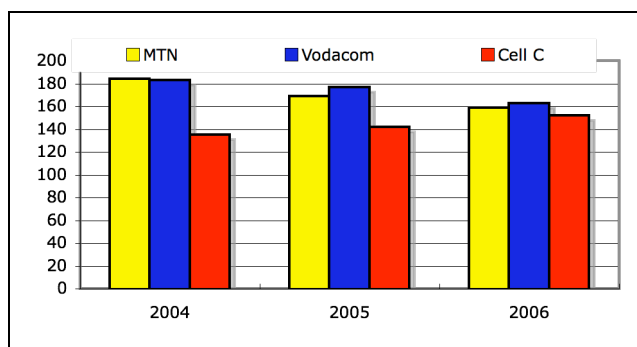


Figure 16: Operator market shares



These disconnections allowed Cell C to report higher average revenue per user (ARPU) numbers compared to the previous period, moving from R142 to R152 and to a considerably higher EBITDA. Cell C remains a bit player in the market and still seems to be trying to overcome perceptions of poor network coverage, even though it covers over 84% of its subscribers with its own network.

Figure 17: Operators' average revenue per user (ARPU)

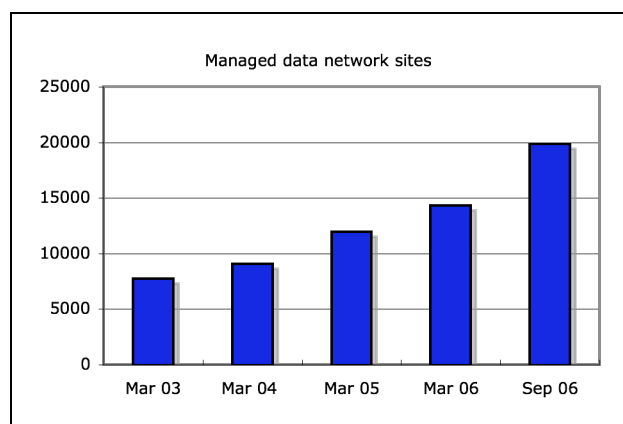


Sources: Operator Annual Reports; Cell C, 2006.

## 5.5. Data

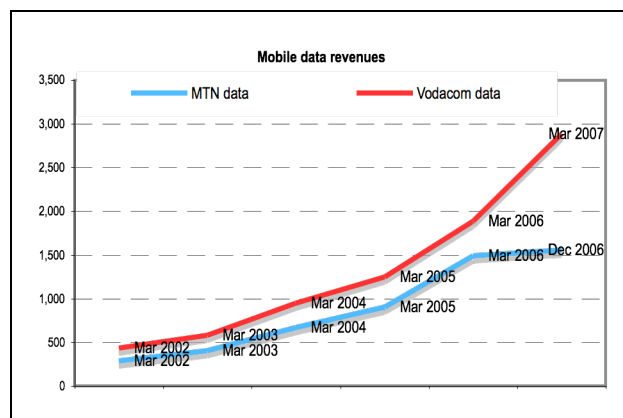
Telkom's voice services have been showing a steady decline and it is placing increasing reliance on its data services. In the corporate sector, it showed strong growth in its managed data network sites, of 157%, between March 2003 and September 2006 (see Figure 18 below).

Figure 18: Telkom's managed data network sites growth



Mobile operators are also facing declining growth in the voice market and are targeting data to provide them with the growth necessitated by their share prices. The financial year-end for MTN has recently changed, making the comparison between MTN and Vodacom difficult. However, the difference between year-ends is only three months, and the point of Figure 19 below is only to show that Vodacom is seeing greater revenues from its data business than is MTN, and also that Vodacom has benefited from being first to market.

Figure 19: Mobile data revenues 2002 - 2007 (estimated)



Sources: MTN and Vodacom Annual Reports, 2006

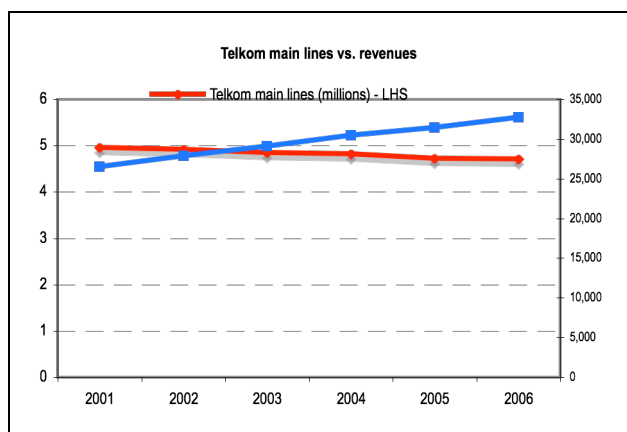
## 6. Access to ICTs

### 6.1. Fixed-line

Fixed-line access in South Africa has generally followed the trend of OECD countries, though for very different reasons. In the OECD countries, fixed lines are declining because of product substitution, mainly via ADSL and cable. In South Africa, fixed lines are declining because of high unit prices. Telkom's strategy is to support fixed-line access in "selected high growth residential areas" (Telkom 2006a: 14). As Figure 20 below illustrates, growing

fixed-line revenues accompanied by declining access are only possible if either prices increase or usage intensifies. Post-2004, Telkom no longer publishes residential access figures, but historically the number of business connections has been significantly higher than residential connections and disproportionate to international benchmarks on business/residential ratios. Telkom has traditionally enjoyed increasing revenues based on the high ratio of business connections, and there is little reason to suppose that this trend has reversed.

Figure 20: Telkom main lines vs. revenues

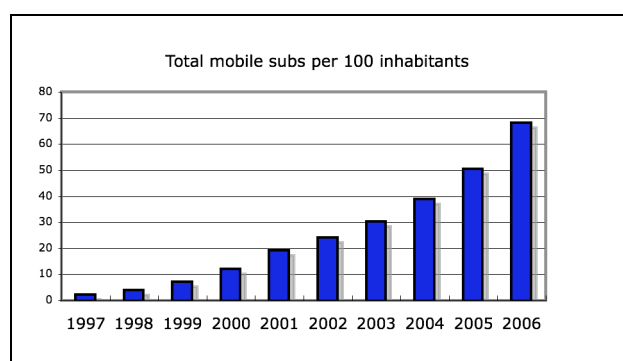


Several independent studies have confirmed that a range of Telkom's prices, particularly local call charges/rentals and broadband, are exponentially higher than in many other countries (See SA Foundation, 2005; Gillwald & Esselaar 2004).

## 6.2. Mobile

As in the rest of Africa, the introduction and growth of mobile over the last decade have provided unanticipated access to millions who were previously marginalised from personal communications. The introduction of pre-paid in the late-1990s saw massive growth in the sector and mobile phones are becoming a ubiquitous feature of South African society. How fast the sector has been growing is often taken for granted, but it is useful to see how incremental the growth was initially, following the licensing of MTN and Vodacom in late 1993, before the threat of competition with the pending third licence and the introduction of pre-paid.

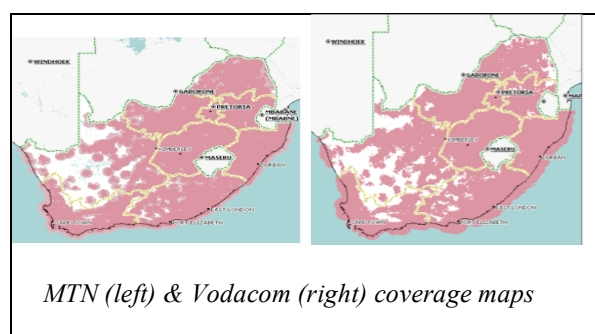
Figure 21: Total mobile subscribers per 100 inhabitants



Source: Operator Annual Reports, 2006

Cell C was initially meant to be licensed in 2000, but licensing delays by the Minister of Communications meant that it was only operational in late 2002, by which time the other two major operators had had a significant head start. Subsequently, Cell C has struggled to make inroads and recently announced a reduction in subscriber numbers from around three million to 2.7 million.

Figure 22: MTN and Vodacom coverage maps

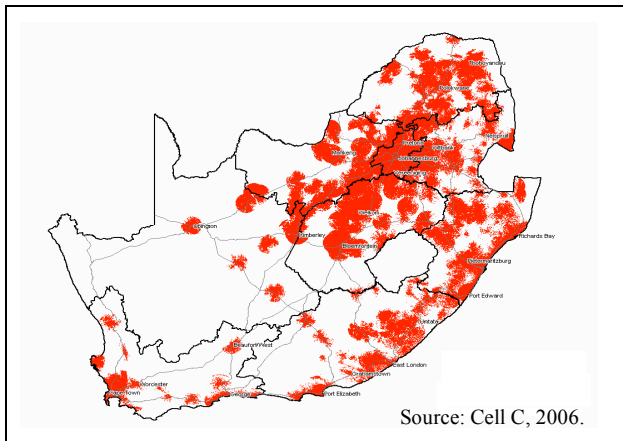


Source: GSM World, 2006.

A comparison of coverage maps shows that Vodacom and MTN cover substantially more of the country than Cell C. For some time, both MTN and Vodacom have covered over 90% of South Africa. With only 2.7 million subscribers, mostly in urban areas, Cell C is able to cover 84% of its subscribers with its own network.<sup>26</sup> Cell C is able to cover the rest of the country by roaming on the Vodacom network. Focus group research conducted as part of a demand-side survey in 2005 found that Cell C is undermined by perception of poor network coverage (Gillwald (Ed.), 2005).

<sup>26</sup> See Cell C (2006), media results presentation, August.

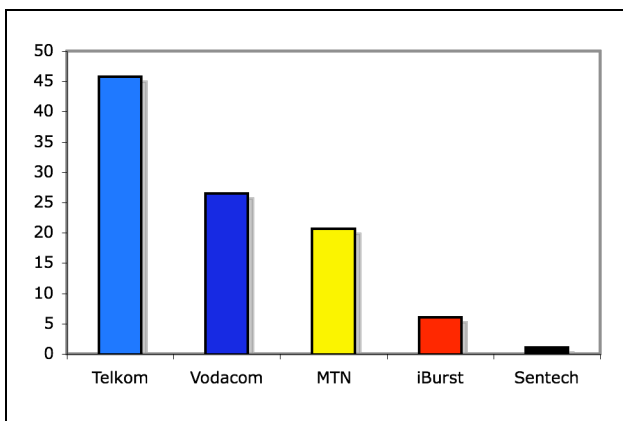
Figure 23: Cell C coverage map



### 6.3. Broadband

Telkom's latest interim results indicate that there has been strong take-up of its broadband services. It is estimated that there is a waiting list of over 50,000 residential subscribers for its ADSL service.<sup>27</sup> The frustration with Telkom's long waiting list has provided wireless competitors with an edge: Virtually all competitors advertise short delivery times.

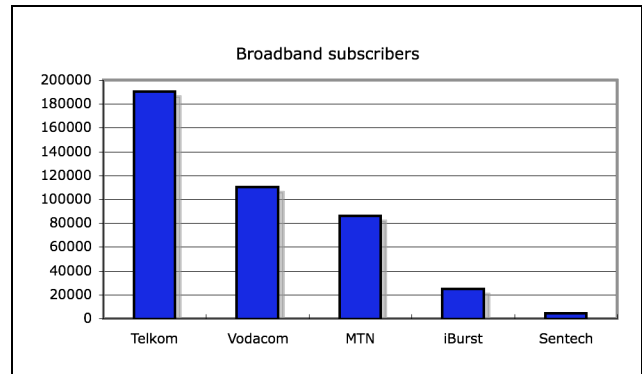
Figure 24: Broadband market share



Source: Sunday Times, 2006

As the Figure above indicates, Telkom still dominates the broadband market with over two-thirds market share, which translates into more than 190,000 subscribers.

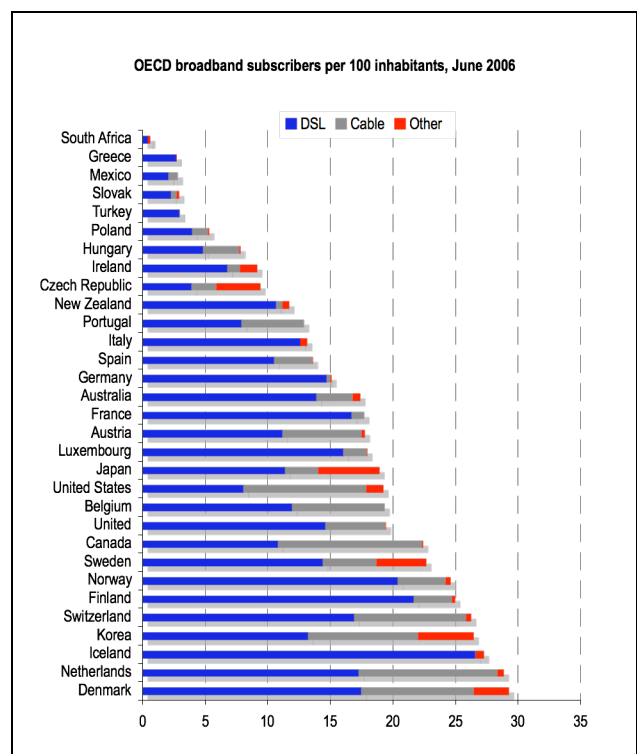
Figure 25: Broadband subscribers



Source: Sunday Times, 2006

Even with some competition in the broadband arena, and the growth rate of 100% that South Africa is currently experiencing, the country still lags behind even other lower middle and middle income countries in broadband. Broadband penetration will have to increase exponentially if South Africa is to unleash the potential of ICTs for economic growth and development.

Figure 26: OECD broadband subscribers compared to South Africa

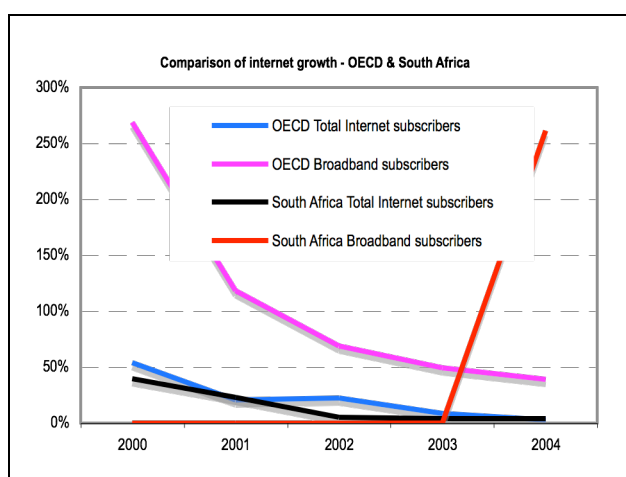


While dialup Internet access is old technology, the majority of Internet residential users in South Africa still access the Internet this way. The Figure below shows the growth rates of dialup Internet access versus broadband access.

<sup>27</sup> See Sunday Times (2006)



Figure 27: Comparison of Internet growth: OECD and South Africa



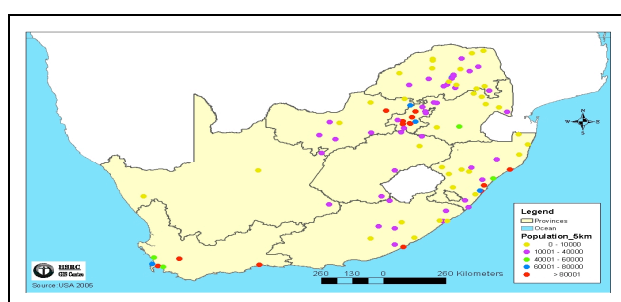
Sources: OECD, 2006; World Wide Worx, 2005

South Africa's total number of Internet subscribers is gradually flattening out. New broadband users are previously dialup users, though their constrained usage patterns as a result of high charges are likely to change over time (see Goldstuck, 2005). However, as the Figure above shows, the OECD market is a mature market with declining growth rates, while South Africa is in the throes of growth. This kind of growth needs to continue for a substantial period of time to achieve the penetration levels of similar countries around the globe. The high cost of access to the Internet has meant that the market for services at that price has more rapidly saturated than it might if access and usage were cheaper.

#### 6.4. Collective access points

A key concern highlighted throughout this report has been the lack of a formal ICT policy and therefore strategy. The lack of an ICT policy means that monitoring progress towards ICT goals is difficult and often open to alternative interpretations. The Universal Service Agency suffers from the same problems. Its policy objectives are unclear and consequently its strategy has been focused upon the roll-out of telecentres and cyberlabs and the funding of under-served area licences (USALs).

Figure 28: Telecentres showing serviced population within a 5 km radius



Source: Tlabela et al., 2006

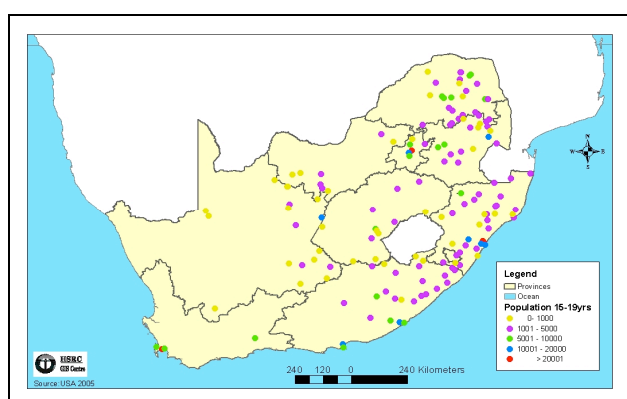
Besides the documented problems around those telecentres that are fully operational and those that provide limited service, it is immediately apparent that the telecentres serve an impossibly large proportion of the population. In Gauteng, for example, 13 telecentres potentially serve over 2.5 million people within a 5 km radius.

Table 6: Distribution of population within 5 km radius of the telecentres by province

PROVINCE	Number of municipalities	No. of Municipalities with tele-centre	No. of telecentres in municipalities	Coverage - 5km	Average coverage per tele-centre
Eastern Cape	43	9	12	277 769	23 147
Free State	21	5	7	156 309	22 330
Gauteng	13	7	13	2 509 636	193 049
KwaZulu-Natal	55	17	19	827 952	43 576
Mpumalanga	24	5	6	82 446	13 741
Limpopo	23	17	30	476 155	15 872
North-West	22	7	7	186 882	26 697
Northern Cape	31	3	3	13 611	4 537
Western Cape	30	3	6	927 313	154 552
Total	262	73	103	5 458 073	52 991

Cyberlabs suffer from the same problem. On average, a cyberlab in Gauteng could potentially be expected service around 125,000 people.

Figure 29: Cyberlabs showing serviced population within 5 km radius



Source: Tlabela et al., 2006

In terms of take-up of services, the strategy to aggregate access and usage through the rolling-out of cyberlabs and telecentres has not been successful. The labs and centres have been very expensive to set up, and are generally dysfunctional or not fully-utilised.

Table 7: Distribution of people within 5 km radius of the cyberlabs by province

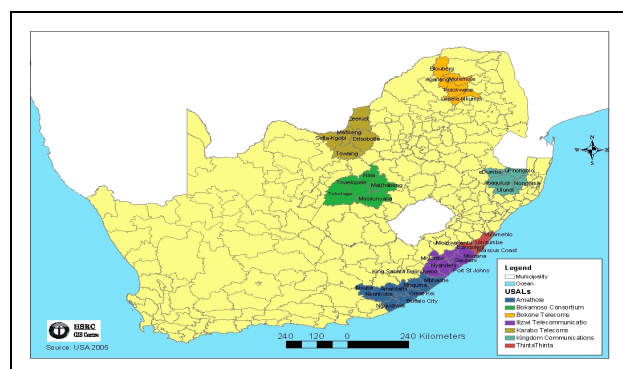
PROVINCE	Number of municipalities	No. of municipalities with cyberlabs	No. of cyberlabs in municipalities	Total resident population within 5km	Average coverage per cyberlab
Eastern Cape	43	18	34	943 422	27 748
Free State	21	10	14	207 499	14 821
Gauteng	13	4	7	876 667	125 238
KwaZulu-Natal	55	26	38	2 056 305	54 113
Limpopo	23	15	30	914 485	30 483
Mpumalanga	24	10	24	544 155	22 673
North-West	22	5	10	166 674	16 667
Northern Cape	31	11	26	454 377	17 476
Western Cape	30	2	3	741 729	247 243
Total	262	101	186	6 905 313	37 125

Source: Tlabela et al., 2006

## 6.5. USALs

The other component of the universal access strategy has been the USALs. They have been dogged by controversy and the majority of them are not operational and have not been given the second tranche of funding due to them – from the newly-renamed Universal Service and Access Agency of South Africa – on achievement of a set of criteria in the first round. As mentioned in the LINK Centre's 2004 Sector Performance Review, without asymmetrical interconnection it was difficult to understand how USALs would have a business case, and in essence that prediction has been borne out. Those USALs that are operational are basically franchisees of the mobile operators, with little innovation around deployment of low-cost technologies or the bundling and cost of services. The map in Figure 30 below gives the distribution of the first set of USALs around South Africa.

Figure 30: Under-served area licences by District Municipality



Source: Tlabela et al., 2006

## 6.6. Community Service Obligations (CSOs)

In contrast to government initiatives, preliminary data on community service terminals (CSTs) rolled out by the mobile firms show a higher roll-out than was required by universal service obligations. Cell C has met its required roll-out of 42,000 CSTs, but Vodacom has more than doubled its required contribution. Initially required to roll out 22,000 CSTs, Vodacom has rolled out over 50,000, which it estimates generate roughly the equivalent amount to that generated from its pre-paid services.

The costs of calls from CSTs are substantially below the average cost of calls from a pre-paid or contract mobile phone. The cost of a call from a CST is set at 90c compared to the cost of an on-net peak call price of around R2.23 (an average cost across all the network operators, excluding Virgin Mobile). If Vodacom is rolling CSTs out so aggressively, it is clearly making money from them and

sees them as a valuable source of revenue. Of course, this does raise questions around the average costs of calls outside of the CST network.

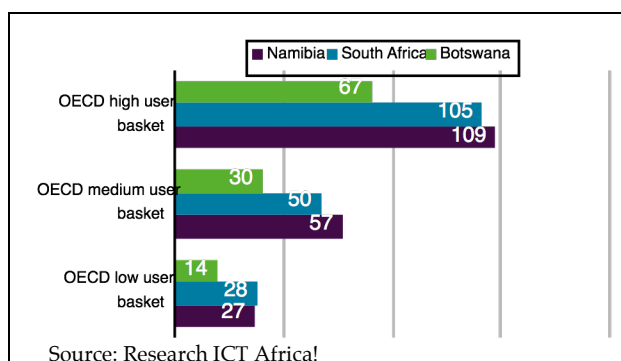
## 7. Pricing

### 7.1. Mobile

In 2005, ICASA published a mobile pricing comparison document, in which it alleged that South African mobile prices were substantially higher than in a set of other countries. The mobile operators were highly critical of the document, arguing that the data used was substantively flawed and that comparison against other countries was spurious because of the different operating conditions in South Africa. Figure 31 below provide a comparison with two of South Africa's neighbours, and this comparison will soon be expanded, via the work of the Research ICT Africa! (RIA) Network, to include 15 African countries in total. Each of the graphs is based on the OECD definition of a mobile user basket and includes set amounts of on-net versus off-net calls, mobile-to-mobile and mobile-to-fixed calls, peak and off-peak. The OECD basket definition is not an ideal basket to use because it is more suited to the relatively wealthier societies of the OECD. However, it is the most commonly used basket definition. There is no basket definition for the African continent, though the RIA Network will be able to produce one after its household survey is completed in 2007.

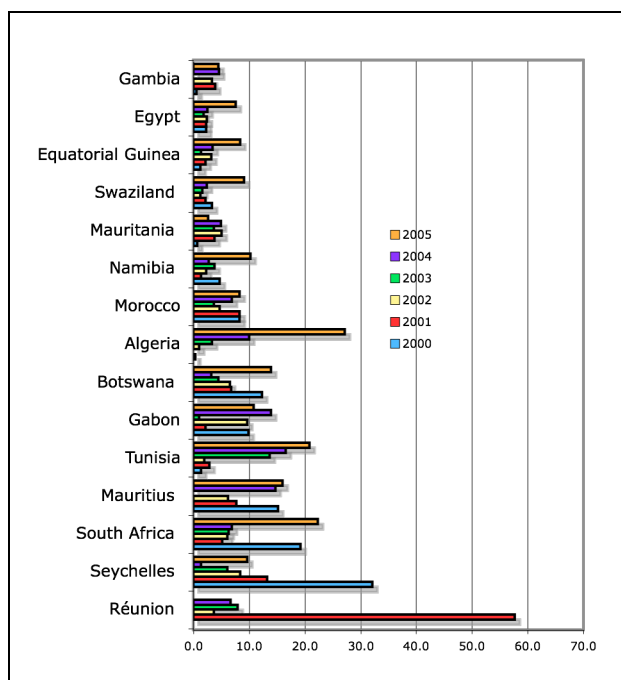
What is immediately apparent is that South Africa is not a market leader amongst its neighbours when it comes to mobile prices. Despite significant differences between Botswana and Namibia and South Africa, for the purposes of this report they make for an interesting comparison for several reasons. Their individual GDPs per capita are not too far removed from each other - in fact, Botswana's GDP per capita is higher than South Africa's. Neither Botswana nor Namibia is able to take advantage of economies of scale in comparison to South Africa, since both have a population of less than 3 million. Botswana and Namibia are on South Africa's borders, which would seem to imply that operating conditions are similar, if not identical.

Figure 31: Mobile price basket comparisons at purchase price parity (PPP)



As the comparison shows, South Africa's prices for a low user basket show that it is the most expensive of the three countries, with Botswana substantially cheaper, applying PPP. Since the introduction of pre-paid in the late 1990s, mobile has been the success story of the ICT sector across the continent. As Figure 32 below indicates, many other countries in Africa besides South Africa are showing high levels of mobile subscriber growth.

Figure 32: Mobile subscriber growth in Africa



Source: ITU, 2005

While the positive outcome of opening up the mobile market is indisputable from an access point of view, the relatively high prices of services, certainly in South Africa, have restricted usage and prompted a pricing investigation by ICASA. The ministerial pricing colloquiums in 2005 and ICASA's investigation into mobile pricing in the same year did force prices down for specified periods by the major operators. However, with reductions in preferential on-net or off-peak pricing, peak

period pricing was not dramatically affected. South Africa, based on a basket of mobile calls, is still more expensive than its neighbours. With a de facto duopoly market, there is a considerable amount of price-following. For these reasons, neither the entry of a virtual mobile operator in the form of Virgin – seen by some simply as a new service provider using Cell C's network – nor number portability, seem to have had much effect on mobile prices.

The high cost of mobile calls is often attributed to the high asymmetrical termination rates mobile operators charge to terminate calls on their networks. The mobile operators argue that this is key to the internal subsidy that allows them to grow their network with declining ARPUs. (ICASA is to issue a determination on both fixed and mobile termination rates early in 2007).

## 7.2. Broadband

Broadband policy is currently in a state of flux. The government has acknowledged this and appointed a Broadband Advisory Council to investigate the matter, but the Council has not yet reported.<sup>28</sup> The move by the Department of Public Enterprises to warehouse Esitel's fibre backbone in Infraco might be the result of frustration at the slow pace of broadband roll-out and the high associated prices. In principle, the idea of another infrastructure provider to compete against Telkom seems like a good one. What is concerning, though, is the complete lack of any clarity on where Infraco might fit into the overall policy for the sector, or on why government believes that the state, clearly unable to operate other state-owned, un-privatised networks in the sector efficiently, will, via Infraco, necessarily be able to bring down infrastructure prices.

Without wireless broadband, broadband penetration would be less than half of what it is now, and the success of operators such as iBurst and the move into the market by Vodacom and MTN speak to the efficacy of a competitive environment in providing some form of access, despite difficult conditions. South Africa's broadband strategy is increasingly opaque, with the Department of Communications stating that Sentech will drive broadband penetration in the country. With Sentech's just over 4,000 subscribers, representing less than 1% of the current market, it is difficult to see how Sentech would become a broadband driver, even with the major capital injection for which it has been lobbying Parliament and the Treasury.

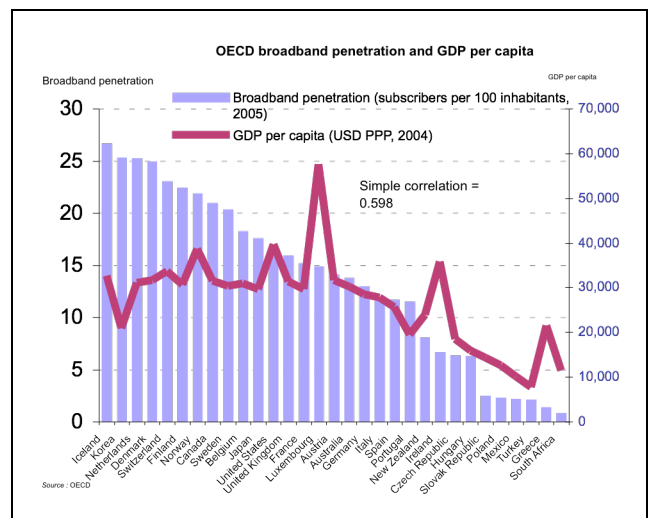
Accurate figures are difficult to come by, but estimates are that South Africa has more wireless broadband subscribers than ADSL subscribers. The

switch from ADSL being dominant to wireless broadband being dominant occurred some time between April and November of 2006. While broadband in South Africa is now defined as including wireless broadband, this is not the case in the OECD. In the OECD area, broadband is defined as being provided either through DSL or cable.

Even including wireless broadband in South Africa's figures, it is clear that there is an access shortfall. In terms of GDP per capita (PPP US\$), South Africa is broadly comparable to Turkey, Mexico, Poland, Hungary and the Slovak Republic. Broadband penetration per 100 inhabitants, on the other hand, is on average two-thirds less in South Africa than in any of these five other countries.

Since access is skewed in favour of wireless broadband, a pricing comparison with other countries is difficult. Penetration compared to GDP per capita is an alternative metric that seems to indicate high prices or lack of supply. Lack of ADSL supply is a clear problem, with Telkom facing waiting lists of three months in length. But it also seems clear that South Africa is suffering from high prices in broadband.

Figure 33: OECD broadband penetration and GDP per capita



Source: OECD, 2006

## 7.3. Interconnection and facilities leasing

Interconnection remains a problem. As Table 8 below illustrates, there is a significant difference between fixed-line and mobile termination rates, with the latter remaining extraordinarily high. In 2006, the UK regulator Ofcom concluded, after a market review, that mobile operators had significant market power over their own networks and that this was not affected by countervailing buying power by fixed-line networks. As a result, mobile

<sup>28</sup> See Matsepe-Casaburri (2006).

termination charges will continue to be regulated in the UK for a further four years from March 2007.<sup>29</sup> As mentioned above, ICASA will be releasing a paper on fixed and mobile termination charges early in 2007.

With regard to facilities leasing, in terms of the 2005 Ministerial policy directives, mobile operators and, some would argue, VANS, are no longer required to acquire their facilities from a PSTN operator. Mobile operators, and in fact most VANS – possibly because of the lack of legal clarity – have not yet chosen to take advantage of this new dispensation. It appears that they would rather pay the cost of Telkom retaining and maintaining their fixed connections, despite claims of very high charges. The rates listed in Table 8 below are not based on long-run incremental cost (LRIC) and should be adjusted when LRIC is finally implemented.

Table 8: Interconnection rates

2006	SAR/c Peak	SA R/c Off-peak
Fixed termination rates	0.29	0.16
Mobile termination rates	1.25	0.77
Mobile to mobile	1.25	0.77

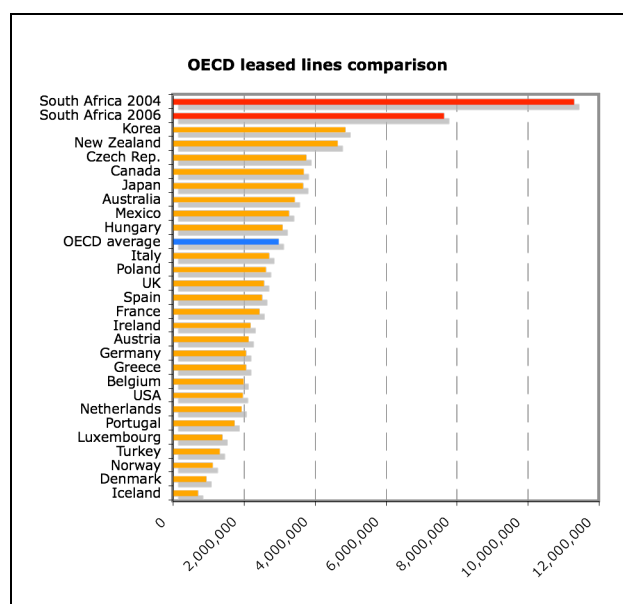
Source: ICASA, 2006b.

A major input into business communications is the cost of leased lines. Even with the introduction of Neotel, Telkom maintains a monopoly on this infrastructure for the short- to medium- term. Prices have come down, as demonstrated in the leased-line section of this report, but South Africa's costs are still more than double the OECD average and dramatically higher than similar low to middle income countries such as Turkey and Poland.

One of the key bottlenecks in South Africa to lowering bandwidth prices is the cost of leased line access – a critical cost to VANS and ISP operations. As Figure 34 below shows, the cost of leased lines in South Africa is magnitudes of scale higher than in any other country in the OECD. A comparison with the OECD has been chosen because not only is this one of the few places where international figures are available, but also because OECD countries are South Africa's major trading partners and thus it is against them that South Africa needs to be competitive, especially in the lower to middle income area.

The leased-line prices have been worked out using a basket methodology used by the OECD up until 2006. Prices are weighted according to distance and bandwidth. The graph below is based on the Telkom 2 mbit/s silver megaline plus. The graph shows that while prices have come down substantially since 2004, the cost of a Telkom leased line is still more than double the cost of the OECD basket. Quite clearly, the threat of competition has forced Telkom to lower the prices of its leased lines.

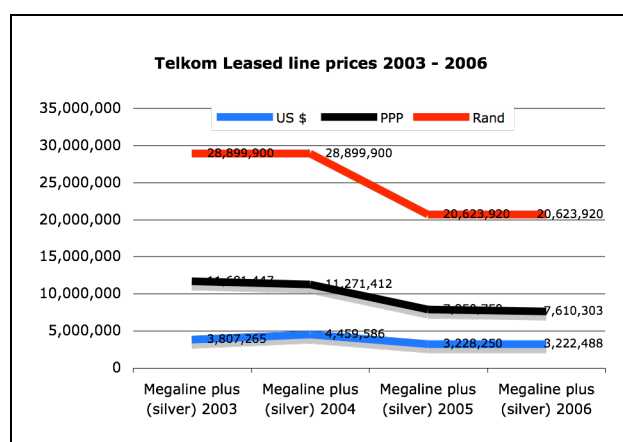
Figure 34: OECD leased lines comparison



Sources: OECD, 2006; Telkom tariff plans 2004, 2005, 2006

The second leased-line Figure merely shows that despite continued astronomical pricing, there has been a positive declining trend in prices since 2003 in Rand, US\$ and purchasing power parity (PPP) terms, primarily, one assumes, due to the entry of a second network operator, Neotel, into this market.

Figure 35: Telkom leased-line price 2003 – 2006



Sources: OECD, 2006; Telkom tariff plans, 2004, 2005, 2006

The price of international bandwidth also remains untenably high. As in many other African countries,

<sup>29</sup> See Ofcom (2006).



even with the opening up of international gateways there is only one economically feasible source of high-quality bandwidth, which today is the SAT-3 undersea cable. It was built by, and is operated through, a closed consortium of African incumbents and international operators who have exclusive rights on the landing stations in their countries. The consortium's practices have come under fire by a multi-stakeholder continental initiative which has demonstrated the access benefits and cost benefits of non-exclusive open access regimes for African countries – which have the most expensive international bandwidth in the world. There have been calls to regulate these landing rights as “bottleneck” or “essential” facilities. This attention has also highlighted the arbitrariness of the costing of this essential facility for African countries at the national level, and discrepancies in the charges across different portions of the network. A price survey of African countries that use SAT-3 for their international bandwidth showed that South Africa's Telkom is charging up to 800% more than other countries for a megabit per second per month. While the Senegalese incumbent Sonatel charges only US\$1,316, Telkom, which also holds the management contract for the cable, charges US\$11,000 (Southwood, 2006b).

For some Eastern and Southern African countries, the longer-term solution lies in the East Africa Submarine cable System (EASSY), which is to be completed by 2008. Through the intervention of non-governmental and academic organisations and the e-Africa Commission, the consortium established to build the cable has been far more open and the approach to landing rights non-exclusive. Bandwidth will be sold on an open access model where everybody can purchase it at the same price whether they are an investor or not. Of course, while EASSY will provide relief for the Eastern and South African countries, including many landlocked countries that have bought into the consortium, the likelihood that West Africa will have any alternative to SAT-3 in the foreseeable future is poor, rendering the landing station in that region a natural monopoly requiring regulation (Gillwald, forthcoming 2007).

## **8. Conclusions and Recommendations**

### **8.1. Policy and legal framework**

The Electronic Communications Act has the potential to adjust the currently inhibiting market structured around vertically-integrated incumbents. But this is dependent on an innovative horizontal licensing regime and the reduction in the currently high regulatory transaction costs. An innovative horizontal licensing regime, in turn, is dependent upon a capacitated regulator that is prepared to

take calculated risks and to imprint its authority on the sector. The current lack of human capital at the regulator ICASA (all six general managers are new appointments), as well as the provisions of the ICASA Amendment Act, suggest that this kind of authoritative regulation is unlikely.

The response of the state to the non-pro-poor policy outcomes of the first decade of policy reform appears to be increased state intervention operationally, despite the apparent absence of capacity and the incongruence of this response with international evidence. The assumption behind increased state intervention is that the market is unable to meet the developmental needs of the country. However, market failure cannot be determined if a market has not been opened up effectively for competition in the first place. In fact, the lesson from the mobile market is that the failure to meet universal access objectives needs to be assessed more often as an efficiency gap, and that the rolling-out of services at competitive prices can draw vast numbers of previously-marginalised citizens into the market. Of course, effective competition in a market with entrenched incumbents requires effective regulation, and this returns us to the centrality of effective regulation to the efficient and equitable delivery of communication services.

### **8.2. Licensing**

The new Act enables the regulator to reduce the regulatory transaction cost of communication business by exempting certain current categories of licence and extending class licences to all competitive services. The international trend is towards service-neutral and class licensing, subject only to declaration for the public record and for statistical purposes. Class licences can be automatically granted to any applicant meeting set criteria. Network operators should be free to establish prices and conditions for service but must grant access to essential facilities on a non-discriminatory basis. These essential facilities can be defined in law as: interconnection, signalling, caller-identification, billing data, number portability and directory databases. This strategy reduces the regulatory burden, allows the focus to be on major licenses, and allows market forces to operate. Many countries are implementing or planning to convert to unified licenses, as in the case of India. This strategy allows any operator to utilise any technology to provide a service, ensuring that the technology decisions are left to the operators themselves. While this strategy reduces the regulatory burden on licensing, it does require stringent enforcement of anti-competitive laws to enforce incumbent operator behaviour.

### 8.3. Regulation and competition

This research argues that the state's pursuit of strategies for economic growth and development need to prioritise market reform of enabling sectors such as telecommunications. However, to ensure effectiveness, strengthening of regulatory institutions and arrangements is required. While most developing countries have now set up independent regulators, in practice these regulators are under-resourced, and unable to govern effectively. The now-classic 1996 Levy and Spiller text outlines how, for this model of regulation to work, certain conditions are required: a strong administrative tradition, the ability to undertake commitments that endure from one government to the next, and a judiciary that is impartial, immune to government and political pressures and able to make enforceable decisions. Developing countries tend to display very few of these characteristics. Thus, for developing countries, the regulatory strategy should also focus on reducing the need for regulatory decisions by accelerating the introduction of competition.

Allowing competition early in network markets such as fixed-line and mobile is vital, especially before or at the same time as the incumbent is privatised. This allows both incumbents and new entrants to grow while there is still large, unmet demand. Pre-packaging regulatory rules by preparing licences for operators prior to licensing reduces the burden on the regulator and reduces regulatory uncertainty for investors. Further, it eliminates the potential for lobbying during the policy process.

The policy and regulatory framework needs to be streamlined to allow South Africa to attract global investment, services and skills. The competitive mechanisms necessary to optimise the competitive gains of opening up the market need to be enabled through an efficient and capacitated national communications regulatory agency, ICASA, effectively coordinated with the Competition Commission.

### 8.4. Transparency and investment

Empirical evidence suggests that open markets are conducive to innovation and diversification (OECD, 2005: 169). Similarly, evidence suggests that investors value certainty and predictability in markets. Historically, uncertainty has only benefited incumbents and the risk remains high that this trend will continue unless transparency is encouraged. There are several ways of ensuring transparency, but key amongst them is the role of the regulator. Ofcom, the UK regulator, has been at the cutting-edge of consumer rights by regularly publicising local tariffs and international roaming rates across countries. "Decision noise" should be rec-

ognised as a strategy by operators that can be countered through benchmarking.

Similarly, the South African government's continued failure to provide a clear vision either through the e-Strategy Task Team, the Presidential National Commission on Information Society and Development (PNC-ISAD) or even narrower processes such as the policy guideline for the new EC Act, prevents the country and the sector from coalescing around a vision and strategy to realise a knowledge economy, and only serves entrenched interests, which are often not in the best interests of the poor.

An assessment of the foreign investment reticence that has characterised the recent licensing rounds within the sector suggests the reticence is far more likely to reflect policy and regulatory risk than the potential of local markets to attract investment. Concerns of market failure which have traditionally justified state intervention are not justified where market conditions have never been allowed to prevail. A level of market failure is inevitable in a country with such a high percentage of economically-marginalised citizens, but it is clear that market inefficiency, resulting from the absence of competitive forces in the market to drive down prices, is a major cause of relatively poor penetration and usage rates. As a major input for business in an increasingly globalised and competitive economy, high costs and limitations on the range of ICT services have had a negative impact on not only the sector but the national economy. Enabling the market to meet the overwhelming demand for facilities and services at an affordable price would rapidly reduce the number of people currently unable to access services and allow the Universal Service Fund to be targeted more directly at servicing genuinely uneconomic areas.

### 8.5. Interconnection and facilities leasing

The always highly-contested and controversial interconnection regime is not clarified by the Electronic Communications Act. There is still no cost-based system or LRIC in place, as intended by previous intensive public hearings, in order to engineer a cost-based regime for this issue that is vital for effective competition.

Interconnection is currently subject to commercial negotiation in a highly uneven environment. The importance of an asymmetrical framework for new entrants, particularly the second network operator (SNO) and the under-served area licencees (USALs), appears either not to be understood, or is being prevented by vested interests from being instituted.

Neotel has the potential to provide some facilities-based competition, but will continue for some time to be dependent for the tail end of any of its offerings on Telkom, making price competition unlikely.

Next Generation Networks (NGNs) and services raise serious questions about the validity of current units of measurement for interconnect pricing. Mobile incumbents appear to be using interconnection rates/negotiations to control usage of VoIP services, because VoIP has the potential to erode revenues for mobile firms. Resource-strapped regulators need to explore simpler interconnection regimes. For example, a bill-and-keep system would help lower termination costs enormously.

## 8.6. Access and pricing

Access to, and pricing of, communication services remain key challenges for South Africa as it seeks to become globally competitive and to build internationally-acceptable infrastructure such as that required for the soccer World Cup 2010. In certain key indicators such as broadband, South Africa is falling further behind the rest of the world and even continental leaders. Mobile remains a success story, but growth from other African countries indicates that South Africa is in danger of losing its place amongst the leaders on the continent in terms of mobile penetration. Acknowledgement of the current deficiencies in ICT strategy and the creation of a public policy process are key if South Africa is not to fall further behind.

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