South African 15-year Telecommunications Policy Review
Office of the Presidency
Final version
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# EXECUTIVE SUMMARY

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EXECUTIVE SUMMARY

This paper provides a 15-year review of telecommunications policy in South Africa (1994-2008). The main focus is to analyse the policy impact on the two central yet evolving Government telecommunications objectives of cost and access.

Cost-competitiveness and universal access emerged as the primary, overarching objectives for telecommunications policy in South Africa. Cost-competitiveness refers to the provision of a variety of high-quality, low-cost services. Universal access comprises two aspects: physical proximity and affordability. These overarching policy objectives have remained in place throughout the review period and set up the ultimate end-goals – the criteria on which the success or failure of policy should be judged.

PERFORMANCE OF THE SECTOR

The performance of South Africa’s telecommunications sector in terms of costs and access has been mixed. In terms of costs, the introduction of mobile services in South Africa has lead to a significant drop in basic voice access costs (as SIM and phone prices have dropped dramatically). However, usage costs (making calls) remain high, in comparison to international markets, for both fixed line and mobile services. High-usage consumers, such as business users, are at a particular disadvantage. Broadband (and dial-up) costs remain significantly more expensive than other international destinations, and once again high-usage customers such as businesses are particularly disadvantaged. Leased line costs, especially international leased lines, also appear to be charged at excessive rates.

In terms of access, there has been major progress but significant issues remain. It may be argued that, with the rapid take-up of prepaid mobile services, basic access to voice telephony (the ability to receive but not necessarily make calls) has been largely solved. Mobile population coverage is nearly 60% and customers across the country can purchase a prepaid SIM card (and a second hand mobile phone) for very low rates, thereby solving the two dimensions of access in this basic case: physical ubiquity and affordability. However, prepaid packages are associated with very expensive outgoing calls. To some extent this is mitigated by the successful roll-out of Community Service Telephones (CSTs) – these payphones charge 90c per minute and have been keenly taken up by lower income segments. Overall, universal access and service issues remain: increasing broadband Internet penetration and securing affordable voice telephony, not just for receiving but also for making calls (without having to use a payphone).
APPROACH TO THE POLICY REVIEW

Policy formulation and execution take place within an evolving policy context. In order to analyse policy properly, it is necessary to take this context, and its development, into account. This entails understanding Government’s overarching policy objectives (outlined above) and how the weighting of these objectives evolves through each policy forming period. Evolving market and technology dynamics and the lessons from previous periods’ successes and failures will also shape the policy context in each period. It is then necessary to understand Government’s overall policy framework, which is implemented through the use of specific policy tools (detailed further in the Annexure). Only then can the policy impact be reviewed and the policy lessons be extracted.

The 15-year review period is divided into three periods (initial, middle and current) and within each period the following aspects are outlined: policy context, policy framework and policy outcomes. Finally, the key policy lessons are discussed.

INITIAL PERIOD: 1994 – 2001

Policy context. Prior to 1996, Telkom was a state-owned monopoly and Vodacom and MTN were licensed in 1993. Policy makers were faced with three major challenges: a massive deficit in access, significant financial constraints in terms of Telkom’s capital position and the Government’s budget consolidation strategy, and a need to improve cost-competitiveness for the sake of economic advancement. It became clear, however, that the policy focus was primarily on reducing the access deficit.

Policy framework. Given the financial constraints, Government could not afford to invest in access directly. Telkom (and fixed line) was the preferred technology to solve access as mobile was seen as a solution for the upper end. Government saw a specific trade-off between increased liberalisation (and cost-competitiveness) and securing universal access: unguided liberalisation may result in resources focusing on upper end markets and ignoring lower income customers and the access deficit. Accordingly, Telkom was granted exclusivity in return for fulfilling significant roll-out obligations. While securing cost-based prices was not a focus of the period, a price cap was imposed to prevent excessive exploitation of Telkom’s monopoly position.

Policy outcomes. The fixed line roll-out obligations failed to achieve access goals, however access to mobile services expanded dramatically, driven by competition, increasing geographical coverage and the ability of mobile operators to price discriminate. In terms of cost, although there was no explicit strategy to drive prices down to cost, the price caps that were imposed still failed
to constrain Telkom. From a wholesale perspective, the entry of Cell C saw rapid increases in interconnection prices, which the regulator failed to prevent.

**MIDDLE PERIOD: 2002 – 2005**

*Policy context.* The success of mobile in terms of basic access shifted Government’s focus to this technology. In addition, the success enabled Government to pay closer attention to cost-competitiveness which was becoming an increasing concern. Accordingly, Government would begin moving cautiously toward increased liberalisation.

*Policy framework.* The shift in focus to mobile technology resulted in subsequent licence grants to MTN and Vodacom being associated with significant roll-out obligations in terms of SIM cards and mobile phones. However, as the number of new licence grants declined (and there was a need not to burden new entrants with heavy access obligations) Government initiated the use of a subsidisation strategy to address the remaining gaps in infrastructure (through USALs – Universal Service Access Licences). The greater focus on cost-competitiveness resulted in the introduction of more fixed and mobile competition as well as stricter price controls. However, fixed line competition was limited to only one more provider on the basis that the entrant required protection to build national infrastructure in competition to Telkom (even though the operator would not face stringent access obligations).

*Policy outcomes.* USALs had little impact on access and SIM and mobile phone roll-out obligations failed. However, CSTs were a relative policy success, with increased use of actual call services achieved through greater affordability. In terms of cost-competitiveness, little was achieved in this period due in large part to significant licensing and regulatory delays. There were significant delays in the introduction of the SNO, in granting rights to alternative providers, in tightening Telkom’s price cap and finally in developing regulation for interconnection and wholesale services, which may have negatively impacted on entry to the extent it was allowed.

**CURRENT PERIOD: 2006 - PRESENT**

*Policy context.* The current period began as cost-competitiveness became a growing, if not urgent, concern (international capacity was of particular concern). It was clear that neither the regulator nor the limited competition available were likely to bring down prices within the policy approaches that had been advanced. In terms of access, the focus shifted to broadband infrastructure and the Internet as an education tool and as a critical business resource.
**Policy framework.** The approach to both access and cost shifted to direct state investment through Sentech and Infraco which revealed (an arguably realistic) lack of faith in the newly passed Electronic Communications Act (ECA) to achieve the cost and access goals. The ECA was structured to be technologically neutral to allow mobile operators entry into fixed lines, and would also secure a more thorough, yet demanding, regulatory mandate for the *ex ante* regulation of ineffective competition.

**Policy outcomes.** Both Sentech and the Universal Service and Access Agency of South Africa (USAASA), which was unable to access funds, achieved little in terms of access. In terms of cost-competitiveness, the ECA did however allow MTN and Vodacom to enter fixed lines. Neotel has struggled to enter the market due to the failure of Infraco to launch and a lack of wholesale regulation. ICASA is yet to complete its wholesale market reviews and appears not to be taking the opportunity to grant VANS full infrastructure licences in the licence conversion process from the Telecommunications Act to the ECA.

**POLICY LESSONS**

The 15-year review revealed a number of key policy lessons and themes.

*No need to limit competition for voice access.* Universal access to basic voice services has been secured by mobile operators *pursuing profit and engaging in lower income and rural areas*. National coverage, the ability of operators to price discriminate, and competition between the mobile operators were critical in unlocking the technology’s potential and providing the majority of South Africans with basic voice services. The roll-out obligations on the other hand failed to deliver, at least in terms of those which were targeted at a universal level. This suggests that the premise of a classic cost-access trade-off which justified limiting competition in the initial period – though understandable given the context of the time – lacks foundation going forward.

*No need to limit competition for later entrants.* Government has restricted entry in fixed lines to give new operators like Neotel a chance to develop a national infrastructure. However, these areas are already serviced by Telkom and so there is no access deficit that requires urgent attention. In addition, even if entrants “cherry picked” the metro areas, it is relatively straightforward to ensure that any price pressure felt by the incumbent in metro areas would filter through to “non-competitive areas”. Unrestricted entry would also mean that entrants have to seek areas where there is not already competition, increasing the chance that all profitable areas are targeted. Finally, in overseas jurisdictions, local loop unbundling (LLU) removes the need for entrants to roll out at the local loop level, significantly lowering the overall burden of investment. The policy of limiting fixed line competition in order to facilitate the entry of the later entrants like
the SNO therefore appears to lack foundation, both in how it was employed in the middle period and going forward.

**Side effects of state investment.** Although state investment may provide some short-term relief, it is likely to be more inefficient, and it may crowd out private investment or actively limit competition by regulatory fiat. A state investment approach may also divert focus from the long-term cure: a sound and effective policy and regulatory environment that facilitates the movement toward open, vibrant competition.

**Regulation and licence delays undermine policy efforts.** Negative policy effects may often have more to do with implementation and administration than with the overarching policy framework itself. A key theme of the 15-year review is the significant delays with both licensing and regulation.

**Subsidisation failure has constrained options.** The USAASA and Universal Service Fund (USF) have largely failed to deliver on access objectives. To the extent that this failure is viewed as a failure of the subsidisation approach in general, it has significantly constrained policy tools as the ability to impose significant roll-out obligations has *de facto* come to an end.

**When roll-out obligations work.** Where the fixed line roll-out obligations failed, the population coverage requirement for mobile (which helped drive mobile prepaid phones) succeeded. CSTs also constitute a relative policy success. This suggests that the success of roll-out obligations is based on a) the right technology choice or, more realistically, technology neutrality, b) the obligation to roll out infrastructure in areas rather than to individuals and c) the right pricing scheme to incentivise uptake from customers such as social discounting (CSTs) or positive price discrimination (prepaid mobile).

**CONCLUSION**

While significant inroads were made in the initial period with rapid increases in access to mobile services, the delays and policy failures of the middle period and the lack of policy options available in the current period effectively constrained Government into addressing the cost and access objectives itself though a state investment approach. It should also be noted that the policy predicament is largely based on policy failures in the middle, and increasingly the current, period. It is likely these failures need to be addressed with long term solutions (better regulation, use of subsidisation and more open fixed line infrastructure entry) in order to expand policy options and improve outcomes going forward.
1. INTRODUCTION

This paper provides a 15-year review of telecommunications policy in South Africa (1994-2008). The main focus is to analyse the policy impact on the two central yet evolving Government telecommunications objectives of cost and access.

Good telecommunications policy is challenging to develop. This was explicitly acknowledged in the 1996 White Paper on Telecommunications. Rapid technological advancement can quickly reshape the logical structure of the market and undermine the impact of policy that is targeted at older market structures. Moreover, policy objectives in telecommunications are often thought to create unavoidable trade-offs, notably between cost and access. Finally, even if policy is well-thought out, implementation capacity may limit the ability for regulators to fulfil the tasks given to them by policy makers.

Internationally, a range of different approaches have been adopted. Although there is an almost universal tendency to more liberal market structures, different jurisdictions pursue this path at different speeds and with different emphases. The South African experience has been coloured by a range of different policy approaches and actual interventions implemented throughout the past 15 years. This provides for a rich policy analysis in terms of indentifying the type of policy that tends to have the greatest impact on expanding universal access and securing cost competitiveness.

1.1. APPROACH

Policy formulation and execution take place within an evolving policy context. In order to analyse policy properly, it is necessary to take this context, and its development, into account. This entails understanding Government’s overarching policy objectives and how the weighting of these objectives evolves from one policy forming period to the next. Evolving market and technology dynamics will also shape the policy context of each period. It is then also necessary to distinguish between Government’s overall policy framework and the actual implementation of this framework through the application of policy tools. Only then can policy impact be reviewed and the policy lessons be extracted.

Policy objectives. Before analysing policy and its impact, we first outline the overarching policy objectives that remained in place throughout the review period. The policy objectives set up the ultimate end-goals – the criteria on which the success or failure of policy should be judged. Although there has been some evolution in how these objectives are defined and weighted, cost and access have remained the central policy objectives throughout the 15-year review period. We
also outline potential trade-offs between cost and access and consider mechanisms that can address these trade-offs.

**Policy periods.** Secondly, the 15-year review period is divided into three separate periods to properly reflect an evolving policy context.

- **The initial period (1994 – 2001)** which included the promulgation of the Telecommunications Act of 1996 and the licensing of the first mobile operators.

- **The middle period (2002 – 2005)** which included the promulgation of the Telecommunications Amendment Act of November 2001, and the attempt to license the Second Network Operator (SNO), which was finalised by 2005.

- **The current period (2006 – present)** which included the promulgation of the Electronic Communications Act of 2006 and the creation of Infraco.

**Policy context, framework, tools, impact and lessons.** Thirdly, a detailed policy analysis of the policy environment in each period is carried out, focusing specifically on the following aspects:

- **The policy context** sections provide the background in which a period’s policy is formulated. It includes the particular weighting placed upon the overarching objectives of cost and access *for that period*, the successes and failures of past policy as well as evolving market dynamics and other constraints.

- **The policy framework** sections describe Government’s “philosophy” on how best to achieve objectives, including how to resolve perceived trade-offs. It is Government’s approach to issues like privatisation, liberalisation, investment promotion, the extent of competition, subsidisation and price regulation. The policy framework was first established in Government’s White Paper of 1996 and subsequent Ministerial directives, and it is also revealed by what Government actually does. The policy framework is heavily influenced by the policy context of the period.

- **The policy tools** section outlines what Government actually used to implement their policy framework. Policy tools are usually established with the enabling legislation and executed by the Minister or the regulator. They can include the specifics or mandate around the licensing framework, the interconnection regime, roll-out obligations and price controls. They also include tools not directly outlined within the legislation such as Government investment and ownership.
• The **policy impact** then analyses the outcomes associated with the policy framework and policy tools used during the period. These outcomes are weighed against the overarching policy objectives (with due consideration to the period-specific policy framework and context) in order to determine the degree to which policy succeeded or failed.

• The **policy lessons** sections then build on the analysis of the policy impact, drawing conclusions in terms of policy lessons which could inform future policy decisions.

The following diagram highlights the overall approach:

![Methodological approach for the review](image-url)
1.2. DOCUMENT STRUCTURE

In section 2, we begin with a brief high-level review of the performance of the sector, focusing on cost and access. Section 3 deals with the overarching policy objectives between 1994 and 2008, and considers the typical trade-offs that must potentially be made in reaching these objectives. The three policy periods are then addressed in separate sections, as outlined above. Section 7 discusses the key policy lessons and themes, and Section 8 concludes.
2. PERFORMANCE

This section considers the sector’s performance in terms of access and cost. First, access to general voice telephony and Internet services are considered. Second, the cost of voice telephony, Internet services and leased lines are considered. For residential customers, both access availability and cost (“access affordability”) are important. For the business markets, cost is the major concern.1

2.1. ACCESS

In this performance section we use the AMPS definition of access. This means:

1. For fixed lines, access to a phone in the household;
2. For mobile phones, the personal ownership or renting of a phone; and
3. For Internet, access at any location.2

2.1.1. VOICE

In South Africa, access to basic voice telephony has dramatically increased. It more than doubled from 30% to 63% of the population3 in the 12 years to 2007, as shown in the figure below.4

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1 Businesses tend to locate in metro areas where basic physical access is not a major concern.
2 This definition focuses on physical proximity and usability but does not explicitly include the element of affordability. Affordability is, however, reflected in sections examining cost, which also speak to the Government objective of cost-competitiveness.
3 Population here refers to the adult population defined by AMPS i.e. age 16 and over.
4 The AMPS figures give a more reliable picture of access than subscriber numbers. Consumers of mobile services may have more than one SIM card, and dormant subscriptions may be counted as subscribers. Total mobile subscriptions in 2007 (as quoted by mobile operators) total nearly 40 million, which given the size of the child population, is likely to be larger than the number of available customers and hence clearly “over-represents” true access.
It is well known that this dramatic performance was due to an (unexpected) expansion of mobile phones, where access has soared from about 2% to over 56% of the population. Fixed line access, after an initial increase before 2000, actually declined by a third from 30% to 20% by 2007.

It is informative to consider access at a more detailed demographic level. We turn to this briefly, considering first fixed lines and then mobile phones.

**Fixed lines.** The table below shows that fixed line access has dropped since 1996 by all demographic measures:

- **1997 – 2000.** Telkom’s roll-out obligations from 1997 to 2001\(^6\) resulted in an increase in fixed line access due mainly to increases in the rural/small urban, black and lower LSM

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\(^5\) Mobile refers here to all ownership and/or use of mobile phones, including business, however privately maintained cell phones account for approximately 98% of cell phone use in the survey and thus all ownership and/or use is used here.

\(^6\) This was done under Telkom’s universal service obligations over the 1997 to 2002 period although no line roll-outs were performed in the final year (http://www.telkom.co.za/minisites/ir/markcontex/reg_uso.html - accessed 21 January 2008).
categories (the categories effectively targeted by the roll-out). Total fixed line access peaked in 2000 at 32%.

- **2001 – present.** The increase in access achieved over the previous period was short lived as many new subscribers were unable or refused to pay for the service, and their subscriptions were subsequently terminated. Total access dropped sharply over the period to 20% in 2007.

The decrease in fixed line termination cannot be ascribed to dynamics occurring only within previously disadvantaged demographic groups. In fact, the higher LSM and white population segments were already moving away from fixed lines by 2000. By 2007, penetration across all demographic segments had decreased. Declines in access are particularly large in the lower/middle income categories (lower LSMs), due to a combination of subscription terminations and a shift to mobile which provided cheaper access (though not calls). Affordability likely drove lower income groups – across racial and rural/urban lines – to migrate away from fixed lines and to the cheaper access alternative, mobile phones.

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**Table 1: Fixed line penetration by location, race and LSM category (selected years 1996 - 2007)**

Source: AMPS

Note: 1993 LSM weights are used.

**Mobile.** The table below shows the rapid growth in mobile penetration. As expected, the most striking growth has occurred in the lower income segments. However, in the mobile case, growth is also related to demographic group as rural/small urban, black and lower LSM segments have all experienced massive increases in access. This reflects the success of mobile technology as well as the use of prepaid contracts, which offer basic access (though not outgoing calls) at
extremely low rates without the need for credit checks. We also note that although higher income groups have higher mobile access, the differences are much lower relative to fixed line access. The periods of growth in access can be described as follows:

- **1994 – 1997.** Growth in access was steady with prepaid contracts only being introduced in November 1997.

- **1998 – 1999.** The introduction of prepaid contracts contributed to large increases in access.

- **2000 – present.** With the geographic roll-out of mobile services, coverage was extended to rural areas, while incomes grew and prepaid access costs declined through a dramatic reduction in SIM card prices. Access growth rates increased considerably.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td><strong>Total</strong></td>
<td>2.4%</td>
<td>6.8%</td>
<td>17.2%</td>
<td>24.1%</td>
<td>33.5%</td>
<td>49.4%</td>
<td>56.3%</td>
</tr>
<tr>
<td><strong>Location</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural/ Small Urban</td>
<td>0.7%</td>
<td>2.4%</td>
<td>8.8%</td>
<td>14.7%</td>
<td>23.8%</td>
<td>39.3%</td>
<td>47.0%</td>
</tr>
<tr>
<td>Urban</td>
<td>4.3%</td>
<td>11.6%</td>
<td>26.5%</td>
<td>34.6%</td>
<td>44.6%</td>
<td>60.6%</td>
<td>66.6%</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>0.2%</td>
<td>1.5%</td>
<td>9.8%</td>
<td>16.7%</td>
<td>26.3%</td>
<td>43.7%</td>
<td>51.7%</td>
</tr>
<tr>
<td>White</td>
<td>13.2%</td>
<td>31.3%</td>
<td>55.2%</td>
<td>60.2%</td>
<td>73.5%</td>
<td>80.3%</td>
<td>82.3%</td>
</tr>
<tr>
<td><strong>LSM category</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LSM (93) 1</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.2%</td>
<td>2.1%</td>
<td>3.8%</td>
<td>18.0%</td>
<td>24.5%</td>
</tr>
<tr>
<td>LSM (93) 2</td>
<td>0.0%</td>
<td>0.1%</td>
<td>1.0%</td>
<td>4.9%</td>
<td>9.7%</td>
<td>21.9%</td>
<td>26.0%</td>
</tr>
<tr>
<td>LSM (93) 3</td>
<td>0.0%</td>
<td>0.0%</td>
<td>2.2%</td>
<td>7.3%</td>
<td>13.5%</td>
<td>27.4%</td>
<td>33.5%</td>
</tr>
<tr>
<td>LSM (93) 4</td>
<td>0.0%</td>
<td>0.5%</td>
<td>5.4%</td>
<td>10.6%</td>
<td>21.5%</td>
<td>36.6%</td>
<td>43.2%</td>
</tr>
<tr>
<td>LSM (93) 5</td>
<td>0.3%</td>
<td>1.7%</td>
<td>10.5%</td>
<td>18.0%</td>
<td>28.8%</td>
<td>45.9%</td>
<td>53.3%</td>
</tr>
<tr>
<td>LSM (93) 6</td>
<td>0.8%</td>
<td>4.6%</td>
<td>21.3%</td>
<td>31.3%</td>
<td>43.6%</td>
<td>59.3%</td>
<td>66.2%</td>
</tr>
<tr>
<td>LSM (93) 7</td>
<td>9.0%</td>
<td>22.1%</td>
<td>47.0%</td>
<td>53.2%</td>
<td>66.8%</td>
<td>76.0%</td>
<td>79.1%</td>
</tr>
<tr>
<td>LSM (93) 8</td>
<td>18.2%</td>
<td>41.2%</td>
<td>61.6%</td>
<td>66.1%</td>
<td>76.8%</td>
<td>85.1%</td>
<td>86.1%</td>
</tr>
</tbody>
</table>

Table 2: Mobile penetration by location, race and LSM category (selected years 1996 - 2007)

Source: AMPS

Note: 1993 LSM weights are used.

Prepaid mobile services have made a massive contribution to a very basic aspect of access, namely physical proximity and ownership. However, prepaid mobile services are also associated with the highest prices for outgoing calls. Thus, a key aspect of affordability remains absent. However, to some extent, this has been mitigated by the roll-out of Community Service Telephones (CSTs). Both Vodacom and Cell C have exceeded their roll-out obligations and, together with MTN, now provide the discounted payphone service in over 200,000 locations.

7 The rapid penetration of the mobile operators has been driven through prepaid contracts – 83% of South African subscriptions were prepaid in 2007 (Source: annual reports of mobile operators).
2.1.2. INTERNET

Access to the internet in South Africa has grown very slowly from 5.1% in 2000 to 7.1% in 2007, as shown in the table below. This slow growth is partly due to the telephony access having occurred through mobile rather than fixed line (where dial-up internet access has been cheaper historically), and the lack of penetration of complementary computer equipment required for internet access.

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>Location</th>
<th>Race</th>
<th>LSM category</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2000</td>
<td>2001</td>
<td>2002</td>
<td>2003</td>
</tr>
<tr>
<td>Total</td>
<td>5.1%</td>
<td>4.5%</td>
<td>4.6%</td>
<td>5.9%</td>
</tr>
<tr>
<td>Rural/Small urban</td>
<td>1.3%</td>
<td>1.2%</td>
<td>1.3%</td>
<td>1.6%</td>
</tr>
<tr>
<td>Urban</td>
<td>9%</td>
<td>8%</td>
<td>8%</td>
<td>11%</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>1.5%</td>
<td>1.1%</td>
<td>1.3%</td>
<td>1.9%</td>
</tr>
<tr>
<td>White</td>
<td>23%</td>
<td>21%</td>
<td>21%</td>
<td>27%</td>
</tr>
<tr>
<td>LSM category</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LSM 1</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>LSM 2</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>LSM 3</td>
<td>0.1%</td>
<td>0.0%</td>
<td>0.1%</td>
<td>0.0%</td>
</tr>
<tr>
<td>LSM 4</td>
<td>0.1%</td>
<td>0.1%</td>
<td>0.3%</td>
<td>0.4%</td>
</tr>
<tr>
<td>LSM 5</td>
<td>1.3%</td>
<td>1.0%</td>
<td>0.8%</td>
<td>1.5%</td>
</tr>
<tr>
<td>LSM 6</td>
<td>3.9%</td>
<td>3.5%</td>
<td>3.4%</td>
<td>4.8%</td>
</tr>
<tr>
<td>LSM 7</td>
<td>16%</td>
<td>13%</td>
<td>13%</td>
<td>19%</td>
</tr>
<tr>
<td>LSM 8</td>
<td>30%</td>
<td>29%</td>
<td>29%</td>
<td>36%</td>
</tr>
</tbody>
</table>

Table 3: Internet penetration by location, race and LSM category (2000 - 2007)

Source: AMPS, Genesis calculations

Note: Data refers to the proportion of the population having accessed the internet in the previous four weeks. Access includes access at work, home, internet café, etc. 1993 LSM weights have been used.

Large disparities remain: higher LSMs, whites and urban users have far greater access than lower LSMs, blacks and rural areas. For the majority of South Africa, internet access is poor or non-existent. For those that do access the Internet, the most popular places to access the internet are home (37%), office (34%), educational institution (12%) and internet café (21%). Of those accessing the internet from home, the most common methods of access are dial-up (56%), ADSL (20%), wireless (19%) and ISDN (5%). However, the share of dial-up is decreasing while broadband connections are becoming more popular given that they offer greater speeds and mobility (for wireless connections).

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8 This number is in line with the 8% penetration for 2007 derived from World Wide Worx's figures.
9 Source: AMPS (2007). “Elsewhere” accounts for 7%. 
In terms of basic internet penetration, South Africa is ranked 7th in Africa. However, most African countries are not nearly as developed as South Africa, and so provide an unchallenging target. Perhaps more importantly, it should be noted that total internet penetration for Europe is 43%, which far exceeds South Africa’s total internet penetration of 7%. In addition, broadband penetration in the OECD was 19% in 2007, which also far exceeds Genesis’s estimate of approximately 2.6% for broadband in South Africa.

Interestingly, South Africa has experienced a rapid growth of wireless internet access (especially that of mobile 3G). However, although this does indicate a successful mobile roll-out of the new technology, it also points to the historically low speeds and high costs of ADSL in South Africa. This can be seen by noting that in international markets 3G penetration is so low, they are often not even tracked in major studies. In South Africa, wireless broadband providers appear to have taken up some of the “slack” in the market left by poor ADSL roll-out. This perspective is underlined in the next section, when South African ADSL quality and pricing is compared relative to other countries. Given that mobile is the technology of choice for much of the population, mobile-based internet is likely to be an important source of future internet connectivity for South Africa, especially through mobile handsets which obviate the need for additional computing equipment and installation.

2.2. COST

2.2.1. VOICE

A key aspect of universal service and access is not only being in physical proximity to a phone, or even owning one, but also being able to afford to use it. To consider the extent to which affordability has improved, we need to consider cost, which is also central to Government’s other main policy objective: improving cost-competitiveness. For businesses in particular, where access is not a key issue, cost is the main determinant of competitiveness. We first consider fixed lines, and then mobile phones.

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11 Source: Internet World Stats in conjunction with data from Nielsen, the ITU, NicCs and other sources (http://www.internetworldstats.com/stats.htm - accessed 28 January 2008). World internet penetration is 20%. Note the OECD itself only tracks broadband penetration.
13 2007 AMPs data indicates that 37% of internet access from home is broadband (ADSL and Wireless), thus using overall internet penetration of 7.1%, Genesis estimates a 2.6% broadband penetration.
15 While access itself is generally not an issue for business, the quality of access may be an issue (voice quality, bandwidth, etc).
**Fixed line voice costs.** Fixed line prices have been regulated through a price cap on a basket of services. This ensures that overall prices are not raised too far beyond their real 1997 level. However, price caps:

a) May allow significant price increases on individual service lines which are compensated by larger reductions in other prices included in the price cap;

b) May allow increases in the cost of a user’s actual basket of services through the introduction of a specific new service at an inflated price. The price cap allows for the reduction of the new service’s (inflated) price and the simultaneous increase in the price of other existing services in the basket, while still not exceeding the overall price cap. Thus the cost of the user’s actual basket could increase;

c) Do not ensure that the starting points are cost competitive and hence do not ensure that final prices will secure cost-competitiveness, especially relative to international peers; and

d) Do not protect against degradation of quality in specific services.

Below we show that there are indications that South Africa is not immune to these possible effects.

**Some individual prices have seen real increases.** Various individual price lines have increased by more than inflation. The following figure illustrates the trends in nominal individual price lines for an average postpaid service. National calls have reduced in price while local call charges and rentals (the bars in the figure) have increased. Fixed-to-mobile call charges have also increased (due mainly to rising interconnection charges).

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16 Telkom’s prices are regulated through a price cap imposed on a residential basket of services. The price cap was at CPI less 1.5% until 2005, but was then changed to CPI less 3.5%.

17 Specifically these services are: installation rates for postpaid residential, installations rates for postpaid non-residential, minimum charge of postpaid local calls, minimum charge of postpaid national calls, postpaid local peak calls, minimum charge of prepaid national calls, prepaid local peak calls, prepaid local off-peak calls, payphones local peak charge, payphones local off-peak charge, and payphone fixed-to-mobile off-peak calls. Source: Telkom tariff filings and Genesis workings.
Figure 3: Fixed location national, local and fixed-to-mobile postpaid peak call rates (nominal prices)
Source: Telkom tariff filings and annual reports, various years.

Tariff rebalancing programmes allow operators to adjust prices so as to remove prior cross-subsidisation. Thus prices for national calls have decreased while prices for local calls have increased. However, an alternative explanation for these price trends is that they are based on increasing prices to services over which competition is unlikely to occur. Any new competition would likely leave the local access portion of the network unchallenged, regardless of the prices charged for those services (as new entrants are blocked from entering this segment due to large economies of scale).

Key basket of services costs have also increased. The implication is that the cost of a bundle of fixed line telephony services for some users could increase. Using the OECD definition for a national PSTN basket of services, the cost of a residential basket of services for high-usage postpaid, low-usage postpaid and prepaid increased on average by 5.3%, 4.9% and 8.1% per year respectively (from 2002 to 2005). In comparison, inflation for the period averaged 5%. This shows that, in real terms, high and low-usage customers are no better off and prepaid customers – who are mostly lower income customers – may have experienced a real increase in their overall fixed line voice telephony costs. For this reason, a residential cap was introduced in South Africa in 2001.

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18 Telkom has engaged in a “tariff rebalancing” programme since 1997. Telkom argued that it cross-subsidised its local calls and rentals through very high national and international prices. Left unchanged, new entrants would be able to target the national and international segments, leaving Telkom with an unprofitable local access portion.

Cost-competitiveness remains elusive. Finally, the price cap has not secured global cost-competitiveness. Numerous independent studies have shown that South African fixed line voice prices still remain high relative to other international jurisdictions. Although operator sponsored studies often dispute these findings, it is our view that the majority of evidence suggests fixed line voice telephony remains uncompetitive on cost. In a 2005 Genesis Analytics study, South Africa’s fixed line local peak and off-peak calls were the most and fourth most expensive calls respectively, and 199% and 79% more expensive than the average price. However, this comparison considered the cost of individual services and not a basket of services. In a follow up study published in 2007, the comparison was based on a basket of fixed line services. For high-usage users, South Africa was the third most expensive of the 15 countries surveyed, ten times more expensive than the cheapest country and 47.4% more expensive than the average price. For low-usage users, South Africa does better: though it was the sixth most expensive country, it is 8% cheaper than the average price.

The distinction is based on the differences in the structure of tariff plans: international jurisdictions generally offer higher rentals and very low call costs, whereas Telkom offers more of a “per call” pricing model, the new Closer packages aside. Low-usage customers may do better in South Africa than in some other countries because they do not have to pay the relatively larger up-front costs, but as usage increases South Africa quickly becomes much more expensive. Moreover, even for the low-usage users, South Africa remains 10.5 times more expensive than the cheapest country, which indicates there is still significant room for improvement. In addition, once purchasing power parity (PPP) is taken into account—a measure which reflects the affordability of a particular local price—the low-usage South African pays 62.7% more than the average.

Mobile voice costs. MTN and Vodacom’s prices have also been subject to a cap of CPI (i.e. increases that do not exceed inflation). Tariff filings show that most call prices (nominal) for the
mobile operators’ packages increased from 1998 to 2005. While local and on-net call charges have increased at rates less than inflation, off-net call charges (calls to other mobile operators) for many packages across all three operators have increased above inflation, a real increase. These increases appear to be caused by large increases in interconnection prices charged by the mobile operators from 1999 and decisions about the structure of prices.

Overall, for high-usage customers, the latest Genesis study suggests that South Africa was the most expensive for a basket of services in the comparison group, and 106.9% more expensive than the average price. For low-usage customers, South Africa is 6.1% cheaper than the average price for the comparison group. That high-usage consumers in South Africa are relatively worse off than low-usage consumers reflects that access costs are relatively low whereas usage costs are high. However, as with fixed lines, the PPP adjusted basket is significantly (78.7%) more expensive than average, which again reflects poorly on affordability.

The structure of pricing has affected usage patterns, with many mobile customers using their phones for access and receiving calls, but not making calls. The figure below shows that the quantity of outgoing mobile calls per user has decreased steadily. This illustrates that while the cost of access to mobile services has become cheaper (cheap SIM cards and lower mobile phone prices), the cost of usage (i.e. call prices) has not. It also reflects a deepening of penetration into lower income groups that are less able to afford the higher call prices.

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*Voice costs for businesses.* The costs faced by businesses for fixed line and mobile calls have been implicitly discussed above. Business use will best be captured by the higher-end usage patterns and a bias towards national and international calls. As such, businesses tend to face the most problematic telecommunication costs relative to their international peers, as South Africa performs most poorly for higher-end users. Cost-competitiveness for business thus remains an especially significant issue.

With increasingly pervasive mobile access in South Africa, a large proportion of calls made by businesses are to mobile phones. To the extent that mobile interconnection prices are high, fixed-to-mobile calls for businesses are also high and thus voice costs for businesses remain high. To the extent that businesses make use of least cost routing, they can route calls to mobile on the mobile networks and avoid high fixed-mobile rates. However, as the interconnection rate effectively determines the floor for the on-net mobile price, this does not necessarily represent a substantially lower price.
2.2.2. **INTERNET**

The structure of fixed line and mobile pricing in South Africa has meant that local calls costs are high and thus dial-up internet access is expensive. This is in contrast to the USA model of free local calls which encouraged growth in internet access. In addition, new “always-on” technologies such as ADSL and 3G are bundled with the voice service and thus the bundle price is also relevant.

The table below illustrates the evolution of ADSL services and prices. Monthly prices have dropped sharply since the introduction of ADSL.

<table>
<thead>
<tr>
<th></th>
<th>Mar-04</th>
<th>Mar-05</th>
<th>Aug-06</th>
<th>Aug-07</th>
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<td>404</td>
<td>437</td>
<td>490</td>
</tr>
<tr>
<td>HomeDSL 192</td>
<td>-</td>
<td>270</td>
<td>Migration to DSL 384</td>
<td>Migration to DSL 384</td>
</tr>
<tr>
<td>HomeDSL 384</td>
<td>449</td>
<td>359</td>
<td>245</td>
<td>152</td>
</tr>
<tr>
<td>HomeDSL 512 / BusinessDSL 512</td>
<td>680 / 800</td>
<td>477</td>
<td>362</td>
<td>326</td>
</tr>
<tr>
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<td>-</td>
<td>680</td>
<td>516</td>
<td>Migration to DSL 4096</td>
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<tr>
<td>HomeDSL 4096 / BusinessDSL 4096</td>
<td>-</td>
<td>-</td>
<td>516</td>
<td>413</td>
</tr>
</tbody>
</table>

**Table 4: Evolution of ADSL services and monthly prices (March 2004 - August 2007)**

Source: Telkom annual reports, tariff filings

Notes: 1. DSL 384 is now referred to as “Fast ADSL”, DSL 512 is referred to as “Faster ADSL” and DSL 4096 is referred to as “Fastest ADSL”. 2. These prices represent the base Telkom costs. ISP fees would be billed on top of these costs.

However, the fact that ADSL prices have dropped does not mean they are cost competitive currently as ADSL may have been introduced at a rate significantly above cost. The following figure shows the monthly cost of subscribing to ADSL services for one year in five countries, in comparison to South Africa’s fastest service.27

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25 Includes all relevant and applicable installation, connection, and modem fees.

26 ISPs and packages used: United Kingdom – Bulldog broadband Anytime 8mbps, Hong Kong – Netvigator’s (PCCW) 24-month contract Multi-user 6mbps plan, New Zealand – Igrin’s Soho “max speed” plan, Australia – Internode’s Home-Extreme-Starter and Home-Extreme-Boost packages at 24mbps, Morocco – Maroc Telecom’s Menara ADSL Pro 4 Mega at 4mbps.

27 South Africa’s fastest service is theoretically capable of downloading 4,096 kilobits per second (4,096kbps), or 4 megabits per second (4mbps).
South African ADSL prices are significantly higher than in various destinations. Not only is South Africa more expensive for low-usage customers, but it is many multiples more expensive for high-usage customers. This is due to the practice of capping ADSL accounts, and charging for the amount of data that is downloaded. This is of particular concern for businesses who would tend to be more intensive users of ADSL than residential customers. OECD research shows that the international norm is not to have an explicit data cap at all\(^\text{28}\). It is interesting that even though Morocco is comparable to South Africa for low usage rates, they quickly become far cheaper for higher rates.

In addition, South African download speeds — the key aspect of broadband quality — are significantly slower than the comparison countries, even though they are more expensive. If these

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\(^{28}\) 64% of DSL offers surveyed by the OECD had no cap and the average cap for those that did (across all speeds and prices) was 16GB per month. Source: OECD Broadband portal (Oct 2007 data) - [www.oecd.org/sti/ict/broadband](http://www.oecd.org/sti/ict/broadband) (Accessed 13 December 2007).
speeds are taken into account when working out cost, South Africa’s “cost per unit of speed” becomes even more expensive.

### 2.2.3. **LEASED LINES**

Leased lines offer guaranteed speeds and unlimited bandwidth although they are far more expensive than ADSL and thus generally only used by business customers. They are also used for intra-firm communication, and are thus an especially important cost for businesses.

**Local leased lines.** The figure below shows that prices of leased lines (known as Diginet in South Africa) have dropped from 1997 to 2005, with a particularly sharp drop between 2002 and 2005. Thus local leased line costs have dropped significantly for business subscribers.

![Diginet prices for different distances and speeds: 1997, 2002 and 2005](image)

*Figure 6: Diginet prices for different distances and speeds: 1997, 2002 and 2005*

*Source: Telkom tariff filings, Telkom website*

These decreases are confirmed in the benchmarking studies. In 2005, South Africa was the most expensive country with prices 102% more expensive than the average price in the comparison group used by Genesis Analytics. But, in 2007, South Africa was fifth most expensive and 26.5%
more expensive than the average price. This shows some significant improvement, but cost-competitiveness remains low.

**International leased lines.** The situation is far worse for international leased line prices, however, which were as much as 31 times more expensive than the cheapest country in the comparison group used in Genesis Analytics’ 2005 study on telecommunications prices. South Africa was the most expensive and 399% more expensive than the average price. The situation has not changed in 2007 as shown in the figure below. South Africa is the second most expensive and the price is 404.7% more expensive than the average price.

![Figure 7: 2mbps international leased line monthly fee](source: Genesis Analytics)

**2.3. SUMMARY**

In summary, we note the following:

1. **Cost.** The introduction of mobile services in South Africa has lead to a significant drop in basic voice access costs (as SIM and phone prices have dropped dramatically). However usage costs (making calls) remain high, in comparison to international markets, for both

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29 Genesis Analytics, “South African Telecommunications prices – An Updated international price comparison, with regulatory recommendations”, Business Leadership South Africa, Occasional Paper No. 3, November 2007, Figure 1
fixed line and mobile services. High-usage consumers, such as business users, are at a particular disadvantage. Broadband (and dial-up) costs remain significantly more expensive than other international destinations, and once again high-usage customers such as businesses are particularly disadvantaged. Leased line costs, especially international leased lines, also appear to be charged at excessive rates. Improving cost is a central objective of Government and continues to require urgent attention.

2. **Access.** It may be argued that, with the rapid take-up of prepaid mobile services, basic access to voice telephony (the ability to receive but not necessarily make a call) has been largely solved. Customers all across the country can purchase a SIM card (and a second hand mobile phone) for very low rates, thereby solving the two dimensions of access in this basic case: physical ubiquity and affordability. However, prepaid services are also associated with the highest telephony cost for making outgoing calls (as opposed to only receiving calls). To some extent the high cost of prepaid mobile calls are mitigated by the successful roll-out of CSTs, which charge 90c per minute. Overall, critical universal access and service issues remain – notably, increasing broadband Internet penetration and securing affordable voice telephony, not just for receiving but also for making calls.
### 3. POLICY OBJECTIVES

Government has pursued many objectives throughout the review period. These can be divided into five groups: universal access, cost-competitiveness, general social (other than access), technical and institutional.

The tables below apply this split to the objectives as outlined within the three most important Acts over the period: the Telecommunications Act of 1996, the Telecommunications Amendment Act of 2001 and the Electronic Communications Act of 2006. For clarity, we highlight the main thrust of the objective and how they evolved, leaving a full quote from the legislation for the endnotes. (Note, as investment is a goal which serves both universal access and cost-competitiveness, it has been illustrated as such).

<table>
<thead>
<tr>
<th></th>
<th>Universal access</th>
<th>Cost-competitiveness</th>
<th>General Social</th>
<th>Technical</th>
<th>Institutional</th>
</tr>
</thead>
</table>
| **Telecommunications Act of 1996** | • Promotion of universal access (stated in three objectives i ii iii)  
• Promote access for disabled personsvii  
• Promote competitionv  
• Open up equipment supply marketx  
• Achieve a variety of servicesxii  
• Promote consumer interestsxiii | • Promote BEEv  
• Promote women ownershipxi  
• Encourage trainingxv  
• Encourage SMME developmentxvi |  
| **Telecommunications Amendment Act 2001** | As above  
plus  
• Bridge digital dividexiv  
• No additions | As above  
plus  
• No additions | As above  
plus  
• Promote convergencexvii |  |
| **Electronic Communications Act 2006** | Above replaced with single objective:  
• Promote universal provision of networks, services and connectivity “for all” xxii  
| As above  
plus  
• Open up telecommunication service and infrastructure marketxxxiii  
Removed:  
• Open up equipment supply market | As above  
plus  
• Promote local ownership from diverse communitiesxxxiv  
Removed:  
• Women ownership | As abovexxxv  
plus  
• Promote interconnectednessxxxvi | Two objectives:  
• Create balance of power between Minister and ICASAxxxvi  
• Harmonize all legislationxxxxvi |

Table 5: Telecommunication objectives as outlined in the Telecommunications Act, the Telecommunication Amendment Act and the Electronic Communications Act

*Source: Genesis*
3.1. KEY OBJECTIVES: COST-COMPETITIVENESS AND UNIVERSAL ACCESS

The objectives within the enabling legislation guide the key policy champions in the sector. But whereas the legislation created numerous targets, two objectives have emerged as the most critical: cost-competitiveness and universal access. Government made this clear even in the earliest stages of the review period:

“Our particular goal is to balance the provision of basic universal service in telecommunications to disadvantaged rural and urban communities with the delivery of advanced information services capable of meeting the needs of a growing South African economy” (emphasis added).

This theme has been repeated throughout the review period, from various sources.

What is cost-competitiveness? The objective of improving cost refers to attaining the “advanced information services” necessary for a growing economy. It includes both low-priced and high-quality services. Higher-priced, but better quality, services may allow a local business to achieve greater overall “cost-competitiveness” than lower-priced, but poor quality, services. (For example, a high-priced broadband service that offers very high speeds may be cheaper per unit of data transferred than a low-priced but slower broadband service). In addition, a key aspect of quality is variety, which further increases local productivity and global competitiveness. The objective of improving “cost” is thus really shorthand for improving “cost-competitiveness” and refers to the provision of a variety of high-quality, low-cost services. All three are required in order for the telecommunications sector to fulfil its role as a “facilitator” of economic growth, as recently described by President Mbeki in his 2008 State of the Nation Address.

What is universal access and service? Access goals refer to the provision of telecommunication services to South Africans who cannot physically access them or afford them. Telecommunications are seen as an essential social service, necessary not only to improve basic welfare, but also to integrate all South Africans into the “information economy.” Individuals use the sector for basic communication, to access informational resources and business services,
and to facilitate entrepreneurial activity. To ensure that all South Africans have a share in these welfare benefits, a key South African objective has been to achieve universal access and service by extending telecommunications services to previously disadvantaged communities.

There are two basic aspects to universal access/service:

a) Physical proximity/ownership. The closer a user is to a potential device the more access they have. "Universal access" generally describes that state when the entire population is "within reach" of a telephone. This culminates in ownership (individually or within the household), which is associated with the term "universal service" (i.e. when there is a phone in every home).

b) Affordability. Physical proximity or ownership of a device does not equate with meaningful economic access; for this to occur, actually using the services offered on the device must also be affordable. (Note, although ownership would reflect affordability for the rental portion, and for receiving calls, it need not reflect the cost of actually making calls).

Government has considered both these aspects of universal access. In early policy documents, affordability was emphasised. However, in practice, the actual definition of access has been more focused on physical proximity. This is partly due to the simplicity of a proximity definition (it is easy to set targets for proximity) whilst affordability is more of a subjective measure. It also reflects that there was a significant access gap in basic physical/ownership access which required closing. The original emphasis on voice telephony then moved toward Internet access, as a) mobile voice technology achieved massive penetration among rural and lower income South Africa and b) Internet access came to be viewed as an essential welfare enhancing technology, and a key bridge to the digital divide. At present, virtually all roll-out obligations are focused on providing broadband Internet access to public institutions, especially education institutions.

Role of investment. A third objective – investment – also plays a central role. However, although it has some direct payoffs (employment, trade balance) its main role in telecommunications

33 For example, the 1996 White Paper states that "the adequate attainment of universal access and service goals is largely dependent upon meeting the requirements of affordability" and "the rough aim is to install 20 telephones per 100 population by the year 2000, recognising that this in part depends on demand, which itself depends in part on affordability." White Paper on Telecommunications (1996), p 30.

34 Universal access was defined by the Minister in 1997 as living within 30 minutes travelling time (interpreted as 5 km walking distance) of a telephone, and universal service was defined as the achievement of more than 50% of economically eligible households with a telephone and service for 24 000 priority customers. USAASA, “Affordability of Telecommunications Services and the Categories of Needy People in South Africa”, February 2006.
specifically is to facilitate the achievement of the former two objectives. Investment is essential in expanding **infrastructure** and **services** which leads to

- Increased cost-competitiveness from an increased variety of services and, *if investment is driven by new entrants*, increased price and quality competition; and

- Increased access for underserviced customers and areas, *if the investment is targeted in this direction*.

For this reason, investment has been drawn in the above table as an objective falling under both cost-competitiveness and access. It is also through the prism of investment that critical trade-offs between these objectives are revealed.

### 3.2. POTENTIAL TRADE-OFF BETWEEN COST-COMPETITIVENESS AND ACCESS

As highlighted above, access has two necessary components: availability (physical proximity/ownership) and affordability (low prices). Providing availability requires infrastructure investment in areas that have been historically under-serviced. Affordability is driven by increasing competition and/or price regulation. Both are essential: available services that are not affordable are no better than affordable services that are not available.

From the perspective of affordability, there is no trade-off between access and cost-competitiveness: the more cost-competitive a sector, the greater the affordability. It is perhaps for this reason that affordability has always been at the core of the state’s vision:

> “Affordable communications for all, citizens and business alike, throughout South Africa, is at the core of its vision and is the goal of its policy.”

However, investment in access availability may constitute a trade-off with investment, or policy paths, that focus on cost-competitiveness:

- If investment is driven by allowing new entry, then competition will kick-in to drive down prices and increase quality. However competition may focus on high-end customers and areas. It is generally argued that new entrants tend to focus their offerings first on businesses in metro areas, and only then on high-end residential customers in metro areas. In turn, incumbents will seek to defend these more profitable areas and focus their investment accordingly.

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In time, entrants may expand out into lower-end metro and finally rural customers. Overall, new entrants focus on unexploited demand where competition is less fierce. For the first entrants this may mean focusing on high-income areas, but later entrants may be forced into lower income areas. For example, later entrants in the mobile sector usually target lower income or niche areas because higher income clients are locked-in (contracts, absence or difficulty of number portability) and the competition is more fierce for those segments.

There are potentially two problems with these dynamics regarding the goal of access. Firstly, investment may take considerable time to get to under-serviced areas. Secondly, there may come a point where it is simply not profitable to invest further as the targeted customers would be unable (or unwilling) to pay for the cost of the investment and associated services. Hence, there is a view that unmanaged liberalisation may not serve the objective of increasing access. Specifically, policy makers will often be concerned that investment in access availability ± as opposed to access affordability ± will suffer as a result of unrestrained entry.

This framework suggests that policy makers may determine a two-stage path toward fulfilling the access objective. Firstly, investment in availability is pursued and secondly prices are driven down to cost. Three potential interventions can be used to prioritise an investment drive to under-serviced areas in the first stage:

1. Use direct subsidisation (through a Universal Service Fund) to:
   a. Help poorer customers buy telecommunications, or
   b. Help fund investment for providers to roll-out into under-serviced areas.
2. Target under-serviced areas and customers directly through state investment; or
3. Place roll-out obligations on licensees to roll-out in under-serviced areas or customers.

Direct subsidisation can occur simultaneously with increased liberalisation. It does not involve any significant trade-off with increasing competition or with achieving cost-competitiveness. However, it usually involves other significant costs such as the cost of raising public funds, taxing licensees (with a universal service tax) and the cost and challenge of channelling funds to appropriate persons and projects. Direct state investment also need not be pursued at the expense of competition, unless Government requires protection from market forces in order to invest or if
Government wants to decrease prices itself. But state investment always entails the cost of raising public funds, and it is usually seen as less efficient than private enterprise.

Finally, roll-out obligations may require limiting competition and hence a trade-off with cost-competitiveness. It is possible to make roll-out obligations simply a licence condition and not promise any protection in return. However, where roll-out obligations are large, significant investment will be required in areas where the profitability is low and uncertain. This in turn likely requires some degree of stability. Allowing competition in such an environment might drive down prices to such an extent that the investment is even more costly than anticipated. In such circumstances, firms may simply decline to be licensed at all. So, when forcing firms to make investments they find unprofitable, their profits in other areas may have to be protected or inflated to some extent. Of course, the cost here is the sacrifice of cost-competitiveness and the danger that monopoly positions become entrenched. Moreover, in certain cases, competition may even drive investment in access availability as new entrants seek out new untapped opportunities.

Overall, though there is a potential argument to limit competition to secure access goals (through roll-out obligations), this approach should be evaluated relative to the other possible approaches.

3.3. OTHER OBJECTIVES

As shown above, Government has also pursued social, technical and institutional objectives. Fulfilling these objectives facilitates the creation of a robust and equitable sector. They do not constitute any particular trade-off with the critical goals of either universal access or cost-competitiveness. As such, they are not the focus of what follows.

36 Black Economic Empowerment has been a goal since 1996. Women ownership was specifically mentioned in 1996, but by 2006 it had been replaced by a more general ownership goal of ensuring that the sector was owned by South Africans (local ownership) form a diverse range of communities.

37 The 1996 technical objectives focused on standard issues of ensuring the sectors reliability and stability and the fulfilment of technical standards. These are basic characteristics that any national telecommunications sector should strive to achieve. By 2001, convergence had become an objective, and it was also a major motivator for the framework of the Electronic Communications Act in 2006. The ECA also saw interconnectedness become an explicit objective (though it had been pursued since 1996).

38 Though Government has pursued institutional objectives – such as strengthening the regulator – since 1996, in 2006 balancing the power between the Minister and the regulator became a specific objective, as did rationalising all associated telecommunications legislation.

4.1. **EVOLVING POLICY CONTEXT**

Prior to 1996, Telkom was a state-owned monopoly and there was no regulator. Vodacom and MTN were licensed in 1993 and launched services the following year. By the time the new Government was formed in 1994, policy makers were faced with three major challenges:

1. **Access.** A massive deficit in access from historically disadvantaged communities, based on an historical lack of investment in access infrastructure in these communities.

2. **Financial constraints.** A state telecom’s provider (“Telkom”) that required significant recapitalisation in order to make future investments, especially in extending the network to historically disadvantaged communities.

3. **Cost-competitiveness.** The need to boost GDP growth through increasing global competitiveness and local productivity and the recognition that telecommunications could play a key part in achieving this goal.

Although Government stressed the need to balance access and cost-competitiveness goals, the ensuing policy clearly revealed that the primary imperative was access. The focus on access was also driven by the premise that there was a trade-off between improving access and cost. 39

**OVERVIEW OF FINDINGS FOR THE INITIAL PERIOD**

The key findings during this period are now outlined in brief. This is followed by a detailed discussion in the sections below.

In terms of the **policy framework:**

1. Government saw a specific trade-off between increasing liberalisation (and cost-competitiveness) and securing universal access;

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39 The 1996 White Paper states: “The state’s vision for telecommunications is one that balances the provision of universal service to disadvantaged rural and urban communities with the delivery of high level services capable of meeting the needs of a growing South Africa economy. The vision must therefore reconcile these two seeming opposites within an integrating framework...” (emphasis added), White Paper on Telecommunications (1996), p 7.
2. Fixed line telephony was considered the appropriate technology to meet access goals and Telkom was accordingly identified as the “access champion”;

3. Roll-out obligations were selected as the mechanism to expand access; they were imposed on Telkom in return for exclusivity (i.e. Telkom was granted a de jure monopoly for five years); and

4. Securing cost-based prices was not seen as an explicit focus in this period (as Telkom needed to earn returns to finance their roll-out); however, policy makers attempted to prevent excessive exploitation of Telkom’s monopoly position through basic price capping.

In terms of **policy outcomes:**

**For access:**

1. Fixed line roll-out obligations failed to achieve access goals; the key problem was targeting individuals (as opposed to communities) who very often simply could not afford the service even though Telkom had made it available; and

2. Access to mobile services expanded dramatically, driven by competition between MTN and Vodacom, a rapidly increasing geographic coverage and the opening up of the lower-income consumers through price discrimination packages that avoiding cannibalising higher-end segments.

**For cost-competitiveness:**

3. Although there was no explicit strategy to drive prices toward cost, the price cap was ineffective in constraining Telkom; there were significant real price increases for some consumer groups and South Africa’s international competitive position failed to improve (and likely got worse given large price declines in overseas jurisdictions during this period); and

4. From a wholesale perspective, the mobile operators passed through rapid and dramatic increases in interconnection prices on the entry of Cell C; the regulator failed to prevent these price increases which may have stunted Cell C’s entry.
In terms of **policy lessons**:

1. Competition, absent explicit roll-out obligations, was the key driving force of increased access (through mobile technology); this indicated that the proposed trade-off between liberalisation and access was not necessarily as pronounced as previously suggested and that, with the right technology and pricing models (prepaid), private companies would in fact pursue lower income segments;

2. Government should be cautious about “picking technologies" in a fast-changing sector – though it was difficult to anticipate the success of mobile at attracting and penetrating previously underserviced areas, alternative access mechanisms which do not need to pick technology from the outset (i.e. those that allow market mechanisms to decide) may be preferable;

3. Roll-out obligations do not guarantee access and, in particular, providing availability would not be beneficial unless affordability was also ensured;

4. Price cap mechanisms are limited in their ability to constrain prices; and

5. The regulator required increased mandate and capacity to regulate wholesale segments (including interconnection prices) and thereby help facilitate new entry.

A full discussion of this period is now provided.

**4.2. POLICY FRAMEWORK**

Government saw a trade-off between cost-competitiveness and access. This trade-off was not based on any direct tension between these two variables, as the affordability aspect means that improving cost-competitiveness has a positive impact on access. Rather, the trade-off is revealed in the investment approach used to achieve objectives. The following explanation was offered:

“Liberalisation trends associated with the spread of the global information highway and the legitimate needs of South African business and urban areas for advanced services could easily combine to draw interest and resources away from the delivery of service to rural

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40 The White Paper states that the "the adequate attainment of universal access and service goals is largely dependent upon meeting the requirements of affordability." In another place, it also states: "the rough aim is to install 20 telephones per 100 population by the year 2000, recognising that this in part depends on demand, which itself depends in part on affordability." White Paper on Telecommunications (1996), p 30.
and disadvantaged areas. The potential development impact of telecommunications would be limited; the opportunity would be lost for South Africa to leapfrog traditional stages of development through the use of telecommunications to foster the application of new information technologies.\(^{41}\)

There was a concern that liberalisation would encourage investment around the high-end part of the sector only, ignoring previously disadvantaged groups and areas. The basis for this concern was outlined above (see 3.2). We also outlined three ways to deal with this problem: subsidisation, direct state investment and roll-out obligations.

### 4.2.1. ROLL-OUT OBLIGATIONS WITH EXCLUSIVITY ARE PREFERRED ACCESS SOLUTION

In the end, Government choose roll-out obligations and, as is sometimes required with this solution, the limitation of competition.

*Reasons for exclusivity in context of roll-out obligations.* There were perhaps three reasons for limiting competition given the choice of roll-out obligation, one primary, the other two secondary:

- The primary reason that the competition needed to be restricted was because the roll-out obligations were extremely onerous. Telkom would be required to add 2.69 million lines, which constituted an increase in over 50% of their existing 1997 base of around 4 million. This would end up costing around R17 billion,\(^{42}\) which is more than half of Telkom’s current annual *revenue*. It is clear that covering this cost out of future profits would require protection and some assurance of these future profit streams.

- An additional reason for limiting competition was to support the partial privatisation of Telkom that took place in 1997, which was engaged in to help recapitalise the company and ease its financial constraints.

- Finally, the exclusivity period was supposed to give Telkom an opportunity to rebalance its tariffs in anticipation of competition. The 1996 White Paper states: “...for Telkom the two central purposes of the period of exclusivity are to allow the company a grace period to roll out the network and to prepare for competition by rebalancing its tariffs.”


\(^{42}\) Genesis Analytics, “Reforming Telecommunications in South Africa – Twelve Proposals for lowering costs and improving access” South Africa Foundations Occasional Paper No. 2 October 2005
Reasons why subsidisation or state investment was not chosen. It is likely that the subsidisation or state investment approach was not taken – which theoretically can be pursued whilst simultaneously introducing competition – precisely because of the large capital commitment that was involved.

- The new Government inherited a large public deficit and it was overall state policy to get spending under control and direct spending to other social requirements.
- Subsidisation of these large investment amounts would have required a far more onerous universal service tax than the 0.5% to 1% that is common internationally (likely in excess of 10% for 5 years, given both fixed line and mobile revenue). Moreover, if subsidisation occurred exclusively out of a universal service tax – and not from Government’s budget, which was unlikely as described above – the problem of assuring Telkom’s profits would have remained as important as with roll-out obligations. After all, this approach would merely amount to taxing Telkom and then giving the money back to them to roll-out. A subsidisation approach would thus unlikely have removed the apparent need to block competition. Moreover, it would have potentially created and added burden in terms of administering the universal service/access fund.

In this light Government’s chosen approach of “exclusivity with obligations” certainly appears reasonable at the time.

4.2.2. MECHANISMS USED TO DEAL WITH COSTS OF EXCLUSIVITY

In addition, Government expressly considered the cost of their chosen approach and tried to devise solutions to limit any negative impact.43

Preventing Telkom from exploiting its monopoly position. Price caps were set up to deal with the potential danger that Telkom raised prices excessively (due to being unconstrained by competition and having private shareholding). However, given the desire to ensure profitability, the purpose of the cap was not to reduce prices down to competitive cost equivalents.

“The adequate attainment of universal access and service goals largely depends on meeting the requirements of affordability. The manner in which the cost of services is determined through tariff regulation is fundamental to the achievement of universal service.

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43 It can allow the monopoly to select high prices (even on services newly rolled-out for universal access), it reduces investment and innovation incentives in other (non-social) areas and it can potentially lock-in incumbent monopoly power, obstructing the success of the (managed or pure) liberalisation phase.
The key requirement is to create a balance between affordability and the need to expand and upgrade the network. This chapter seeks to create such a balance between affordability and tariff setting.\(^{44}\)

**Making a credible commitment to future competition.** Government also recognised the danger of Telkom entrenching its monopoly position. Government set up a mandate for the regulator to block Telkom from engaging in activities that were deemed to entrench their monopoly position. However, given that protecting their profit for the sake of roll-out obligations was considered legitimate, the White paper itself stated that this type of regulation would be difficult to implement.

“There is a danger, ironically, that the plan succeeds too well, and Telkom during the period of exclusivity is able to position itself in such a way that it can impede competitive ventures. This has indeed been the case in many other countries, where a strong incumbent operator so dominates a liberalised market that the benefits of competition are few. Thus the Regulator has the difficult task of monitoring Telkom's activities to distinguish between actions that facilitate the central goals of the sector in terms of reconstruction and development, and actions whose effect will position Telkom so powerfully as to undermine eventual competitors. This will not be easy, but must be done.”\(^{45}\)

In summary, Government aimed to address the imbalance of investment in access to the telecommunications services by privatising Telkom and placing roll-out obligations on the new entity. In return investors were assured that they would face a period of stability with which to make their return on investment. At the same time Government imposed a price cap to ensure that Telkom did not exploit their advantage too much and gave the regulator a mandate to prevent Telkom from unfairly entrenching their monopoly. After the period of exclusivity, additional licences could be granted if and when the regulator and the Minister found that this was needed. VANS and PTN licensees would also be given more rights at a date to be determined by the Minister.\(^{46}\) The overall approach was referred to as a policy of “managed liberalisation.”

### 4.2.3. THE ROLE OF MOBILE TECHNOLOGY IN THE POLICY FRAMEWORK

In the initial period, mobile technology was seen as an expensive service for high-end and business users. Its potential to achieve universal access goals was generally not recognised.

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\(^{44}\) White Paper on Telecommunications (1996), p 6

\(^{45}\) White Paper on Telecommunications (1996), p 18

\(^{46}\) These would include voice over data and resell rights. For example, the White Paper suggests resell for VANS should come about at the fourth year. However, this would be associated with roll-out obligations, in order to help alleviate taking revenue from Telkom who then may not be able to fulfil their own obligations.
Rather, fixed line technology was considered “the primary means to achieve this goal”\(^{47}\) (of universal access). Although the mobile operators were subject to specific roll-out obligations, these were extremely limited relative to Telkom. Vodacom and MTN had to roll-out 22,000 and 8,000 payphones called Community Service Telephones (CSTs). Accordingly, there was no explicit policy of exclusivity for MTN and Vodacom. However, the mobile operators were also subject to general obligations in terms of population coverage which can be classed as a general form of roll-out obligation. The regulator was to investigate the possibility of licensing new mobile operators by 1999, and the Minister would use this as input to decide on issuing new licence invitations. It is noted that the mobile operators were obligated to achieve stringent geographic and population coverage targets. Although this may not have been expressly dubbed as a universal access obligation — but rather a general investment commitment — it would turn out to have major implications for access.

4.2.4. UNIVERSAL SERVICE AGENCY AND FUND

We note that a small subsidisation approach was followed. An agency was set up to manage a Universal Service Fund, which received compulsory contributions from licensees. However, initially contributions were very low and the agency was at first focused on defining and researching universal access issues. The intention was to put an institutional framework in place to gear up for more active involvement in subsequent periods.

4.3. POLICY TOOLS

The policy process moved from the White Paper discussed above to the enactment of the Telecommunications Act in 1996, which outlined the key policy tools that would implement the policy framework. In Annexure 9.1, we outline the policy tools available to Government. In Annexure 9.2 we provide an extensive summary table detailing how the policy tools were used in this initial period and how they evolved in subsequent periods.

This section provides a summary of some of the key developments in implementing the various policy tools.

**General**

**Government ownership and investment.** Government initiated the move toward privatisation by selling a 30% state in Telkom. Critically, management control also passed to the new shareholders.

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\(^{47}\) White Paper on Telecommunications (1996), p 14
Licensing. Telkom was given a 5-year period of exclusivity. VANS were permitted to offer data services but they could not offer or self-provide infrastructure, provide voice services or resell space capacity. The Minister/Regulator elected to grant only one new mobile operator licence. A “beauty contest” was held to select the new mobile operator. After significant procedural delays and legal challenges (that reached the High Court) this process finally resulted in the award of a licence to Cell C in June 2001. Cell C launched in November 2001, coinciding with the enactment of the Telecommunication Amendment Act and the end of this initial policy period.

Access

Roll-out obligations. Telkom made significant progress towards meeting this target and fulfilled their obligations in the four years to 2000. Nevertheless, Telkom’s churn, especially on new lines in underserviced areas, began to take its toll. By 2001, the number of fixed line voice customers actually declined from the previous year (from 32% to 29%). In 2002, Telkom decided not to roll out new lines in fulfilment of its obligations, choosing instead to pay the R15 million in penalties for missing its target by 16,448 lines or 0.6%. In the next few years, fixed line subscriptions fell dramatically, and many of the new customers who had received a line as part of Telkom’s roll-out obligations had their subscriptions terminated. The mobile operators achieved both their general obligation (population coverage) and specific obligations (CST phones).

Subsidisation. Given the focus on roll-out obligations, subsidisation received only limited attention during this initial period. The Minister capped the USF at R20 million and ICASA set the universal service contribution at only 0.16% once the capped period came to an end. Operators were only scheduled to begin payments in April 1999, well into this initial policy period. The USA used what little funds were allocated to provide “access points” in the form of telecentres. The Universal Service and Access Agency of South Africa (USAASA) had set a target of establishing 60 telecentres in its first year, 100 in its second and ultimately 4,000 access points. However by the end of 2000, it had only established 65 (and currently only 116 telecentres have been established). USAASA also implemented school cyberlabs which are telecentres located in schools to provide computer and internet services. USAASA had initially rolled out 21 cyberlabs

49 These are essentially centres in under-serviced communities where people can obtain access to telephones, fax, computer services, internet and e-mail. Some centres also provide ICT training, and printing and photocopying facilities. There were a number of different types of access points: (i) multi-purpose community centre telecentres (MPCC) as part of the Government Communication and Information Services (GCIS) project, (ii) community telecentres, (iii) e-school cyberlabs, (iv) ICT telecentres and (v) community digital hubs.
50 USAASA, “Universal Service Agency Impact Document”, July 2005
51 USAASA Annual Report 2006-2007
in its 2002/2003 financial year and set a target of rolling out another 1,000 in the following three years, yet only 150 have been rolled out in schools across the country.\footnote{USAASA Annual Report 2006-2007}

**Cost-competitiveness**

**Price control.** The Telecommunications Act mandated the Minister to regulate Telkom charges. The Minister determined that fee increases would be capped at the CPI less a productivity factor of 1.5%. The maximum increase in an individual service would be 20% in real terms. In 2001, ICASA lowered the maximum price increased to 5%. Overall, Telkom did stick to its price cap, as this is a relatively easy mechanism to enforce. There was one exception, however. A regulator vacuum developed after the Minister’s price cap control period came to an end (May 2000) and before ICASA developed its own regime and had it approved by the Minister (November 2001). In this period, Telkom increased prices assuming a productivity factor of zero, as opposed to 1.5%, and also used a predicted (as opposed to actual) figure for CPI. This resulted in a tariff increase which was 2.6% higher than if the regulations were passed on time. Furthermore, once the rate regime was approved by the Minister, Telkom persisted with its new tariffs and contended that the new regulations were invalid. (Note: In the next period, ICASA took Telkom to court and the case was settled out of court in June 2002. The settlement forces Telkom to repay consumers R320 million over the following two years by imposing increases below the maximum permitted by the price cap.)

**Ex post regulation of ineffective competition.** The Telecommunications Act mandated ICASA, in very general terms, to prevent Telkom from engaging in discriminatory acts or ones that would create any “undue advantage” over a potential future competitor. Although ICASA did attempt to intervene in some disputes (e.g. AT&T), this ultimately had little enforcement effect.

**Interconnection.** Interconnection also constituted a key area where ICASA needed to provide regulation. Interconnection rates are established in freely negotiated agreements. ICASA could only provide guidelines and intervene if there was a dispute. Initially, Vodacom and MTN set a low rate to each other (around 20c) but a high rate to Telkom (around R1.20). Telkom also set a rate of around 20c, but this was likely high for a fixed line service. The fact that the mobile operators were able to discriminate against Telkom probably constitutes one of the major interconnection problems in the early years. By 2000 ICASA passed interconnection guidelines enforcing non-discrimination. From 1999 to 2001, the mobile operators steadily increased their mobile-to-mobile rate to be in line with the fixed-to-mobile rate.
4.4. POLICY IMPACT

4.4.1. IMPACT ON ACCESS

There were (eventually) sharp declines in fixed line access in conjunction with sharp increases in mobile access. As fixed line was the universal access champion, this marked an interesting event: universal access had been driven by the market, not guided by policy.

Fixed line roll-out obligations a failure. Telkom’s roll-out obligations failed to achieve the key goal of increasing access. There are perhaps three main reasons the policy failed in this case:

1. *Did not pick right technology.* Firstly, many customers choose to migrate away from fixed lines because the prepaid mobile services offered access (though not calls) at extremely low rates. Government had backed the “wrong” technology as fixed lines simply could not compete with mobile phones for the purposes of providing access to lower income and rural areas. Government cannot expect to have anticipated, in 1994-1996, that mobile technology would trump fixed lines in terms of ability to penetrate rural and lower income areas. Whilst Telkom did experiment with so-called fixed-wireless applications for residential services which have a cost structure similar to mobile (enabling lower access costs), the inability (or lack of incentive) to price discriminate this service meant that the access component remained costly to subscribers and hence it still failed (i.e. the wrong technology still constrained the pricing of the alternative technologies).

2. *Did not focus on price/affordability.* Secondly, the roll-out obligations were not associated with any social pricing obligations. Telkom did not choose to lower prices to these customers as they may have had to pass the lower prices onto their established client base. Moreover, the emphasis on tariff rebalancing would only tend to increase the cost of basic access (i.e. the cost of line rental local calls) and so decrease the likelihood that lower income users could afford the service. The Telkom roll-out failed in large part because it (almost completely) ignored “affordability,” despite the fact that this was identified as being the key component of access in the White Paper of 1996.

3. *Focused on individuals rather than communities.* The roll-out obligation related to specific numbers of residential lines i.e. access to individuals. However lower income individuals will often not be able to afford services and hence face a danger of being cut off, or if the company is forced to maintain them, for these lines to become economically unfeasible. Targeting communities with community services such as payphones means one is counting

53 Fixed-wireless is the use of wireless technologies that do not permit roaming between the footprints of different wireless transmitters.
on the collective spend of a community and not that of individuals, which is more variable than that of a community. At the same time, it may have been more effective to obligate the roll-out of core infrastructure (such as exchanges and street cabinets as well as payphones) into a greater number of areas. Then, as individuals can afford services, these can be rolled out as and when is commercially viable.

It is noted that Telkom has nevertheless expanded their fixed line infrastructure, in the form of actual lines in the ground and the building of local telecommunications exchanges. These may one day be used for the roll-out of new technology such as broadband ADSL. However, doing so would require a focus on affordability and hence far lower prices.

Successful expansion of mobile contributes significantly to access. MTN and Vodacom experienced rapid increases in penetration during this period. The contribution of mobile phones to universal access had become extremely significant. By 2001, mobiles were used by 21% of the (adult) population, within reach of the 29% that used fixed lines. In addition, the mobile operators completed their (minimal) CST obligations by 2000. The success of mobile raised the apparent superiority of using wireless technology for access goals. Fixed line technology requires rolling out individual lines to individual houses (in addition to the local exchanges used to support them). Success was therefore crucially dependent on whether those specific houses could afford them. With mobile technology, once the initial transmitter infrastructure has been established, and geographical coverage has been achieved, incremental consumers can be linked at a far lower cost. In addition, once mobile operators have an infrastructure in place, they are incentivised to draw in new (even lower revenue) customers in order to utilise capacity better. This can be done through the use of packages which price discriminate and therefore introduce new customers without cannibalising the existing base (e.g. prepaid and contract packages). A policy which focused on expanding investment (with less initial focus on affordability) may thus have worked well with mobile, but not with fixed lines. As noted above, fixed-wireless services have features similar to mobile technology and could have been a more successful rollout technology if the ability and incentive to price discriminate was available.

Subsidisation approach not a focus. As noted, the subsidisation approach was not focused on during the period (relative to roll-out obligations). The USA used what funds that did have to build access points in the form of telecentres; but roll-out was extremely low and accordingly, so was the impact on access. The project has been plagued by key problems which contributed to the low roll-out:

- The access points were set up with advanced technology that did not match the needs of the community, leading to an insufficient demand for these advanced services.
• The agency became stretched as it tried to “micro-manage” the telecentres as opposed to outsourcing administrative and operational functions.

• There was insufficient availability of infrastructure such as fixed lines and electricity in rural areas, and an under-developed roll-out plan.

• There were significant security problems in the protection of equipment from theft and vandalism.54

We note that the benefit of such telecentre access points remain compelling, especially in the context of broadband Internet roll-out where rural customers will likely require guided support in their introduction to this new technology.55 However, to achieve the potential impact, USAASA must learn from past mistakes and successes in their management of the future roll-out.

In summary, whilst the fixed line roll-out failed, and subsidisation was neither focused on nor (to the extent it was used) executed well, the mobile expansion had been extremely rapid. The mantle of “policy champion” for access seemed to have shifted from Telkom to the mobile operators.

4.4.2. IMPACT ON COST-COMPETITIVENESS

There were no significant improvements in cost-competitiveness. Although mobile technology had introduced prepaid packages with very low rental fees, these services were targeted at low-income segments, and hence did influence the broader competitive base of South African businesses. Moreover, the cost of outgoing calls on prepaid packages was the highest voice telephony cost in the sector.

Restraining the fixed line incumbent. Although Government did consider cost-competitiveness a critical objective, the policy approach was to allow Telkom to earn sufficient profits to fund the roll-out obligations. The price control and ex post mandate to prevent Telkom from entrenching their monopoly position were not intended to bring prices down to cost. Rather, they were meant

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54 USAASA Annual Report 2006-2007
55 Where telecentres were successful, they made a positive impact on the communities in which they were located by (i) creating jobs, (ii) providing access to ICT facilities and (iii) the empowerment of local SMMEs through social and economic investment, and capacity building among others. There were a number of factors that led to their success: good management, support from other organisations and Government Communication and Information Service (GCIS), and offering of new services such as producing awards and programmes, lamination, running post office and home affairs offices, among others ForgeAhead, “Achievement of the Telecommunications Act Objectives”, Final Revision February 2006 and USAASA, “Universal Service Impact Document” July 2005.
to act as upper-bound constraints on particularly excessive increases in pricing or anti-competitive behaviour.

- The relative simplicity of price cap implementation arguably ensured that this was achieved. However, this is cold-comfort for the goal of cost-competitiveness. As shown in the performance section, the ability for the price caps to create a low cost environment was limited by various factors (high starting price, ability to pass through high individual price increases and ability to “pad” the price cap by introducing new services). As described in the performance section, South African telecommunication costs remained overall uncompetitive on cost and quality relative to international peers.

- Regarding the ex post regulation mandate, it seems fair to say that this generally specified mandate had almost no impact on achieving cost-competitiveness or from ensuring that Telkom was not able to entrench its monopoly position. VANS such as Internet Solutions, Verizon and M-web became the key drivers of Internet service provision in the early 1990s. Telkom initially did not have an ISP division, but nevertheless were the exclusive providers of the telecommunications capacity on which Internet services were provided. When Telkom did enter the ISP market in 2000 they were quickly able to gain market share amid repeated claims of anti-competitive practices from the incumbent ISPs.\(^{56}\)

**Licensing delays in mobile.** Whilst mobile operators priced within their CPI-0% cap, they introduced many new packages at rates that were first determined outside of this cap. The significant delays in licensing the third mobile operator (Cell C) meant that Cell C was only able to enter the market in November 2001, at the end of this initial policy period. The welfare cost of these procedural delays are felt in the short run (market has longer time without increased competition) and the long run (incumbents have greater chance to entrench dominance and prevent successful entry). In fact, consideration of the interconnection regime suggests that the latter effect did occur.

**Interconnection.** The entry of Cell C created the first explicit need for wholesale regulation (other than the original arrangements between the mobile operators and Telkom) as the new entrant was heavily reliant on incumbent infrastructure. By 2000 ICASA passed interconnection guidelines enforcing non-discrimination.\(^{57}\) The non-discrimination principle was used as a justification for the mobile operators to bring interconnection prices for mobile operators up to the

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\(^{56}\) In 2002, ICASA upheld complaints from AT&T and Internet Solutions that Telkom was withholding access to telecommunications facilities, and thus acting uncompetitively, although the finding was legally challenged.

\(^{57}\) Moreover, ICASA had little ability to set or control prices, unless a dispute was brought. Telkom did not dispute the rate the mobiles charged, whilst Telkom’s own rates were fixed by the Minister.
price charged to Telkom.\textsuperscript{58} Unfortunately, this occurred by raising the price the mobile operators charged each other, not by reducing the price charged to Telkom. The non-discrimination principle was only included in the 2000 regulations, whereas the mobile operators started raising prices to each other in 1999. Two explanations are possible:

- The mobile operators acted on the non-discrimination principle in advance of the legislation being passed; or

- The mobile operators attempted to use interconnection charges to foreclose Cell C on its impending entry into the market. High interconnection charges mean higher off-net call prices (in order to cover the costs of interconnection), which would place Cell C at a disadvantage, making price drops less attractive and entry more difficult. This is a classic case of entry exclusion.\textsuperscript{59} Note, in the absence of a new entrant, it may be in the interest of relatively equally sized operators to set low interconnection rates in order to reduce competition in the retail market.\textsuperscript{60}

The following figure shows that the increase in interconnection prices between mobile operators was more likely due to the Minister announcing that additional mobile licences would be issued rather than the non-discrimination principle.

\textsuperscript{58} See “Vodacom (Pty) Ltd Submission in response to ICASA’s Section 4B Inquiry into Wholesale Call Termination Market Definition in Notice 78 of 2007”, GG NO. 29568 published on 29 January 2007.


\textsuperscript{60} If interconnection rates are low, so are off-net rates. This means that customers don’t perceive a large difference between the two mobile operators they will charge similar prices no matter who is called. In the initial stages of the market, where customers were choosing to sign up with MTN or Vodacom, had off-net rates been high, there may have been a strong force pushing all customers to choose the operator with the majority of customers. This may have led to a tipping point in which one operator wins the entire market. To avoid the aggressive competition that would have been used in such a fight, it suits two equal operators to avoid the tipping point scenario by setting low off-net rate, and hence low interconnection rates. We note that the mobile operators claim that their initial rate was set at an arbitrarily low rate as they believed a balanced calling pattern would maintain and hence there would be no significant net payments.
ICASA was not able to prevent these price rises. On its entry, Cell C did not raise any dispute with ICASA regarding interconnection fees and as such ICASA was unable to intervene. However, the ICASA interconnection regulations in 2000 set out that major operators (those with greater than 35% market share) should set their interconnection rates at LRIC. Only Telkom was defined as a major operator, but this has not translated into any actual LRIC obligations. As shown in the figure above, Telkom was also able to steadily increase interconnection charges post August 2001.

**4.5. POLICY LESSONS**

As discussed above, the policy framework set up by the 1996 White Paper appears relatively sound given the policy context and objectives weighting at that time. However, key lessons can now be drawn on the basis of the subsequent impact. These include:

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61 Note, Cell C has behaved as a price follower in terms of the interconnection charges, pricing their interconnection at the same rate as their incumbents. Telkom and MTN would find it difficult to justify forcing Cell C to charge a lower rate.

62 Cell C petitioned the regulator to define Vodacom and MTN as “major operators” due to their market share of over 35%, and though this was investigated in 2005, such a declaration does not appear to have occurred (http://telkom.investoreports.com/telkom_ar_2006/html/telkom_ar_2006_9.php).
• **Competition in the market can drive access.** Despite the roll-out obligations on the fixed line operator, it was the large growth in mobile services that ensured the growth in access. Through extensive geographic coverage and the ability of mobile operators to price discriminate and thus capture lower-income consumers (and not cannibalise the high end), competition in the mobile market actually drove the growth in access, rather than specific roll-out obligations. However, it could be argued that because geographic coverage was an obligation imposed on the mobile operators, this was a direct consequence of policy.

• **Roll-out obligations do not guarantee access.** Despite the extensive roll-out obligations placed on Telkom and the provision of exclusivity, the lack of affordability meant that many subscriptions had to be terminated despite the availability. It is thus critical to “get the pricing right” when using roll-out obligations. This includes permitting operators to price discriminate in order to incentivise them to target lower-income households by structuring prices so as to avoid cannibalising consumers with different usage patterns.

• **Try not to pick technologies.** Government should also be cautious about “picking technologies” in a fast changing sector – though it was difficult to anticipate the success of mobile at attracting and penetrating previously underserviced areas, alternative access mechanisms which don’t need to pick technology from the outset (i.e. allow market mechanisms to decide) may be preferable. Furthermore, where Telkom showed flexibility with respect to fixed-wireless, this also required flexibility in the approach to pricing by both Government and Telkom.

• **Price cap mechanisms are limited in their ability to constrain prices.** Despite the constraint of a price cap placed on Telkom, many prices were raised above inflation and the cost of certain consumers’ baskets of services increased above inflation.

• **Increased mandate for regulator required.** The regulator required an increased mandate and increased capacity in order to regulate wholesale segments (including interconnection prices) and thereby help facilitate new entry. Specifically, the regulations needed to level the playing field were required to be in place before entry occurred.
5. MIDDLE PERIOD: 2002 – 2005

5.1. EVOLVING POLICY CONTEXT

In the middle period, Government remained focused on the cost and access objectives. However, the policy context was evolving. Cost-competitiveness was of increasing concern and this saw Government move somewhat closer toward liberalisation as planned in the initial white paper. Government faced a decreased ability to load licensees with large roll-out obligations and the mobile market was increasingly covering the population and delivering access achievements, even in the absence of explicit obligations. This drove a shift in policy focus toward mobile technology, overall affordability (as opposed to only availability) and the use of direct subsidisation to plug infrastructure gaps where they did occur. In addition, Internet access targets became progressively important.

OVERVIEW OF FINDINGS FOR THE MIDDLE PERIOD

The key findings during this period are now outlined in brief and discussed in further detail in the sections that follow.

In terms of the policy framework:

1. Given the decreased ability to impose large roll-out obligations, Government began to use a subsidisation strategy (through USALs) to address remaining access gaps;

2. The mobile success in penetration encouraged a shift in focus to mobile technology for access goals and subsequent license grants to MTN and Vodacom were associated with significant roll-out obligations;

3. The mobile success also allowed Government to focus more on cost-competitiveness; this was pursued through introducing more fixed and mobile competition as well as stricter price controls; and

4. Government considered it necessary, however, to limit fixed line competition to only one more provider on the basis that this was necessary to encourage the second operator to build a national infrastructure in competition to Telkom (though the second operator would not face stringent access obligations).
In terms of **policy outcomes:**

*For access:*

1. The entrant subsidisation strategy (through Universal Service Access Licences (USALs)) had little impact on access due to poor entrant business models, a lack of complementary regulation on interconnection and roaming, and competition from commercial mobile services and CSTs;

2. SIM and mobile phone roll-out obligations failed due to poor regulatory execution and were rendered unnecessary due to market developments; and

3. CSTs were a relative policy success, securing increased use of actual call services through greater affordability.

*For cost-competitiveness:*

4. The retail price cap on Telkom was not tightened until very late in the period;

5. The regulator failed to effectively regulate wholesale services and interconnection leading to increased retail prices and entry barriers for the new infrastructure entrant and existing retail VANS competitors; and

6. New infrastructure competition was not introduced (until end of period) due to delays in the licensing of the SNO and late granting of rights to alternative providers (such as VOIP).

In terms of **policy lessons:**

1. Universal access projects require complimentary wholesale regulation and also need competent firms that can leverage off large scale economies and compete;

2. A failure to anticipate required administrative and regulatory steps can lead to costly delays in actually facilitating new competition;

3. The regulator required a more explicit mandate to regulate ineffective competition from an *ex ante* perspective; and

4. There was a possibility that capture in the sector had led to both licensing and regulatory delays.
5.2. POLICY FRAMEWORK

5.2.1. APPROACH TO COST-COMPETITIVENESS

The increasing concern for cost-competitiveness was associated with a surge of pressure from business. Telecoms started to play a more substantive role in operations, based on increased globalisation, the explosion of the World Wide Web, and the emergence of large outsourced and network business practices, especially Business Process Outsourcing and call centres. In addition, there was a realisation that in the previous period there may have been an over-emphasis on the pursuit of availability as opposed to affordability in pursing access goals. The trade-off between cost-competitiveness – which is directly linked to increased affordability – and access became significantly less pronounced.

THE FOCUS ON FIXED LINES

Improving cost-competitiveness implied, at the very least, reducing the prices charged by the fixed line incumbent. The single fixed line infrastructure provided the core broadband infrastructure on national and international submarine networks and it effectively determined (a large part) of mobile operators input costs as well as the costs of other new entrants into the sector. Regulating Telkom’s fixed line infrastructure was thus key to reducing both residential and business costs as well as facilitating increased competition. There was less of a concern with mobile cost-competitiveness not only because its impact on business costs was generally lower, but also because there were already three mobile operators and a hope that this would bring down prices. Partly for this reason, mobile price regulation did not change during the middle period.

Two basic approaches were pursued to improve the cost-competitiveness of the fixed line sector: stricter price controls and adding limited competition.

A MOVE TO STRICTER PRICE CONTROLS

In the short-term, the most immediate mechanism to bring down prices was through increasing the productivity measure of the price cap. ICASA would now be responsible for proposing changes, but these would still need to be approved by the Minister.
LIMITED INCREASE IN FIXED LINE COMPETITION

With Telkom’s period of exclusivity having come to an end, Government moved to open up the fixed line sector, recognising the primary role of competition in achieving cost-competitiveness. However, Government’s approach was to only license a single new entrant – dubbed the Second Network Operator (SNO) – and to provide for a three year period of exclusivity (for the duopoly of the SNO and Telkom).

When the SNO was finally licensed, it did not face any stringent or explicit universal access obligations. It is unlikely that had the SNO been licensed sooner (the SNO ended up taking three years to get licensed) Government would have sought to impose the type of stringent roll-out obligations that justified limiting competition for Telkom (see 4.1.1). As discussed, there was a recognition that new entrants already had a disadvantage relative to incumbents and so should not be overburdened with heavy roll-out obligations. Rather, the extended exclusivity was motivated by the focus on driving infrastructure competition, as opposed to only service competition. Without competition (or strict regulation) in infrastructure, wholesale prices will remain high and this will feed into higher retail prices. When the SNO was finally licensed in 2005, though they had no significant universal access obligations (only targeted ones), they did commit to covering 50% of the population within five years and 80% of the population within ten years. Although these did not amount to specific universal access obligations – as customers only had to be covered not served – it did imply investment that would reach numerous towns and cities.

Exclusivity for increased competition not increased access. There was a concern that infrastructure investment would not occur (or be as attractive) on a national level, if multiple licences were issued. It is worth emphasising that the concern here was not that entrants would fail to roll-out in very poor areas which had heretofore been deprived of access, but that they would fail to invest in sufficient infrastructure to compete with Telkom’s existing network on a national level. Instead, they would cherry pick the large metro areas, leaving other areas – even those that were reasonably profitable – for later roll-out. The logic for further exclusivity was therefore based on an idea of furthering infrastructure competition and not furthering access. Government thus elected to license only a single additional fixed line provider for the purposes of encouraging standard investment in infrastructure. At the same time, they maintained the restriction on VANS to offer voice, resell or self-provide their own fixed links. It is noted here that this logic is not necessarily coherent. First, the benefits of price competition secured in metro areas (through cherry picking) can in fact be transferred through to outer lying areas through, for example,

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63 When the policy was enacted in the Telecommunications Amendment Act of the 2001, the Telkom roll-out failure had not been revealed, as the first declines in subscription occurred in that year. This can therefore not be seen as a reason why heavy roll-out obligations would not have been selected. Rather, as above, there was an approach not to overburden new entrants.
common pricing constraints and non-discrimination obligations. Alternatively, wholesale price regulation can secure this goal in the medium-term whilst new entrants move from one market opportunity to another. This logic is examined in more detail in the policy lessons section.

**Sentech.** It is noted that an additional approach that Government pursued under “adding completion” was to license Sentech to be a carrier of carriers. They were to offer international voice and data services on a wholesale basis only. The idea was that Sentech would have been able to introduce immediate competition by providing international capacity via their existing satellite earth stations and transponder leases. Government’s decision to carve out this particular area for some limited increase in competition indicated a concern with international prices. Moreover, it constituted an ad hoc introduction of a ready-to-use, Government-controlled infrastructure to help VANS and even the future SNO. The approach did not signal any significant departure from the exclusivity that had now been granted to the du jure duopoly of Telkom and the SNO.

### 5.2.2. APPROACH TO ACCESS

**THE NEW FOCUS ON MOBILE FOR ACCESS GOALS**

Whereas fixed lines were essential to achieving cost-competitiveness, Government now recognised the role that mobile could play in extending access to rural and lower income areas. This led Government to explore ways to place universal access obligations on mobile operators, who had largely escaped them in the first period. As mobile infrastructure had largely been rolled-out, the focus was not about driving infrastructure investment per se, but rather on lowering prices to secure affordability. However, there were two constraints on the ability to do this:

- Firstly, it was recognised that Government could not (or should not) impose fresh obligations on existing licences, unless those licensees applied for new (spectrum) licence rights; and

- Secondly, there was some recognition that any new national licensee could not have substantive obligations or else they would be constrained in competing with incumbents, or not launch at all.

The first real opportunity for new roll-out obligations came with the licensing of Cell C at the end of the last period. Their CST obligations were higher than both MTN and Vodacom combined (reflecting the new emphasis on mobile technology) however the targets were still low from a universal access perspective (reflecting the need not to overburden the new entrant).
opportunity for licence obligations came with the 1800 and 3G spectrum awards to MTN and Vodacom. The licensees were both incumbents and hence the constraint of not overburdening a new entrant was relaxed. Government seized the opportunity to place what appeared to be very significant roll-out obligation (2.5 million SIM cards and 250,000 handsets each). These were not infrastructure obligations, but rather committed the operators to providing access at a low rate (reflecting the emphasis on affordability).

THE RISING IMPORTANCE OF INTERNET ACCESS

By this time (2004) policy makers began to recognise the importance of Internet access provision, and the need to bridge a growing (Internet-based) digital divide. The 2005 Neotel licence obligations did not burden the new entrant with universal-type obligations. Instead, they were targeted at specific public institutions, especially schools, for the provision of broadband Internet access. Pricing and affordability again received attention, as Government included a social pricing scheme known as an e-rate, which called for providers to offer a 50% discount in their provision of Internet access to educational institutions (this came into effect in 2005 and applied to both dial-up and broadband services).

A MOVE TOWARD SUBSIDISATION

The shrinking ability to impose universal roll-out obligations precipitated a shift toward alternative universal access mechanisms. USAASA received slightly increased funding and the Amendment Act created an under-serviced area licence (USAL) category. USALs were licensed to roll-out infrastructure and services in specific areas that suffered from extreme access problems (teledensity less than 5%). The strategy attempted to “plug the gaps” in areas where it was believed other operators simply had no incentive to invest. It is also noted that the USAL approach was designed to achieve three other “general social” objectives. USALs were to be granted 1) only to small businesses, and special consideration was to be given to 2) applicants from historically disadvantaged backgrounds and 3) to women.

5.3. POLICY TOOLS

An extensive summary table of the evolution of policy tools over the 15-year review period is provided in Annexure 9.2. Key developments for this period are highlighted below.

Licence framework. After a series of procedural delays reminiscent of the Cell C licence process, the SNO was licensed only at the end of this “middle” period, in December 2005. The Minister did not invite any applicants for a third fixed line or fourth mobile licence as had been provided for in the Act. A ministerial announcement in September 2004 finally lifted the historical
restrictions of VANS and mobile operators (to come into effect in February 2005). However, though it is clear that VANS would have the right to offer voice over data (VOIP) and resell, and that mobile operators have the right of self-provision, whether VANS have the right of self-provision is less clear as a subsequent Ministerial press statement indicated that the original announcement did not include this right.64

Roll-out obligations and social pricing. Major developments include:

- **Focus on mobile.** Cell C was required to roll-out 52,000 CSTs, far in excess of the obligations on MTN (7,500) and Vodacom (22,000). Moreover, both Vodacom and Cell C rolled-out far in excess of these obligations. As of mid-2007, Vodacom had rolled out over 95,00065 and Cell C had rolled out 110,000.

- **Still larger focus on mobile.** The 1,800Mhz licence awards obligated Vodacom and MTN to each distribute 2.5 million SIM cards and 250,000 phones each in the five years after 2004. The roll-out was also supposed to be associated with a discounted or “non-competitive” price, a sign perhaps that policy makers had internalised the lesson of the fixed line roll-out failure relative to the CST roll-out success. The move away from fixed line technology as the “universal access” champion was confirmed when the SNO was finally licensed (Neotel’s 2005 licence) with no universal access obligations for basic voice telephony, but geographic coverage requirements were maintained.

- **A turn to the Internet.** Neotel’s licence required them to provide high speed internet connectivity to 2,500 public schools or further education and training institutions and 2,500 rural public clinics. For the 3G spectrum the operators had to provide internet access to 140 institutions for people with disabilities within three years, and 5,000 schools within eight years. In addition, Government included a social pricing scheme known as an e-rate, which called for providers to offer a 50% discount in their provision of Internet access to educational institutions. The e-rate would likely apply to the 3G and broadband roll-out obligations, as well as to any other provider offering the service and, in particular, Telkom. Education institutions only had to apply to Telkom in order to gain access to this rate.

**Subsidisation.** Contributions to the Universal Service Fund remained limited, though in 2003 a slight increase from 0.16% to 0.2% was provided for by ICASA. The major focus of USAASA during this period has been the subsidisation of the USALs. Seven USALs have so far been

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64 The ECA will largely replace the VANS framework, but the status of VANS existing rights in terms of self-provision will be important in terms of which licences they are granted.

65 Vodacom Annual Report 2007
licensed and each one has signed a subsidy agreement with USAASA for a total subsidy of R15 million to be paid in equal amounts over three years. According to USAASA, two of the seven USALs have started to roll out their networks. Itel in the Eastern Cape has rolled out a regional infrastructure as well as national roaming and provides mobile, fixed line and data services. Amatole also in the Eastern Cape was planning to go live with its network by the 1st of September 2007.66

**Price caps.** In July 2005, ICASA increased the productivity factor in the Telkom price cap to 3.5% (hence the cap was CPI-3.5%).

**Ex ante regulation of ineffective competition/interconnection.** Government left the framework for the regulation of ineffective competition largely in place, with two important exceptions.

- Firstly, it was recognised that that the SNO would need fair access to Telkom’s infrastructure, and the regulator would be given the power to determine the terms of any associated agreement in the event of a dispute.

- Secondly, there was likely an increased concern regarding the high rates in interconnection agreements, and accordingly the regulator was also given more power to resolve related disputes (where they could impose – as opposed to only propose – agreement conditions).

Nevertheless, even in these specific instances, regulation remained dependent on licensees bringing disputes to the regulator. As such, the approach to ex ante regulation remained decidedly ex post in nature.

### 5.4. POLICY IMPACT

#### 5.4.1. IMPACT ON ACCESS

Below, we consider the impact on access from three different perspectives: improvements in infrastructure roll-out, improvements in the affordability of basic access (telephone, SIM Card) and improvements in the affordability of service costs (making outgoing calls). Overall, whilst there were no significant advancements in infrastructure roll-out, basic voice access became cheaper based on market forces whilst service costs remained high, with some important relief offered by CSTs. Regarding Internet access, the e-rate took time to be implemented and the impact of targeted broadband obligations remains unclear.

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5.4.1.1. INFRASTRUCTURE INVESTMENT

The ability to impose universal-type roll-out obligations during the period had decreased and mobile technology was increasing covering nearly the entire population anyway. The policy tool used to “fill the gaps” that remained were the creation of USALs and their direct subsidisation.

The failure of USALs. As it is currently understood that the other USALs (outside of the two cited above) have not started rolling out their networks and are currently resellers of GSM services under their own branding through arrangements with mobile operators. As of May 2006, USALs only secured about 17,000 customers between them and are plagued by a number of problems:

- Limited business model:
  - As the licensees are limited to under-serviced / low income areas, the potential for revenue generation is limited and they cannot share common costs across a wider base, a key mechanism for telecommunications infrastructure providers securing lower costs.67
  - As small business, USALs often lack funding and the required skills to run a telecommunications company. The potential to gain direct subsidisation from USF was not initially clear until it was specified by a later directive from the Minister (for R15m per licence).

- Hard to compete with mobile incumbents:
  - The roll-out of CSTs into under-serviced areas and mobile connection generally has made the USALs’ offering less attractive – especially as customers get national reach and mobility with the incumbent mobile operators but not USALs.

- Lack of complementary regulation:
  - Key regulatory building blocks were not in place. The costs of roaming outside USAL area (to overcome aversion to limited geographic coverage) as well as the cost of interconnection rates were particularly essential regulations for USALs. Although there was some suggestion that USALs might receive discounted roaming rates and asymmetric interconnection fees (i.e. they would pay less than they receive for

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67 Lisa Thornton Inc., “Recommendations on How the USA and other Stakeholders might assist USALs to ensure Sustainability” May 2006.
Basic USAASA functions, like mapping underserviced areas, were also performed poorly. Overall, USAASA did not have a clear strategy and so failed to receive sufficient funding. Contributions to the USF were challenged first by operators (when ICASA and the Minister set the percentage contribution) and then by treasury (when allocating the USF budget). The failure of the USALs to effectively utilise the funds that had been received further weakened the perceived efficacy of USAASA in the eyes of Treasury and Government.

5.4.1.2. AFFORDABILITY OF ACCESS EQUIPMENT

The 1,800Mhz spectrum imposed apparently significant roll-out obligations on licensees (2.5 million SIM cards and 250,000 mobile phones). However, although the roll-out was supposed to occur at a discounted rate, the details of this were never agreed to, nor were the beneficiaries of the equipment identified. Accordingly, to our knowledge the roll-out has not occurred.

At one level the focus on affordability was well conceived given that mobile geographical coverage was nearly complete (providing availability) and the key lesson of the fixed line roll-out failure was a lack of focus on affordability. However, even if regulatory execution had not been poor, rapid market dynamics would have muted any significant impact the policy may have had. Mobile competition drove prepaid SIM cards costs to virtually zero and achieved massive penetration in lower income and rural groups. It is doubtful whether the 5 million SIM cards – even if completely free – could have had a significant impact on access in this market context.

In some sense, this is a “policy failure” worth having. After all, the fundamental objective of affordable basic access for voice telephony had been (largely, if not completely) achieved. But the policy lesson here was that competition, not obligations, achieved the access goals. The implication was that the obligation was “cheap” to the operators and more could have been achieved from Government’s perspective with the spectrum allocation.

5.4.1.3. AFFORDABILITY OF SERVICES

Whilst there were massive strides in basic access (both from availability and affordability perspectives) the cost of (outgoing call) services, as well as Internet access, remained extremely high. In fact, prepaid packages which had driven the basic access success offered the highest call costs in the sector. A primary response to this was the CST obligations and the e-rate together with the broadband roll-out obligations.
The relative success of CSTs. CST obligations constitute a big policy success: they were aggressively rolled out by the operators and are keenly used by lower income groups. The pricing scheme must be seen as a primary cause of the success:

- Retail prices were capped at 90c, which is multiples lower than the average price paid by lower income users whose alternative is high-priced prepaid mobile calls. For this reason, CSTs were keenly used by this segment of the market, including consumers who already had prepaid phones. Given a large proportion of calls were to mobile phones themselves, real savings were generated (relative to both mobile-to-mobile and fixed-to-mobile calls). We understand that CSTs are particularly popular for peak periods where the savings are greatest. Locating CSTs in transport nodes also ensured greater impact.

- The low retail rate was underpinned by a low interconnection rate – namely zero at first, then 4c and finally 6c per minute for mobile interconnection. The implication of this was that part of the cost of operating CST phones was transferred to the receiving operator and not the originating operator. This reduction in costs made the exercise profitable for the originating operator who makes the decision to roll out and where to place the phones. This is especially the case for new entrants with low market share. That cross subsidisation among providers spurred a roll-out by the originating operators was somewhat of an unintended policy benefit, as Government originally did not believe that licensees would roll out more than their obligation, as reflected in the manner in which the licence condition and its enforcement framework is framed.

These facts constituted the key difference with the fixed line roll out where a) users were simply unwilling to pay to use the service, b) Telkom had no incentive to drop the price for fear of cannibalising their existing client base and c) Telkom had no particular incentive to roll-out other than on the basis of the “punishment stick” of a fine for failing to meet roll-out targets, which in the final year they accepted anyway. In addition, the roll-out was not dependent on selecting an individual that would be able to continue to afford to use the service that was offered to him (as in fixed line roll-out to homes). An appropriate pricing scheme thus appears to be an essential element of successful roll-out obligations as well as requirements to continue to provide the service (rather than just install it).

68 Consumers could use their prepaid phones to receive calls (on the basis of low access/ rental costs) but use CSTs, wherever possible, to make outgoing calls.
69 Most calls will go “off-net” and so receive the interconnection subsidisation and less of the entrant’s own customers are cannibalised as consumers switch calling from higher priced prepaid phones to CSTs.
**Targeted Internet access: e-rate and roll-out obligations.** In 2007, Telkom claimed that they provided the e-rate to 1,300 education institutions.\(^{70}\) The extent to which MTN, Vodacom and Neotel fulfilled their broadband roll-out obligations, which will also likely have to be provided with an e-rate, is unclear. Altogether, MTN, Vodacom and Neotel are obligated to roll-out to 12,500 public educational institutions (excluding clinics). Given that there are just over 25,000 public schools in South Africa\(^{71}\), this does represent a sizeable proportion of the target group.

**Summary.** Overall, the “plug the gaps” USAL subsidisation programme had failed. However, the increasing mobile geographic coverage basically covered the entire nation anyway. With this availability in place, market forces drove down prepaid access prices securing affordability, and basic universal access had thus largely been achieved. However, outgoing service prices—which also form a part of broader access goals—remained very high both for calls (from both landlines and mobiles, CST services aside) and Internet access (with some potential relief for public institutions, but not individuals). The affordability of these services had not benefited from increased competition as occurred with basic access, and they were undermined by a generally poor performance on cost-competitiveness, discussed next.

### 5.4.2. IMPACT ON COST-COMPETITIVENESS

As outlined, Government pursued a two-prong approach to improve price competitiveness: introduce a limited amount of new competition and increase regulation, especially price regulation, of the fixed line incumbent.

#### 5.4.2.1. PRICE REGULATION

Given the decision to restrict competition, price regulation became critical. In addition to retail regulation of Telkom’s voice and data (ADSL and leased line) rates, wholesale rate regulation would also become important both because it is the main determinant of retail prices and because it is necessary to facilitate entry in telecommunications.

**Retail fixed line price regulation.** In the absence of additional roll-out obligations for Telkom, the rationale for allowing Telkom to maintain higher prices had come to end. However, for most of the period, the price control did not get tighter. In July 2005, ICASA finally increased the productivity factor to 3.5% with the approval of the Minister. This does constitutes a significant improvement on the constraints faced by Telkom, but it took a long time to bring about. However, with no step wise change in prices, South African fixed line prices remain out of sync with

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\(^{71}\) http://www.southafrica.info/ess_info/sa_glance/education/education.htm
international jurisdictions where prices are dropping significantly and start from a far lower base. The general problems of the price cap approach remained unresolved and South African cost-competitiveness suffered accordingly (see cost performance in section 2.2).

**Wholesale price regulation.** Given the increasing importance of data capacity, local and international leased lines supplied on a wholesale basis to VANS would become a key determinant of business costs. Particularly acute cost problems were identified on the cost of international leased lines using the SAT-3 undersea cable, to which only Telkom could provide access. (Note, although a wholesale service “officially” only occurred after VANS gained the right to resell, the rise of VPNs and Internet Service Provision meant that ISP and VANS use of retail leased lines was effectively a wholesale service by a different name).

However, most wholesale services were excluded from the business and residential price caps. Although wholesale prices have to be below retail ones (otherwise Telkom could easily be accused of margin squeeze) there was no mechanism in place at the wholesale level to reduce the generally high costs of data capacity. There was also uncertainty regarding the legal implications of Telkom’s SAT-3 contract which gave it monopoly rights over the landing of traffic in South Africa. However, we understand that whilst ICASA felt it could challenge the contract, their preference was to wait for the new Act to resolve the issue rather than get involved in a protracted legal battle. Overall, inaction during this period caused significant costs for the sector, and in turn South Africa’s overall cost-competitiveness.

Furthermore, regulation on wholesale access to essential facilities needed to be put in place in order to level the playing field and facilitate entry when it did occur. However, ICASA failed to have such regulations in place by the time of entry. This too has resulted in significant costs to the sector as entry becomes ineffective in light of a lack of facilitating regulation.

**Wholesale price regulation of interconnection.** The need to bring down retail prices, as well as to encourage entry, also required regulating interconnection (especially for Cell C and VANS, when they got the right to employ VOIP). However, the high interconnection rates, which were passed through by the mobile providers between 1999 and 2001, continued through this period. Despite the small increase in ICASA power (to impose as opposed to only propose conditions in an interconnection dispute), no dispute was brought. In addition, neither MTN nor Vodacom were declared as major operators and hence they avoided LRIC obligations. Moreover, although Telkom was declared a major operator, LRIC obligations were not imposed despite these being

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72 Note, there are various reasons why Cell C may have been pressured not to bring a dispute to ICASA (e.g. pressure resulting from their roaming agreement with Vodacom).
established in ICASA regulation as early as 2000. Eventually, the prospect of the new Act which would introduce a new methodology for interconnection was again seen as justifying further inaction in this regard. The precise rationale for this is unclear, as any regulation established in terms of the previous Act would have maintained until transferred in the new framework.

5.4.2.2. INTRODUCING COMPETITION

Regarding the introduction of new competition there was one important policy success, one policy failure and one policy which made little difference.

Policy success of competition in mobile

Access price down to nearly zero. Perhaps the greatest improvement in cost-competitiveness was that mobile access was driven down to extremely low rates. This was based on two factors. Firstly, Government policy was to encourage competition right from the beginning (MTN versus Vodacom) and then again at the end of the last the period, with the introduction of Cell C. The new entrant in particular aggressively targeted the lower-income base with prepaid services. Secondly, market dynamics in prepaid were such that price competition was able to kick-in with only three players. Prepaid customers can switch providers and avoid being locked-in to long-term contracts. Recognising this, as well as the massive pent-up demand in the lower income segments, the mobile operators realised that to a large extent, penetrating the prepaid market would enable a provider to build a network and hence have a large part in the sectors overall flow of traffic. The mobile operators fought aggressively to achieve this, offering lower and lower prices to attract an extremely price sensitive segment.

Competition brings some relief to outgoing call costs, but ultimately hindered by interconnection rates. Overall, although Cell C may have been a key driver of lower rates in the prepaid access market (and also played a key part in terms of CSTs roll-out), they struggled to make substantial in-roads into the market in terms of gaining market share or reducing outgoing call prices. A key reason may have been the very high interconnection rates which MTN and Vodacom passed through just before Cell C’s entry. This may also have been a key reason why the new entrant did not seriously challenge the incumbents on outgoing call price.\textsuperscript{73} Cell C did introduce per second billing which resulted in some savings for users.

\textsuperscript{73} When interconnection rates are high, providers have a reduced incentive to drop prices to try gain market share. See Laffont, J.J., Rey,P. and Tirole, J., “Network Competition II: Price discrimination” Rand Journal of Economics, Vol 29, No 1, Spring 1998, pp 38-56.
**Policy failure in introducing fixed line competition**

The relative policy success of the introduction of mobile competition reflects the failure in fixed lines. The fact that the SNO was not introduced sooner has likely caused significant costs, both in terms of their ability to have introduced competition during this period, and, from a longer term perspective, the fact that it gave Telkom a greater ability to entrench their position in anticipation of the SNO’s entry.

The period of duopoly granted to the SNO became a *de facto* monopoly period for Telkom. We discuss the underlying logic of continued limits to fixed line competition in the concluding section. In any event, it is clear in retrospect that there was little benefit to forestalling expanding rights for the sake of the SNO. License delays meant that the SNO did not benefit from any protection it would have afforded them. Moreover when the restrictions on VANS and mobile operators were finally lifted in February 2005 (before the licensing of the SNO) the positive impact would be largely felt in the next period. However, two immediate impacts are noted:

1. VANS were able to offer business international VOIP services at far lower rates and this has generated significant declines in Telkom’s international call tariffs. In addition, VANS were able to utilise large economies of scale to offer national calls at prices comparable to that of a traditional local call, as the trunk part was provided through VOIP (the local call costs were then incurred as the call broke out onto Telkom’s network). However, the ability for VANS to offer competitive local calls (and still more competitive national calls) was muted by a) high prices for local, national and international leased lines which still determined their underlying costs, and b) high interconnection costs, or the refusal/obstruction by Telkom, MTN and Vodacom to sign interconnection agreements with the VANS.

2. The fact that mobile operators could now self-supply (and resell spare capacity) had no immediate impact on the market, as instead of actually doing so, the mobile operators used their new rights (and the threat of self-supply) to negotiate for better rates from Telkom. Telkom could offer these operators better rates (and maintain the business of the mobile operators) without also lowering rates to the rest of the market. They were able to discriminate on the basis of volumes which only the mobile operators could reach. This indicated that self-supply for some may mean that they can get better rates but it does not mean that this will feed through to others who have been denied those rights (i.e. the VANS whose right to self-supply is in doubt). In addition, it is not clear whether the lower costs secured by the mobile operators were passed through to their customers or simply constituted a shift in rent from Telkom to the mobile operators.
Policy neutrality of Sentech introduction

Ultimately the relative ad hoc introduction of Sentech had little effect on the price of international capacity overall. It is generally recognised that the type of satellite technology employed by Sentech is a complement to undersea cables, not a substitute. As such these services were not able to address the acute cost problems associated with SAT-3.

5.5. POLICY LESSONS

The policy framework of the first period envisioned a period of exclusivity to drive access to be followed by a period of liberalisation and the pursuit of cost-competitiveness. However there was in fact very little real departure from the initial period of exclusivity: incumbents remained effectively unconstrained to push South African telecommunication prices to amongst the highest in the world and to utilise tactics (including high interconnection and potentially also margin squeeze) to frustrate the entry of what little competition had been allowed. Overall, the second policy period constituted a major policy failure, especially in light of what was originally planned in the Telecommunications White Paper of 1996.

Some key policy lessons from this period include:

- **Complementary wholesale regulation essential to success of universal access projects.** The lower interconnection rates and prices applicable to CSTs were the largest contributor to their success, whereas the lack of lower interconnection rates and/or favourable roaming agreements for USALs significantly limited their development. The relevant wholesale regulation for any universal service project needs to be carefully considered and addressed.

- **Universal access projects need competent firms that are able to compete.** USALs were issued to small firms with few skills and limited funding, often with additional conditions attached. However, faced by competition from incumbent mobile operators, and extremely limited economies of scale, universal access policies may be more effective if awarded to more competent, larger telecommunications firms.

- **Failure to anticipate regulatory delays is costly.** Delays in both the licensing of the SNO and introducing voice competition in the form of alternative services such as VOIP enabled Telkom to entrench its position in the market. Policy that gives due regard to the likely regulatory delays involved – and hence plans necessary regulation in advance – is likely to be more effective.
• **The need to enhance the regulatory mandate.** As in the last period, it was clear that there was a need to give the regulator a more explicit mandate to regulate ineffective competition from an *ex ante* perspective.

• **It is possible that the delays were caused by capture in the sector.** Regulation of the sector and particularly the fixed line incumbent presents a conflict of interest due to the state’s ownership of the incumbent.\(^{74}\) Consistent delays in regulation during the period such as the delayed licensing of Neotel and the late approval of rights to alternative providers as well as use of the ECA as a justification for not regulating the prices of so-called major operators would suggest that a degree of regulatory capture might have been at play during the period.

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\(^{74}\) Source: Gillwald, Alison “Submission to the Department of Communication on the Draft Convergence Bill” (Notice 3382 of 2003), Wits LINK Centre, 3 February 2003
6. CURRENT PERIOD: 2006 – PRESENT

6.1. EVOLVING POLICY CONTEXT

The current policy period began as cost-competitiveness became a growing, if not urgent, concern. There was a widespread perception (shared by President Thabo Mbeki in at least two State of the Nation Addresses) that cost-competitiveness was lacking and needed to be addressed. The cost of international capacity in particular was directly impacting on Government’s attempts to attract large Business Process Outsourcing and Call Centre projects, and hence increase employment. It was clear that the policy approaches that had been advanced were insufficient to meet the task: neither the regulator nor the limited competition available were likely to bring down prices within the prevailing policy framework.

From an access perspective, there was an explicit shift in focus toward broadband infrastructure. The Internet (and similar IP-based communication networks) was now established as:

- An essential education tool (for student research and for centralised and efficient distribution of media-rich educational material as with “e-education”);

- A critical resource for business and banks to communicate and provide services to their clients;

- A potentially efficient mechanism for Government to share information with public institutions and citizens, and to receive information from them (e.g. new online tax forms and “e-health”); and

- A critical tool for gaining employment in the growing information economy.

Increasingly high-speed connections were required to fulfil these goals and provide access to sophisticated Internet applications, media-rich websites and file sharing. Dial-up, which is five to ten times slower than even the slowest broadband connection, was seen as inadequate to fulfil these goals. Broadband Internet access was therefore identified as the primary mechanism to secure Internet access for schools and Government institutions and to allow rural and lower income users to share the benefits of the new technology.
OVERVIEW OF FINDINGS FOR THE CURRENT PERIOD

The key findings during this period are now outlined in brief and discussed in further detail in the sections that follow.

In terms of the **policy framework**:

1. There was an overall shift to pursuing both access and cost-competitiveness goals through direct state investment (through SOEs);
2. State investment (through Sentech) was chosen to address broadband access and cost objectives; this perhaps reflected a constrained decision as previous policy mistakes had limited other options (i.e. the failure of subsidisation approach and price regulation policy, and the limited opportunities to impose roll-out obligations);
3. Infraco would be used to secure lower broadband prices and hence cost-competitiveness – this again appears to be a constrained decision based on past policy mistakes (i.e. the failure to introduce more effective competition as well as the failure of the regulator to bring down prices);
4. The ECA was structured to be technology-neutral and this allowed, primarily, for the entry of mobile operators into fixed lines; however, further introduction of infrastructure competition is limited by invitation of the Minister despite global trends to completely open up this space; and
5. The ECA would also finally secure a more thorough, yet demanding, regulatory mandate for the **ex ante** regulation of ineffective competition; however the state investment approach revealed (an arguably realistic) lack of confidence in this approach to address goals in the shorter term.

In terms of **policy outcomes** (although the period is not yet over):

*For access:*

1. USAASA was unable to access funds and became effectively non-operational, further reflecting the failure of the subsidisation approach thus far; and
2. Sentech made little progress in rolling out wireless broadband infrastructure in rural areas (and equally little success in attracting customers in urban areas).
For cost-competitiveness:

3. The ECA allowed MTN and Vodacom to enter fixed lines, a major policy improvement that should spark price competition for certain services;

4. However, Neotel has struggled to enter due in part to the failure of Infraco to launch and a lack of appropriate wholesale regulation;

5. While ICASA has initiated key wholesale market reviews for the purpose of implementing wholesale regulation, progress has been slow and the regulator faces potential legal challenges; and

6. The regulator appears not to be taking the legal opportunity to grant VANS full infrastructure licences in the licence conversion process (from the Telecommunications Act to the ECA framework).

In terms of policy lessons it can be seen (although the period is not yet over) that:

1. Regulatory shortcomings and previous policy failures may have forced the Government to attempt to address policy goals itself (e.g. through state investment);

2. Problems with SOEs are already evident with Sentech yet to offer significant rural broadband services and Infraco yet to provide access to Neotel;

3. Even if state investment is pursued (out of necessity at this stage), further limiting competition on the basis of needing to protect state investments (or Neotel for that matter) poses significant risks to cost-competitiveness goals and probably lacks a logical foundation;

4. The regulator needs to have enabling legislation in place before entry rather than having the process of putting regulations in place after the entrant has been licensed;

5. To boost regulatory effectiveness, it may be necessary to provide the regulator with greater information access powers in keeping with the fact that they bear the burden of proof (as opposed to the operators); and

6. To capitalise on the opportunity of the regulator to expand infrastructure rights of previous VANS suppliers, it may be necessary to provide explicit policy/ Ministerial direction in this regard.
6.2. POLICY FRAMEWORK

6.2.1. APPROACH TO ACCESS GOALS

6.2.1.1. MOBILE PENETRATION FREES GOVERNMENT TO FOCUS ACCESS INITIATIVES ON BROADBAND

Basic universal access for voice telephony secure. The unprecedented expansion of mobile penetration among lower-income and rural groups had arguably solved universal access with respect to basic voice telephony. Mobile national coverage was now almost complete, providing availability. SIM cards were virtually free, securing affordability. By 2006, voice penetration was just under 60% of the adult population. Some problems might still remain – in particular the cost of mobile phones themselves – but as second-hand phones continued to filter down into the market, it was reasonable to expect that all South Africans would soon be able to gain long-term (if not life) access to mobile networks for a nominal once-off fee. Policy intervention for basic voice access no longer seemed required.

Securing affordable calls probably required a cost-competitiveness, not access, approach. To the extent that outgoing calls remained expensive, especially for prepaid users, the rapid expansion in CSTs (over 200,000) did provide some relief. More universal access to cheaper calls (that did not require waiting in line at payphones) was probably better pursued using general cost-competitiveness approaches (e.g. price regulation or facilitating competition) rather than one of the access approaches outlined above (e.g. state investment, subsidisation and roll-out obligations and social pricing). In particular, the state could not feasibly duplicate the existing mobile infrastructure through direct state investment nor subsidise, on an ongoing basis, the outgoing calls of the entire installed base of lower-income and rural South Africa. The ability to impose roll-out and social pricing obligations on existing operators had also decreased, and any attempt to bring down prepaid package prices on a universal scale would likely amount to price regulation anyway (and require the appropriate mechanisms, such as consideration of cost, market power, etc).\(^{75}\)

\(^{75}\) To the extent that any pricing obligation did apply on a universal level (say upon granting a new spectrum licence) it is difficult to impose discounted pricing commitments for outgoing calls on a more general level (i.e. for all prepaid customers as opposed to only a specified limited number of CSTs). Unlike with equipment (SIM cards and phones) these variable services would impose a highly uncertain cost on the mobile operators, making any access commitment implausible. More generally, unlike with fixed lines, identifying who would be the recipients of any discounted product, and excluding those who did not require it (i.e. upper income customers) would be difficult given that mobile customers are not identified by location. For example, the issue of identification was in part responsible for the failed execution of the 5 million SIM cards associated with the 1,800MHz licence obligations. Finally, the incentive for beneficiaries to sell any discounted package to upper income users would be of concern.
Broadband may in future provide voice services anyway. Finally, it is noted that broadband infrastructure (both wireless and fixed line) may be able to offer cheaper voice services through VOIP technology providing competitive pressure on all voice call costs. This gave further rationale to the shift to the broadband access goal.

6.2.1.2. DIRECT STATE INVESTMENT TO SECURE THE NEW BROADBAND ACCESS GOALS

Securing universal broadband access required once again focusing on infrastructure roll-out as opposed to only affordability. As in the first period, it would appear that the policy premise was that private operators would not necessarily roll-out broadband beyond the “cherry-picked” metro areas. This is probably only a defensible premise for the short-term only. For example at present, the rollout of 3G and ADSL has been limited mainly to metro areas. However, unlike in the first period where roll-out obligations were used to solve this problem, in this period direct state investment was chosen as the preferred approach.

Rationale for state investment approach to achieve broadband access goals. To some extent, this appears to be a constrained choice decision:

- **Opportunities for roll-out obligations limited.** The ECA provides an opportunity to impose additional obligations, firstly in granting new licences and secondly in any possible extension of rights in the conversion process, as operators move from a technology-specific and service-specific licence to a technology neutral and all-encompassing service licence. However, any such obligations are likely to be small: firstly, so as not to overburden entrants and secondly, so as to maintain equality with obligations imposed on recent licence grants.76

- **Subsidisation approach not favoured.** The apparent failure of the USAASA to drive policy through the USF has distanced policy makers from using the subsidisation approach. In addition, the size of the investment required to extend broadband access to rural and lower income areas may make this approach less feasible.

The DOC and DPE thus made a decision to drive broadband access goals through state-owned Sentech.77 This reasoning would have been reinforced by the concern that any private roll-out may yield market power and high prices. Wholly-owned state enterprises, on the other hand,

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76 The Neotel and 3G licences were only associated with limited and targeted broadband roll-out obligations, and it will therefore be difficult to justify imposing anything more onerous on VANS if they are granted ECNS licences.

77 It is noted that while the goals of Infraco are more focused on securing general cost-competitiveness – discussed next – Sentech is being used to achieve rural broadband access goals, as their wireless technology is considered appropriate for rural provision.
could be forced to price close to cost. Again, this premise could only apply to the short-term and could only exist as long as ineffective regulation of these prices remained in place.

This rationale needs to be weighed up against the potential negatives of state investment, in particular Government inefficiencies, the crowding out of private investment and even blocking new entry to protect state investments. These issues are turned to in the concluding section.

6.2.2. APPROACH TO COST-COMPETITIVENESS

Three approaches are being used to improve the now critical goal of cost-competitiveness in this period:

- State investment in Infraco, to expand broadband capacity and introduce competition at the wholesale level (which will facilitate both cheaper call and data services as “broadband capacity” is used as an input to provide both);

- Introduction of competition under the new licence framework of the ECA; and

- Regulation as mandated by the ECA, especially interconnection, local loop and undersea cable regulation.

6.2.2.1. STATE INVESTMENT IN INFRACO

The failure of price regulation or new competition in securing cost-competitiveness has limited the options available to Government in the short-term. Government is now pursuing state investment through Infraco to secure the goal of cost-competitiveness. Infraco is being utilised to create an “information superhighway” to compete with Telkom’s existing fibre network. This will include a national fibre backbone (as well as metropolitan fibre loops) and potentially an undersea cable. This infrastructure will be offered on a wholesale level (at cost-based prices) to retail providers through Neotel. At the same time, Sentech will be used to offer cost-based retail wireless broadband access as discussed above.

Rationale for the Infraco approach. The infrastructure company will provide many services which are targeted at the upper end of the market, including high speed fibre network infrastructure and an undersea cable. Infraco cannot be seen primarily as fulfilling an access objective (which is rather being targeted through Sentech). The explicit goal of Infraco is to generate cost-based broadband prices across residential, business and Government sectors, as
numerous public statements and the objectives in the Infraco bill make clear.\textsuperscript{78} For example, Minister of Public Enterprises, Alec Erwin recently stated:

“This broadband capacity is so strategic to our economy that the state is intervening through the formation of Broadband Infraco. The intervention seeks to address the high cost of broadband in SA, by making infrastructure in the national backbone and international connectivity available at cost-related prices.”\textsuperscript{79}

There are two main motivations for pursing this goal through state investment as opposed to selling the Infraco infrastructure (previously owned by Eskom and Transtel) to Neotel or other providers:

- Firstly (and perhaps primarily), it is suggested that state enterprises could price closer to cost and realise a lower rate of return by virtue of their shareholders (namely Government) pursuing objectives other than profit maximisation. This includes cost-based wholesale prices for national trunk and international capacity. To some extent, this may represent disillusionment with the current price regulation process and the slow pace of competition being introduced, and the urgency with which Government wishes to address this problem. In addition, there may be some concern that if the infrastructure were to be sold directly to Neotel this would merely result in a duopoly shared by Neotel and Telkom. The market power that both providers would then enjoy may be exploited to raise prices above cost. Infraco may thus present a quick route to introduce cost-based prices to the industry in the short-term, without relying on either regulatory processes or uncertain competitive equilibriums.\textsuperscript{80}

- Secondly, Government wants to provide certainty around the availability of broadband capacity for specific projects such as the 2010 Soccer World Cup and the bid for the square kilometre array (SKA) telescope project. It is arguably uncertain that private capital will roll out in time for these specific Government goals given the current regulatory and policy framework, and such uncertainty may be intolerable given the national importance of these projects.

\textsuperscript{78} A central objective of the Broadband Infraco Bill is to reduce broadband costs in South Africa through a reduction in the Tier 1 national backbone connectivity costs. The economic model is to recover costs and ensure further investment rather than maximise profits.

\textsuperscript{79} http://www.itweb.co.za/sections/telecoms/2008/0801171036.asp?S=Legal%20View&A=LEG&O=FRGN

\textsuperscript{80} In any case, we note that if this is the basis for state investment (i.e. a concern that market structure will be uncompetitive and therefore lead to high prices) there is no strong economic reason to actually limit competition by regulatory fiat when engaging in such a state investment approach (by definition, entry into the infrastructure market will be inherently difficult and limited to a few players and there is no need to create further artificial limits). The approach also runs the risk of leading to an inefficient state run company, which ends up perversely increasing costs in the industry.
Whereas this suggests there may be a “practical” and urgent need for the state to urgently boost access and reduce costs in the short-term, it also shows that the reason Government has been forced into this situation is due to a failure of past policy and its implementation, in particular the complete failure of the second policy period. Given that there is global evidence of large-scale telecommunications investment by private companies, and there are both local and international companies who have keenly indicated their desire to invest in such infrastructure in South Africa if only they were given the legal right, the logic of using state investment may be highly questionable. Specifically, the correct policy should also be to focus Government efforts concurrently on fixing the policy and regulatory problems. If the policy tools that failed in the middle period are not corrected in the current one (especially the role of the regulator) then Government may find itself one again constrained to “do it themselves” in the next policy formation period. This issue is considered in the concluding section.

6.2.2. INTRODUCING NEW COMPETITION UNDER THE LICENCE FRAMEWORK IN THE ECA

The ECA also introduced a technology-neutral licensing framework by removing the traditional distinctions between fixed line, mobile and VANS operators. An immediate result of this approach is that it clearly allows mobile operators to expand into fixed lines and for Telkom to start offering mobile services (based on the spectrum rights they already have). This in itself has a competition-widening effect for existing infrastructure providers. In addition many existing VANS will likely receive full service licences, but this was largely already achieved when restrictions on VOIP and resell were lifted in 2005.

Whether or not more wide-scale competition is introduced will depend on key decisions taken in the current period:

- The Minister retains the right to invite new full infrastructure licensees. There are no indications at present that this will occur within the current period. Moreover, even if new licences are granted, the new framework for national infrastructure licences does not appear to resolve any of the structural features which caused the significant licensing delays of the recent past.

- The licence conversion process underway will convert existing licences under the old Telecommunications Act into the new ECA framework. This process is managed by ICASA (and not the Minister) and presents an opportunity for infrastructure rights expansion outside of inviting new licences. A critical and much debated question is whether the existing “VANS providers” will receive full infrastructure rights (individual ECNS licences). If VANS are granted these rights, this potentially prejudices Neotel, who has just paid an
extensive amount for gaining these rights. On the other hand, it would also constitute a significant opening-up of the fixed line space and VANS have argued that this is justified by certain legal interpretations of their current rights (and the ECA requirement not to decrease those rights). The policy approach to this question will be critical.

- Spectrum is still perceived to be a scarce resource. Entry into the wireless (and mobile) space will thus be dependent on the ICASA implementation of the spectrum plan submitted to the ITU, and the extent to which spare spectrum capacity is made available to new providers, in conjunction with infrastructure licences which will likely be required to use any spectrum licence. The ECA also recognises that certain new technologies may be used without causing noise interference and the ECA mandates ICASA to create licence exempt categories to encourage their uptake.

6.2.2.3. REGULATION UNDER THE ECA

The rationale to engage in regulation of incumbents with market power has continued from the last period. Both retail and wholesale prices remain high relative to other jurisdictions. Telkom continues to have a near de facto monopoly on infrastructure services facing only limited competition from Neotel and perhaps the mobile operators in terms of their recent roll-out of fibre links. Interconnection prices remain high, and Telkom’s (local loop) network requires unbundling to facilitate entry and the provision of voice and broadband services by alternative providers.

The main difference in approach relative to the last period is a greater specification of ICASA’s mandate to engage in regulation of ineffective competition (Section 67 of the ECA). ICASA now has an explicit and structured mandate to engage in ex ante regulation, including stringent cost-based price regulation (as opposed to a focus on price caps) and network unbundling. The ECA also provides a special mandate for regulating interconnection and certain facilities, especially essential facilities such as the local loop and submarine cable landing stations. The Minister has also emphasised and tried to accelerate the latter by issuing statements and directives on local loop unbundling (LLU) and the undersea cable.

6.3. POLICY TOOLS

An extensive summary table of the evolution of policy tools over the 15-year review period is provided in Annexure 9.2. Key developments for this period are highlighted below.

The licensing framework under the ECA. The ECA has removed the traditional distinctions between fixed line, mobile and VANS operators. There are now two basic licence categories, a service (ECS) and an infrastructure (ECNS) licence category. These can apply at either a local
(class licence) or national (individual licence) level. However, it remains possible for the old licensing framework to simply be translated into the language of the new one.

- **National infrastructure.** The Minister retains full control over granting individual ECNS licences.

- **National Services.** The service space is effectively open already (with the VANS having the right to provide voice over data and resell capacity) and hence ICASA’s ability to grant individual ECS licences is of doubtful significance.

- **Municipality infrastructure and services.** There is likely to be some increased liberalisation at a local level. The extent to which this is beneficial will be determined by the ease with which providers can register for class (infrastructure) licences and the extent to which applicants can secure many class licences in many areas. The geographic limitations of these licences reduce the economies of scale and thus a provider holding a licence for just one specific area is less likely to be able to compete with national infrastructure holders.

- **Spectrum.** Mobile operators will still require a separate spectrum licence as will wireless broadband providers. The extent to which entry occurs in these areas depends on the allocation of rights by ICASA within the ITU-approved spectrum plan.

**Roll-out obligations.** There have been no new additions to roll-out obligations in this period. However, the targeted broadband obligations of Neotel, MTN and Vodacom (for roll-out to education and other Government institutions) remain in place. The extent to which they have been fulfilled at present is unclear.

**Subsidisation.** USAASA has not engaged in any significant new activity in the current period. Although there appears to be some attempts to bolster USAASA, contribution rates remain low and USAASA still does not access the majority of funds raised. Currently, operators are only obligated to provide 0.2% of their revenue to the USAF. This is surprising given that internationally, contribution rates are routinely above 1% despite having far lower access deficits.81 In addition, the Minister and Parliament have also elected not to make available to USAASA the full amount of funds that were raised through the limited contributions.82

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82 For example, of the R151 million in contributions ICASA received from operators in the 2006/2007 financial year, only R31 million has been given to USAASA. In total, of the R456m collected for the fund, the agency had received just R195m (Business Day, 5 December 2007, p13).
Regulation of ineffective competition, including price regulation, interconnection regulation and unbundling under the ECA. The ECA creates an explicit and detailed mandate for dealing with ineffective competition. Critically, a full *ex ante* approach has been developed, and this represents a significant break with the past. In keeping with international best practice, ICASA must define competition markets, identify operators with SMP, determine if the market is ineffectively competitive and regulate *ex ante* in anticipation of any potential abuse that might occur. ICASA also has the mandate to regulate *ex post* in response to disputes about possible anti-competitive actions (s67(1)). However, regulations need to be put in place by ICASA before *ex post* competition regulation can be managed. Until then, the Competition Authorities whose jurisdiction is being questioned by some of the major operators remain the only avenue for such complaints. Regulation can range from obligations to provide access, not to discriminate, to offer transparent pricing and finally to create explicit price controls ranging from price caps, to retail-minus, to explicit cost-based pricing using LRIC and FAC, which rely on cost of account analysis.

**Government ownership and investment.** The positioning of Infraco and Sentech signal a return to a state investment approach. Infraco is being used to build an “information superhighway”, including a national fibre backbone and potentially an undersea cable. This infrastructure will be supplied on a wholesale level to retail providers (and initially it appears, exclusively to Neotel). Sentech will focus on providing wireless broadband connectivity, especially in rural areas. Further details surrounding the funding and operational strategy of Infraco and Sentech remain unclear at present (aside for funding of digital migration for Sentech).

### 6.4. POLICY IMPACT

#### 6.4.1. IMPACT ON ACCESS

**6.4.1.1. DIRECT SUBSIDISATION**

USAASA has gone through a process of strategy development and has made new CEO appointments (plus board members). However, they are still unable to access the funds held by Treasury, in large part due to a failure to submit a well developed business plan. At present, USAASA is effectively a non-operational advisory body to Government. In addition, USALs appear largely abandoned and also no longer play an important role in the universal access policy of Government. This potential policy tool is therefore not being used still and there appears no plan in place to revive it. This severely limits the policy options open to Government both now and in the future.

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83 Business Day, 5 December 2007, p 13
6.4.1.2. ACCESS INFRASTRUCTURE

Although Sentech has been tasked with the rural broadband roll-out, we are not aware that any progress has been made in this regard. It is noted that Sentech has also been tasked with the urgent digital migration of television which requires management focus and resources.

**Pricing schemes and product plans.** Overall, it is not clear that a strategy has been developed which maps out a pricing plan (that will be acceptable and affordable to target markets) and the extent to which that implies Sentech will make a profit or run at a loss in order to achieve access goals. It is also not clear whether Sentech will target institutions where guidance, education and infrastructure (computer) equipment will be provided, or whether it will target individuals. Generating significant demand from the latter seems unfeasible in rural areas (given the potential lack of computer equipment and skills). In this case, it may be that Government intends to offer VOIP services as an initial entry strategy.

Overall, it is not yet apparent that the decision to position Sentech as the broadband access champion will in fact speed up rural and lower-income access to these services.

**Caveat on picking technologies.** Government’s positioning of Sentech as the wireless broadband access “champion” seems again to “pick a technology.” In particular, 3G is likely considered overly expensive for the purpose of broadband roll-out, but this was the same view that was held regarding mobile voice services in the beginning of the initial policy period. Furthermore, consumers already largely have access to mobile devices and so it may solve the other problem of broadband roll-out, namely getting consumer equipment in place and affordable. There also seems to be less focus on encouraging new spectrum technologies – for example, those that do not cause interference to other spectrum users – to meet rural broadband access goals. Moreover, the nature of competition is that market participants will experiment with many different technologies and thus the right technology would be determined by success in the market rather than its being pre-selected. As with mobile voice, the market may be better suited to pick the right technology.

6.4.2. IMPACT ON PRICE COMPETITIVENESS

6.4.2.1. NEW COMPETITION FROM STATE AND PRIVATE COMPANIES

**Mobile operator entry in fixed lines.** An immediate effect of the ECA is to facilitate entry by MTN and Vodacom into fixed line services. This is significant as both these firms already have large networks and cash flows. They will also be able to leverage key network externalities in
order to target the fixed line market (including a common backbone infrastructure input and interconnecting calls between mobile phones and fixed lines). In the short-term, retail fixed line voice services are unlikely given the need to build fixed local loop and the fact that the Telkom local loop is as yet unbundled.

However, mobile operators have indicated their intention to build a national fibre backbone in order to carry their huge voice (and increasingly data) traffic between their mobile base stations and switching centres (which require metro links, and national links between metro areas and also between metro and rural areas). They have already engaged in some initial roll-out in this regard. It is possible that some of this capacity may be resold to service providers (the existing VANS) in order to provide data and VOIP services. Alternatively, the mobile operators might utilise the capacity to offer their own data and VOIP services, through their data service divisions. MTN Network Solutions (the MTN VANS division) has already advertised in Sandton and Rosebank that they will soon offer fibre services to business users. However, at present, any uptake that has occurred is limited and it is far too soon to conclude that they will be able to seriously challenge the fixed line incumbent.

**Neotel struggles to enter.** Neotel officially launched services in mid-2006 (a policy overhang from the last period). Their actual roll-out reveals the limited impact on the market of the new entrant. The following are likely contributing factors:

- Neotel has not yet been given access to the Infraco infrastructure and this has increased the challenge of launching successfully. Neotel infrastructure will also be provided exclusively to Neotel for a 4-year period. It is possible that unless Neotel faces some obligation to pass through the cost-based price they pay to Infraco into cost-based retail prices, they will not do so. Instead they may seek to price at the profit maximising duopoly level with Telkom. This would forestall the benefit of state ownership until after the Neotel exclusivity period has come to an end, and Government can sell to multiple providers.

- Wholesale regulation is critical to facilitate entry in telecommunication markets. Although Neotel has the right to use Telkom infrastructure, the manner in which this occurs, as well as the price, will require detailed wholesale regulations, which are yet to be passed in South Africa. In particular, current high interconnection rates favour the larger network and there has been little progress in developing local loop unbundling regulations, or for regulation further downstream (such as with wholesale ADSL origination and conveyance products). Finally, although Neotel does have their own shareholding in the SAT-3/SAFE

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84 Infraco is yet to be licensed. President Mbeki stated in his 2008 State of the Nation Address: "Accordingly, we will this year complete the licensing and operationalisation of InfraCo."
cable (through their strategic equity partner, VSNL), they currently lease capacity from Telkom as they are restricted by:

- Access to the landing station – although landing stations have been declared an essential facility, no regulations have been published in this regard, and

- Commercial restrictions on using or building their own landing station – it is possible that the private SAT-3 shareholder agreements give exclusive rights to Telkom to land traffic in South Africa; though the Minister has indicated that such terms would be declared null and void on 1 November 2007, much uncertainty remains.\(^{85}\)

**VANS may yet be excluded.** The VANS have not self-provided any fixed links due to uncertainty surrounding the Minister’s statements. This means that major VANS who might otherwise build these links (on the back of their heavy data traffic) cannot do so. Of critical importance at present is the transfer of licences from the old to the new framework. ICASA’s current “conversion matrix” specifies that VANS will *not* in fact receive such licences, but many will receive full service licences. The approach will likely be contested by the VANS, who may even take legal action on the claim that the previous Ministerial directives gave them the right to self-provision and the ECA specified that rights cannot decrease in conversion. ICASA has indicated that though at present VANS will receive service licences, they may in future invite applications for infrastructure licences. The eventual outcome in this space is unclear.

**SOE projects stall, and perhaps create incentives to deter entry.** Notwithstanding the potentially valid arguments for forming Infraco and Sentech (as outlined above), the SOEs appear to have been significantly delayed. It is possible, although not certain, that had infrastructure been sold to Neotel, they would have employed it sooner.

In addition, it is noted that Government investment in Infraco and Sentech might incentivise it to protect the profitability of the SOEs. This has key implications:

- It may reduce the likelihood of VANS getting increased infrastructure rights.

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\(^{85}\) For example, Neotel stated in November 2007 regarding the Minister directive to declare exclusivity agreements null and void: “The legal impact of the Minister’s other statements about the SAT-3/SAFE agreement is more difficult to gauge. However, Neotel will continue to leverage the position of VSNL, our strategic equity partner, which owns and operates multiple international submarine cables, and is a significant shareholder in SAT-3/SAFE, to enable us to deliver competitive international bandwidth to the South African market,” as quoted in a press article [http://mybroadband.co.za/news/Telecoms/146.html](http://mybroadband.co.za/news/Telecoms/146.html).
• There has been some suggestion that Government may seek to prevent competing submarine cables from landing in South Africa, including the Seacom cable (which involves Neotel).

• Granting spectrum rights to SOEs may crowd out private investors from scarce spectrum, or encourage policy which does not release spectrum even when it is available. In addition, it may encourage policy that does not create licence exempt categories for new technologies which do not cause interference on the spectrum. This is worrying given the poor track record of Sentech in delivering quality telecommunications services. The net result may be an inferior and expensive service which delays real delivery for years and may ultimately be protected from competition as has occurred in the recent past.

6.4.2.2. REGULATION

ICASA progresses slowly through market reviews. Although the ECA created an explicit mandate for more meaningful regulation, it has simultaneously created significant hurdles for actual implementation to take place. ICASA must define competition markets, identify operators with SMP, determine if the market is ineffectively competitive and regulate ex ante in anticipation of any potential abuse that might occur. ICASA has already engaged in numerous “market reviews” including interconnection and various wholesale markets, including the local loop, leased lines and submarine cables. ICASA proposals, so far, are in line with international best practice and seek to apply stringent cost-based prices to a host of Telkom services, as well as interconnection services of the mobile operators. The reviews do indicate an increased commitment to impose stringent regulation, in keeping with international best practice.

ICASA has burden of proof, but no easy access to information. However, the ICASA proposals are still some way off from actually being gazetted as formal regulations, and then being applied. The affected operators have lodged intensive criticism of ICASA market reviews, on legal, procedural and economic grounds. These criticisms are expected as the proposed regulations contain far reaching proposals to dislodge incumbent market power. However, ICASA has been involved in these processes for a period approaching two years, still without practical result. There is the ever present danger that if ICASA simply pushed ahead without clearing all the hurdles (e.g. administrative, legal and economic, including the justification for market definition, SMP designation, a finding on ineffective competition and remedial intervention) the result would be challenged in court. A major part of the problem is that ICASA has the onus of justifying their findings, whilst their access to the data of licensees remains restricted.
ICASA may publish further findings shortly, and potentially even regulations. Experience overseas suggests that even leading operators take significant time to implement these types of regulation and they often face legal challenges. However, the current ICASA process is probably pushing the bounds of these time periods. If ICASA were to fail to publish regulations within the next six months, it would indicate a potentially serious problem.

**A shortcut to interconnection and facilities leasing regulation.** As the above processes have not reached conclusion, interconnection rates remain high and the local loop and international landing station have not yet been unbundled and offered at cost. Nevertheless, in these specific cases, there is a potential shortcut:

- The *draft* interconnection regulations of 2007 hold that if a provider is shown to have SMP then the regulator can automatically enforce the provision of interconnection at prices matching long run average incremental costs. Given the *relatively* easier economic and legal case for a finding on SMP, if the draft interconnection regulations of 2007 are enacted, ICASA would have significantly greater power to regulate prices (without needing to investigate the effectiveness of competition or explicitly argue for a particular type of remedy, as the regulation would automatically impose one). But the operators may yet challenge these draft regulations and the shortcut it represents.

- A similar shortcut will likely exist for the regulation of essential facilities such as the local loop and landing station of the undersea cable, if the draft regulations are passed. This approach would be more difficult to challenge as these facilities are explicitly listed as “essential facilities” in the ECA and moreover the Minister has recently moved to instruct ICASA to declare them as such. However, it appears that two processes are currently underway in ICASA in terms of these regulations: firstly, those that are being pursued under Section 67 as described above and secondly, those being pursued in response to the Minister’s directive and essential facilities regulation. It is noted that the LLU special committee anticipated that it would take four years to actually implement local loop unbundling. As yet, even the regulations have not yet been passed.

**Jurisdictional disputes over ex post regulation.** A further aspect to effective regulation is the effective policing of anti-competitive behaviour by incumbent operators against smaller new entrants. Currently there is a jurisdictional dispute between ICASA and the Competition Authorities that has been exploited by some incumbents. At the very least it has created sufficient uncertainty in order to make *ex post* regulation ineffective at the moment.
Summary. Overall, whilst the regulator has embarked on various regulatory routes, and this might eventually have dramatic effects on South Africa’s cost-competitiveness, the ECA processes may create serious obstacles to implementing certain regulation that could have been implemented under a less explicit but less burdensome mandate.

6.5. INITIAL POLICY LESSONS

Key policy lessons from this period are:

- **Past policy failures limit Government policy options.** Government appears somewhat constrained into taking a state investment approach, given the failures of other approaches (subsidisation, price regulation, the introduction of effective competition and the inability to impose roll-out obligations). Aside from the logic of now pursuing state investment, this “predicament” highlights the need to improve the policy tool architecture (in particular, the regulator ICASA and USAASA) to ensure that Government has more feasible options in the next policy period.

- **Problems with SOEs already evident.** Sentech has yet to offer significant rural broadband services and Infraco has not yet provided access to Neotel placing them at a significant disadvantage, two years after their own launch. These indicate that SOEs are not necessarily the best solution to even this short-term problem.

- **Danger of limiting competition because of state investment.** There appears to be significant interest in telecommunications infrastructure investment by private investors. There is a danger that policy makers will seek to protect state investment by limiting entry into the sector. The logic of this approach is considered in the following section.

- **Regulator needs to have enabling regulations in place before entry.** The entrants require a levelling of the playing field upon entry and it is totally inadequate to have the process of putting in place such regulations only once an entrant has been licensed. Rather, these should be in place before entry so that entry is effective.

- **Regulator should be given greater access to information.** Although the ECA provides for the more effective and wider regulation of the sector, ICASA must now carry a higher burden of proof. Suitable investigative powers are then required to meet this burden, especially with regards access to information of operators. Giving these powers to ICASA will be an important step toward their empowerment.
• Minister should provide direction regarding infrastructure competition by VANS. ICASA is currently transferring licences from the old Act to the new framework. The current transfer scheme does not grant VANS full ECNS infrastructure licences. If South Africa is to grasp this opportunity to expand rights and increase competition, a policy directive from the Minister may be required.
7. POLICY LESSONS

This section outlines some of the policy lessons that have emerged from the 15-year review of telecommunications. We highlight only the large themes and not smaller lessons emerging from individual periods. In addition, it is important to stress that these lessons may not have applicability beyond the telecommunications sector.

7.1. NO NEED TO LIMIT COMPETITION FOR ACCESS – A LESSON FROM THE FIRST PERIOD

In the beginning of this review, we raised the issue of a classic cost-access trade-off. Enhanced competition and liberalisation may secure lower prices in the short run, but resources might focus on upper-income areas, and lower-income and rural areas may have to wait a considerable time to be targeted, or risk not being targeted at all. It was noted that such a trade-off, if it does exist, only occurs with the availability aspect of access, not the affordability aspect. The latter is generally directly and positively linked with increased cost-competitiveness. Furthermore, such reasoning only suggests that the application of investment to profitable lower-income communities would not take place immediately, rather than not take place at all. It is only investment in unprofitable segments of the market that would not take place at all, but this could as easily be addressed by universal service subsidies (to consumers or companies) in conjunction with competition.

Regarding availability and the investment needed to create it, Government initially believed that it was necessary to limit competition to provide stability for private investment (that would not ordinarily be made from a profit maximising perspective). With very large investment commitments, future revenue streams must be relatively stable to determine the actual cost of such social investment and hence the true value of the licence. The rationale for limiting competition in the first period was thus revealed.

Although this reasoning seemed theoretically sound at the time, subsequent market developments have shown that it was empirically unwarranted. Universal access to basic voice services (i.e. the ability to receive calls) has in fact been secured by mobile operators pursuing profit and engaging in an unprecedented roll-out of prepaid mobile phones into lower income and rural areas. At the same time, Government's attempts to drive access through policy interventions have repeatedly fallen short of their marks. The original fixed line roll-out obligations, the SIM and
mobile phone obligations and the attempts at direct subsidisation through the USALs, all stand out as cases in point.\footnote{Although greater success has occurred with CSTs, and the jury is still out on the various Internet obligations recently placed on Neotel and the mobile operators (for 3G licences), all these obligations are essentially “community” or “institution” based – they are not attempts to drive a universal access goal across millions of individuals. We discuss the potential lessons from CSTs below.}

The mobile operators had the right technology for the job: once national coverage is secured, operators can add incremental customers at virtually no cost and thereby help utilise spare capacity on the network. The ability to price-discriminate and launch prepaid pricing plans enabled the operators to target the lower income segments without cannibalising the high revenues from their contract customers. But the \textbf{competition} between MTN and Vodacom, as well as Cell C’s \textbf{entry} which saw them target the lower income market, were critical in unlocking the technology’s potential and providing the majority of South Africans with basic voice access.

It is also not apparent that all entrants will only target high-income metro markets. Specifically, if entry is unrestricted, then whilst some entrepreneurs will target the more profitable high-income metro areas, other entrants will pursue profitable opportunities in other markets including lower-income and rural areas. This is already happening (albeit in a legal vacuum) with smaller entrepreneurs offering niche services to schools or small communities (the Knysna municipality offers its own telecoms services to residents). Specifically, it is only if entry is severely restricted that the select new entrants may focus on the most profitable segments first in their capital expansion plans. As soon as entry is unrestricted this result falls away.

\textbf{This should challenge the perhaps dated notion that a trade-off exists between driving access and driving cost-competitiveness through liberalisation, at the very least for profitable lower-income areas.}

Regarding voice services going forward, the main “access deficit” is now based on affordability (in terms of making calls), whereas availability has essentially been secured through the national coverage of the mobile networks. Given that affordability and cost-competitiveness are directly linked, it would appear that the rationale for limiting competition on the basis of driving voice access has now been removed.
7.2. NO NEED TO LIMIT COMPETITION FOR LATER ENTRANTS – A LESSON FROM THE MIDDLE PERIOD

In the middle period Government again decided to limit competition. This time it was in order to facilitate the entry of the SNO. No further licences were to be granted for a period of three years between May 2002 and May 2005, and VANS provider restrictions were not lifted until February 2005.

Neotel did not face any significant “universal access” roll-out obligations when they were finally licensed and it is unlikely that, as a new entrant, they would have been so burdened even if they had been licensed sooner. The extension of exclusivity appears to be based on a more general infrastructure concern. This was not that infrastructure would not be rolled out to needy and underserviced areas, but that absent protection, new operators would fail to invest in sufficient infrastructure to compete with Telkom’s existing network on a national level. Instead, they might cherry pick the large metro areas, leaving other areas – even those that were reasonably profitable – for later roll-out. The introduction of competition might fail to bring the benefits of infrastructure competition – lower prices – to outlier areas unless providers were committed to going there and, as a reward, protected from competition. In the first period limiting competition was based on access goals. The middle period was about limiting further competition in order to protect new entrants.

But critically Telkom had already rolled out infrastructure to the majority if not all the places the new entrant would likely need to invest in order to fulfil their coverage obligations. Given this, a policy of limiting fixed line competition in the middle period – or going forward – seems to lack foundation:

1. Firstly, even if it takes time for competition to reach outlying areas, the urgency to do so quickly is removed given that Telkom would already be serving those areas by providing availability.

2. Secondly, on the assumption that these areas are in fact profitable (and do not form part of a universal access objective) these areas will be targeted, with perhaps only cash flow constraints influencing the timing. This is true even in the short-term if entry is completely unrestricted which allows a range of entrepreneurs to enter the market and target different niches.

87 Though the Neotel obligations did not amount to universal access obligations they did imply investment that would reach numerous towns and cities.
3. Thirdly, even if competition only focused on the metro areas, it is relatively straightforward to guarantee that any price pressure felt by the incumbent in those areas can filter through to “non-competitive” areas. This can occur through common pricing constraints or by imposing non-discrimination obligations on the incumbent’s retail services. In this case, it may make even more sense to concentrate competitive attacks on the metro areas, as this is where the greatest declines in price will likely occur and then filter through to the rest of the country.

4. Finally, in overseas jurisdictions, new entrants like Neotel are given access to the incumbents local loop infrastructure and this removes the need for them to actually roll-out at the local loop level. It is furthermore not clear whether it is ever necessary for entrants to duplicate the incumbent’s local loop because doing so may simply be economically inefficient given the ability to use local loop unbundling (LLU). Government and the regulator are trying to implement LLU. This approach removes the significant investment requirements that a telecommunications operator would incur if they were to make Greenfield investment at the local level. Investments at the trunk level can be supported by providing traffic for a host of different customers in different destinations and so there is no need to build up a customer base within specific destinations (a difficult task). Accordingly, the need to provide a protected environment for entrant investment is significantly reduced.

Overall then, there appears to be no clear reason why Government would continue to limit fixed line infrastructure competition going forward.

The possibility that it may be based on the need to protect state investments is considered next.

### 7.3. SIDE EFFECTS OF STATE INVESTMENT – COMMENTS ON THE CURRENT PERIOD APPROACH

In the current period, Government has elected to use state investment to pursue both broadband access and cost-competitiveness goals. The use of Sentech and Infraco appears to be based on a constrained choice decision resulting from a very poor policy performance in the middle period. Roll-out obligations are now difficult to impose, subsidisation has not worked to date, the regulator has not managed to constrain retail prices to globally competitive levels using price controls and the impact of competition has been limited due in large part to the facts that a) by policy, the number of infrastructure competitors remains limited, b) there were significant delays in licensing current providers and c) the regulator has failed to pass wholesale regulation to help facilitate entry from the competition that is allowed.
It may be argued that, practically, as Government has now “run out of options”, state investment is the only feasible approach to achieve telecommunication sector goals in the very short term – which seems to be the current focus of Government given the crippling effects of high prices and the lack of infrastructure for 2010 and other projects.

7.3.1. COUNTER ARGUMENTS AGAINST STATE INVESTMENT

This argument needs to be evaluated relative to the following considerations.

A basic cost: the inefficiencies of state-owned enterprises. Almost three years into the current period, both Sentech and Infraco have failed to even begin offering the relevant services (Sentech, to rural wireless broadband customers and Infraco, to Neotel and other providers). The inefficiencies of state-owned enterprises is not peculiar to South Africa. Rather it is a systematic problem in many international jurisdictions as is extensively documented in the academic literature. It is therefore likely, or at least there is a significant possibility, that Sentech and Infraco will continue to struggle to actually implement Government’s approach, even if it is well planned at a policy level.

A reasonable alternative: the willingness of the private sector to invest and the ability for competition to drive broadband goals. State investment is sometimes justified on the basis that private investors would fail to invest sufficiently in the required infrastructure and services. However, the extent to which the state would need to fill the gaps seems relatively limited given current trends in the telecommunication sector.

- **Cost-competitiveness – the broadband national and international backbone.** In general, the Infraco services focus largely on upper end infrastructure, including fibre national backbones and an undersea cable. These are the types of services that private market providers usually do seek to offer. The mobile operators have already begun to invest in metro fibre networks and it is likely that if VANS were given full infrastructure rights, they would do the same. Moreover, there are explicit plans by international consortiums to provide submarine fibre capacity to South Africa. If competition were fully encouraged, even without increased wholesale regulation, this is likely to generate significant reduction in broadband prices.

- **Access – wireless broadband.** In this case it may be more reasonable to argue that these providers would avoid the very low income areas which nevertheless form a major access objective for Government. However, note the following:
- There are many private investors who are actively trying to gain better access to the spectrum in order to invest in wireless broadband infrastructure. These investors range from Neotel and Telkom to major VANS players, to small business start-ups. For example, we are aware of businesses models, even for small businesses, where wireless broadband access (with an appropriate technology application and infrastructure) is provided to schools in lower income communities. This infrastructure is then leveraged to provide wireless VOIP phones to members of the community, which can provide far cheaper calls than currently available on mobile.

- The success of mobile technology (also wireless) in penetrating lower income and rural markets is relevant here: it was competition and technology that drove access, not policy interventions even though these were pursued. In the current context, the ability to introduce competition is even greater as there is now a greater ability to efficiently manage the spectrum to ensure that more operators are given access, and to ensure that low noise technology is allowed to operate in a licence exempt space. Ensuring that the South African spectrum plan is in keeping with the most advanced jurisdictions is an absolutely critical requirement if South Africa is to gain the benefit of wide-spread wireless broadband access through the competitive application of low-cost and wireless technology applications.

- Finally, where access gaps do remain, this may be better pursued through a revised subsidisation approach (see section 7.5 below).

There is clearly large potential for private investment in broadband and the ability for market competition to drive broadband access goals. The existence of a state-owned provider pricing at cost will significantly discourage private investment as these companies will struggle to earn a sufficient return as they try to compete with the SOEs. The potential “crowding out” of private investment must be seen as a significant negative side effect of the state investment approach.

A danger of losing focus: the need to boost ICASA and USAASA, as well as address policy deficiencies. The state investment approach will entail significant public expense. The question arises as to whether or not some of these funds would be better utilised by enhancing the capacity of the regulator and ensuring that key wholesale regulation is passed. This would solve the problem of high broadband costs and also guide the market toward more sustainable competition. If this is not done, and an authentic regulatory infrastructure remains lacking, Government may find itself once again in a situation where they are constrained to “go it alone”. Boosting the regulators (i.e. both ICASA and USAASA) in terms of funding, skills, capacity, leadership and enhanced powers to carry out their mandate should remain a primary priority.
addition, addressing the policy deficiencies that restrict investment by private investors (such as entry limitations) should also be addressed such that this investment occurs.

### 7.3.2. COMPETITION SHOULD NOT BE LIMITED EVEN IF STATE INVESTMENT IS PURSUED

However, even if the state investment approach continues to be pursued, the positives should not be undermined by then impeding private investors where they do still want to invest. There would appear to be little rationale for such an approach:

- **Economies of scale will protect investment.** Government’s investment is partly based on the recognition that telecommunications infrastructure contains large economies of scale which can prevent some private firms from investing, and provide market power for those that do. Government’s investment is supposed to prevent the high prices that may result from such a market structure. But the very economies of scale that justify the investment in the first place will likely protect this investment without the need to impose additional regulatory restrictions.

- **Prices at cost will also protect investment.** In addition, were a potential infrastructure provider to consider entry, they would only do so if they believed they could earn a sufficient return in a market in which Government is offering cost-based prices. This is likely to create serious barriers to entry which again is likely to be sufficient to protect Government’s investment without the need to impose additional regulatory restrictions.

- **Overarching objectives of investment undermined by not allowing entry.** The motivation for Government’s investment in both Sentech and Infraco is clear: to expand South Africa’s broadband capacity, improve broadband quality, reduce broadband prices and bring broadband Internet access to schools, and rural and lower income users. But preventing other private providers from supplying broadband services can only harm these motivating goals as there will be less capacity and less price competition than if other providers had been allowed to enter. If Government’s investment achieves its goals by encouraging a competitive response to its pricing model, does it matter that their investment is somewhat compromised? As Government has indicated, Infraco assets can and may indeed be sold in future. If the policy objectives were achieved by a still more efficient provider that was pricing below Infraco, such a sale would be appropriate, mitigating against any capital losses.
7.3.3. **SUMMARY**

State investment may provide a short-term relief. This may be important to policy makers in the current context. South Africa remains globally uncompetitive on telecommunications costs and this negatively impacts on broader national economic goals (employment, growth, investment). This has now been made clear through the loss of massive BPO and Call Centre projects. South Africa also requires sufficient broadband capacity for the Soccer World Cup in 2010 and other large Government projects. Given the lack of alternative policy tools, and the urgency of these matters, state investment at one level appears understandable.

But short-term relief may lead to more pain in the long run, and this needs to be considered relative to the benefits of state investment. State investment is likely to be inefficient, and it may well end up crowding out private investment or actively limit competition by regulatory fiat.

Overall, a state investment approach may divert focus from the long-term cure: a sound and effective policy and regulatory environment that can facilitate movement toward a vibrant, open competition.

7.4. **REGULATION AND LICENCE DELAYS UNDERMINE POLICY EFFORTS**

Negative policy effects may often have had more to do with implementation and administration than with the overarching policy framework. A key theme arising from the 15-year review is the significant delays which often surrounded both licensing and regulation. In particular, the following critical delays were experienced:

**Licensing delays**

1. The licensing of Cell C, which was first possible as early as 1997, only took place at the end of 2001.

2. The licensing of Neotel, which was first possible in 2001, only took place at the end of 2005.

3. The launch of Infraco, which is still to offer wholesale services to Neotel, two years after Neotel’s launch.
Regulatory delays

4. The interconnection regulations of 2000, which mandated the imposition of LRIC on major operators, have still not done so to Telkom even though they were declared a “major operator.”

5. Although Neotel had the right to access Telkom infrastructure, without a regulated framework and in particular a regulated price, it is doubtful that this right could be given much meaning.

6. Current wholesale regulations under the ECA are taking significant time to develop though progress may still be forthcoming.

These delays could have been avoided through better anticipation and planning and just getting the timing of regulations right could have had a major positive impact on the sector. The sector may benefit from an enhanced focus on anticipating upcoming requirements and working to ensure that the enabling and administrative environment is in place before implementation is required.

The following related points are also noted on licensing and regulation issues.

- **Licensing.** The licensing processes selected (“beauty contests”) appear to be inherently contestable (as occurred with Neotel and Cell C). This may suggest that more transparent procedures may lead to quicker results. For example, the use of auctions may create such transparency and have additional benefits as well. Going forward, the use of class infrastructure licences will create a registration regime for these area specific licences. To take advantage of the procedural simplicity, it may benefit to make these licences as robust and meaningful as possible.

- **Ineffective competition regulation.** Regarding regulation, it is possible that a major constraint on ICASA at present – besides basic capacity constraints – is that Section 67 seems to put the onus of proof for justifying any regulatory imposition on ICASA. Although these may lend credibility and transparency for regulations going forward, ICASA is also handicapped by their limited power to access operator information. Operators can then claim that ICASA has not considered sufficient data, even though that data is in their power to release. To speed up the current regulation process, it may be critical to secure wider information gathering powers on behalf of ICASA, or alternatively, to shift the onus of proof
to the operators. It may also be helpful for the Minister to issue directives on certain issues in order to give political backing and enable ICASA to speed up the process.

7.5. **SUBSIDISATION FAILURE HAS CONSTRAINED OPTIONS**

The USAASA and the USF have largely failed to deliver on access objectives. To the extent that this failure is viewed as a failure of the subsidisation approach in general, it has significantly constrained policy tools. This is because the ability to impose significant roll-out obligations has probably *de facto* come to an end.88 This leaves state investment as the only viable solution to fulfil major access goals, where it is clear that commercial enterprises will not target the desired consumer segments. Sentech has been chosen for the key remaining access goal of broadband access, but as discussed, there is considerable uncertainty regarding Sentech’s ability to deliver on access objectives.

*Can the subsidisation approach be revived?* If the subsidisation approach is to be reconsidered, significant changes would need to be made. The roll-out of telecommunications infrastructure is highly capital intensive, and the success of any project is dependent on a range of market variables. Accurately determining which infrastructure roll-out projects deserve funding requires expert financial and economic judgement, actual industry experience, and knowledge of current technology trends and market dynamics.

Aside from hiring highly trained and experienced personnel to make these decisions, this suggests a different approach may be required. In particular, there is an alternative of “pre-selecting” which companies, projects or technologies deserve funding. Instead, market mechanisms can be set up which can efficiently aggregate the above decision variable to “self-select” the optimal candidates. For example, auctions can be held for specific infrastructure projects, which award a subsidy to the bidder who claims the lowest subsidy (then awards the subsidy to that bidder with the legal obligation to roll-out, as in any contract). Alternatively, rewards may be offered to companies for demonstrably providing services to a given amount of customers within the underserviced area. If the award is set at the right amount, it can transform a previously unprofitable area or customer segment to one that is decidedly profitable.

*Should subsidisation be limited to only small businesses?* Although USAASA did provide for staggered subsidisation based on fulfilling targets, substantial funds were released before a sizeable amount of customers were actually serviced. To some extent, this may have been based on the need to fund the “small businesses” that were granted USALs. We note that the ECA will

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88 As noted, any new licences that are granted (or extended under the ECA framework) are unlikely to be associated with significant roll-out obligations (firstly, so as not to overburden new entrants and secondly to maintain equality with recent licence grants such as Neotel’s limited obligations).
potentially transfer the licences of many proven VANS providers into class ECNS providers. A policy question, if subsidisation is pursued, may be: is there any rational reason to limit any subsidisation program to a particular group of such providers (i.e. the previous USALs)? Doing so on the basis of “small businesses” runs the risk of “putting too many objectives in one basket” and seeing none realised. It may be argued that the goal of providing access should generate behind it the full capital strength and experience that exists within the leading, and most innovative, industry players. Diverting USF funds to support small business start-ups threatens to dilute the overall impact on access.

### 7.6. WHEN ROLL-OUT OBLIGATIONS WORK

As discussed, the roll-out obligations for fixed line roll-out and later for SIM cards and mobile phones failed to achieve their goals. The success of a general population coverage requirement for mobile, CSTs and, if it goes well, the specific roll-out obligations for broadband infrastructure into educational institutions, suggests the following:

1. **Technology.** There is a need to get the technology choice right or, more realistically, remain technologically neutral in the roll-out obligations. This is now possible under the ECA, where obligations can be specified in terms of service standards, not technology, and where licences are not restricted to a single technology. However, the fact that a particular licensee’s business plan might be focused on a particular technology choice (or they do not have access to radio spectrum to provide alternative technologies) implies that flexibility is required beyond mere licence technology. Specifically, it is still required that either obligations are tradable (or can be sub-contracted to another operator), or that a universal service fund is used and firms compete for universal service subsidies (enabling operators using competing technologies to compete for the subsidy).

2. **Obligation.** The more successful obligations appear to be a more general obligation to place infrastructure in an area rather than services to individuals. This includes both coverage obligations (population coverage by mobile operators) and community infrastructure services (such as the CSTs or other payphone options). The reason these are more likely to work is two-fold. First, the obligation to place infrastructure in a particular community is a sunk cost and hence the operator will explore means to increase usage of that infrastructure and generate revenue. This incentivises them to innovate on prices and services which serve the low-income communities. Second, it removes the danger that lower income individuals will go through periods where they are unable to pay for the service rendering it unfeasible. Community roll-out plans, such as those that occurred with CSTs and now with Internet broadband obligations, can leverage off the collective spending power of the entire community or area.
3. **Pricing.** There is a need to develop a well planned pricing scheme that actually incentivises uptake from customers. Lower income and rural customers will generally not be able to afford the services that higher income customers pay for. Hence it is critical to offer one of two possible solutions to this problem. One solution is to lay the foundation for positive price discrimination by operators. Specifically, economic theory clearly demonstrates that price discrimination can expand output by incentivising operators to explore lower-income market segments without cannibalising other segments, making the strategy profitable overall. An inability to price discriminate may discourage targeting lower income communities because operators will include the loss of revenue to other price segments in their calculation of the profitability of such ventures. An alternative solution is to specify some type of social discount price for any roll-out obligation. The fact that Telkom have supplied Internet access connections to 1,300 schools at the e-rate indicates that it may be possible to drive access goals merely by mandating that the provider must provide a service upon request at a specific price.

Looking forward to a potential strategy for broadband roll-out these lessons would suggest the following in the event obligations were used (which is itself not apparent):

- Do not choose technology again. Government is pursuing broadband through Sentech and WiMax infrastructure – as such it has made a technology choice for roll-out. Whilst WiMax has some of the beneficial aspects of being wireless, it may still yet fail because of the lack of complementary devices in the hands of consumers for broadband access (in contrast to say 3G technology). At the very least, a specific technology should not be selected like this;

- Impose obligations around coverage of areas. This would include transmitter coverage for wireless broadband applications or specific community targets that would get infrastructure into an area in the event of fixed line technologies such as obligations to service schools or clinics (which then ensure technologies such as DSL get rolled out without specifying individual households); and

- Permit price discrimination by service type. This would encourage operators to explore alternative service packages that are priced and structured in a manner which addresses the demand of different consumer segments.
8. CONCLUSION

In addressing the key objectives of cost and access, Government’s telecommunications policy has met with limited success over the past 15 years, illustrating the difficulty of developing effective telecommunications policy.

The performance of South Africa’s telecommunications sector in terms of costs and access has been mixed. In terms of costs, the introduction of mobile services in South Africa has lead to a significant drop in basic voice access costs (as SIM and phone prices have dropped dramatically). However usage costs (making calls) remain high, in comparison to international markets, for both fixed line and mobile services. High-usage consumers, such as business users, are at a particular disadvantage. Broadband (and dial-up) costs remain significantly more expensive than other international destinations, and once again high-usage customers such as businesses are particularly disadvantaged. Leased line costs, especially international leased lines, also appear to be charged at excessive rates.

In terms of access, there has been major progress but significant issues remain. It may be argued that, with the rapid take-up of prepaid mobile services, basic access to voice telephony (the ability to receive but not necessarily make calls) has been largely solved. Mobile population coverage is nearly 60% and customers across the country can purchase a prepaid SIM card (and a second hand mobile phone) for very low rates, thereby solving the two dimensions of access in this basic case: physical ubiquity and affordability. However, prepaid packages are associated with very expensive outgoing calls. To some extent this is mitigated by the successful roll-out of Community Service Telephones (CSTs) – these payphones charge 90c per minute and have been keenly taken up by lower income segments. Overall, universal access and service issues remain: increasing broadband Internet penetration and securing affordable voice telephony, not just for receiving but also for making calls (without having to use a payphone).

The policy focus of the initial period (1994 – 2001) of this review was primarily on access. Telkom was identified as the “access champion” and given extensive roll-out obligations in return for exclusivity. These obligations failed to achieve access goals, however access to mobile services expanded dramatically, driven by competition, increasing geographical coverage and the ability of mobile operators to price discriminate. Although there was no explicit strategy to drive prices to cost, the price caps that were imposed still failed to constrain Telkom. From a wholesale perspective, the entry of Cell C saw rapid increases in interconnection prices.

The middle period (2002 – 2005) saw cost-competitiveness become a more important concern and, after the success of mobile in terms of access, a greater focus on mobile rather than fixed
line technology. USALs had little impact on access and SIM and mobile phone roll-out obligations failed. However, CSTs were a relative policy success, with increased use of actual call services achieved through greater affordability. In terms of cost-competitiveness, little was achieved in this period due in large part to significant licensing and regulatory delays. There were significant delays in the introduction of the SNO, in granting rights to alternative providers, in tightening Telkom’s price cap and finally in developing regulation for interconnection and wholesale services, which may have negatively impacted on entry to the extent it was allowed.

The **current period** (2006 – present) began as cost-competitiveness became a growing, if not urgent, concern (international capacity was of particular concern). In terms of access, the focus shifted to broadband infrastructure. The approach to both access and cost shifted to direct state investment through Sentech and Infraco which revealed (an arguably realistic) lack of faith in the newly passed ECA to achieve the cost and access goals. Both Sentech and USAASA (which was unable to access funds) achieved little in terms of access. The ECA did however allow MTN and Vodacom to enter fixed lines. Neotel has struggled to enter the market due to the failure of Infraco to launch and a lack of wholesale regulation. ICASA is yet to complete its wholesale market reviews and appears not to be taking the opportunity to grant VANS full infrastructure licences.

While significant inroads were made in the initial period with rapid increases in access to mobile services, the delays and policy failures of the middle period and the lack of policy options available in the current period effectively constrained Government into addressing the cost and access objectives itself though a state investment approach. It should also be noted that the policy predicament is largely based on policy failures in the middle, and increasingly the current, period. It is likely these failures need to be addressed with long term solutions (better regulation, use of subsidisation and more open fixed line infrastructure entry) in order to expand policy options and improve outcomes going forward.
9. **ANNEXURE**

9.1. **KEY POLICY TOOLS THAT IMPACT ON ACCESS AND COSTS**

The licensing framework determines a) the type of licences that are available, b) the number of licences within each type that can be issued and c) the degree of discretion the regulator and Minister have in issuing new licences. This is therefore the key policy input which determines the basic competitive structure of the market (number of competitors per service-type), which directly impacts on the cost, quality, output (including access) and innovation in services.

Roll-out obligations require licensees to service certain areas and/ or demographic groups, usually as a condition for receiving a licence. These obligations are usually specified in the licences themselves. They clearly have a direct impact on universal service and access.

Social pricing. In some cases, roll-out obligations include specific pricing commitments (such as mobile CSTs). This is likely to significantly increase the potential success of any roll-out obligations. Social pricing might also include additional commitment to offer discounts to specific institutions like schools, etc.

Direct subsidisation involves providing funds to a) projects which extend infrastructure in underserviced areas or b) consumer groups in order to help them in their purchases of telecommunication services. In either case, this tool will directly impact on access.

General pricing regulations are used in order to constrain the pricing power of providers with market power. They can include simple price caps, cost-based formulas (e.g. LRIC) and rate-of-return regulation. These policy tools directly impact on the telecommunication cost faced by consumers.

Ex ante regulation of ineffective competition is used in order to counter the market power of providers. Though it can include general pricing regulations, it is wider than this. In particular, it can involve obligations to provide access to facilities and wholesale services such that new entrants can utilise incumbent infrastructure when entering. Regulation of ineffective competition can thus a) deal with the immediate results of poor competition (price regulation to combat high prices) as well as b) actually help the market move toward effective competition through encouraging entry. Two particularly important aspects are interconnection and facilities regulation. Both are so important that the ECA mandates basic pro-competitive conditions (access, non-discrimination, transparency) without market analysis.

Interconnection regulation has both a technical and an economic component. If networks are interconnected, it means that customers of one network can communicate with customers of another; otherwise, they cannot. Facilitating interconnection is thus considered a technical requirement in order to ensure that the telecommunications sector allows communication between all users. There is an obvious economic component in that interconnected networks increase the welfare of network users. In addition, interconnection is usually charged as a wholesale price which feeds into the price of “off-net” retail calls. High interconnection rates can result in high retail rates, and may also block new entrants from gaining market share.

Wholesale (facilities) regulation. In order to make market in-roads, entrants require access to incumbent infrastructure, especially the local loop and international facilities.

Ex post regulation of ineffective competition. The regulator may also be able to stop a provider from engaging, or seeking to engage, in a particular anti-competitive action, if a complaint is brought or the regulator investigates the matter.

Government ownership and investment determines Government’s degree of direct involvement in the sector. Ownership of providers may enable Government to more easily influence those company’s strategic decisions. Investment may allow Government to fill an infrastructure gap not being adequately provided by the market. These tools, although perhaps more indirect than those listed above, can impact on the market functioning and outcomes. Moreover, they constitute key policy decisions for Government, and are tracked below along with the other policy tools.
### 9.2. TABLE OF EVOLUTION OF POLICY TOOLS FROM 1996 TO 2008

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<tr>
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<tbody>
<tr>
<td>Licence framework</td>
<td>The initial framework established by the Telecommunications Act of 1996:</td>
<td>Amendment Act left the previous licensing framework in place, but it did set some clear dates for exclusivity provisions to end, and for VANS/PTN licensees’ rights to expand. In particular:</td>
<td>Significant change in overall licence framework – room for new entry and many technology distinctions discarded to facilitate convergence.</td>
</tr>
<tr>
<td><strong>Fixed lines</strong></td>
<td>Telecommunication Act gives Telkom an “exclusive period” for a set period to be approved by Minister.</td>
<td>Fixed line. Telkom period of exclusivity ends May 2002 with (possible) introduction of SNO. But Telkom and ‘SNO’ given duopoly for another 3 years (May 2002 to May 2005). Minister should conduct market study (before December 2003) to consider additional licence to be granted after May 2005.</td>
<td>ICASA gets increased independence. All services licences to be decided by ICASA. These are “class” (local or provincial) and “individual” (national) ECS licences, which are retail services that exclude underlying infrastructure. Class infrastructure licences also now decided by ICASA.</td>
</tr>
<tr>
<td><strong>MNO</strong></td>
<td>Act gives Vodacom and MTN initial duopoly, subject to revision. Authority, within 2 years of Act’s publication, must investigate feasibility of additional licence and make recommendation to Minister, who has power to invite and approve new licences.</td>
<td>- SNO licence finally granted to Neotel in December 2005</td>
<td>Minister retains control over key segment. Minister must invite applicants for new individual ECS licences.</td>
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<td></td>
<td>- SATRA recommends two additional licences in 1998. In 1999, Minister issues invitation for only one. After legal challenges and procedural delays, Cell C was granted a licence in June 2001 and launched in November 2001.</td>
<td>MNO. Minister should conduct market study (before December 2003) to consider additional licence (to Vodacom, MTN and Cell C) to be granted after Dec 2003.</td>
<td>Major upcoming events. ICASA also has the key power to transfer licences from the old to the new framework and to create licence exempt categories.</td>
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<td></td>
<td>- Many VANS granted licences, but restrictions not lifted in this period</td>
<td>VANS. On September 2004, the Minister issued a notice releasing the restrictions on voice over data, resell and (apparently) self-provision after February 2005. In January 2005, the Minister clarified that the notice did not allow self-provision for VANS, only Mobile operators.</td>
<td>- Licence transfer. ICASA can’t decrease rights and may have to expand them to fit into new framework, or create sub-categories of licences. Who will get full individual ECS licences?</td>
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<td></td>
<td><strong>PTN</strong>. Eskom and Transnet run their own networks, but cannot sell spare capacity until date determined by Minister.</td>
<td>- Number of VANS increased from 60 in 2001, to 300 in 2005</td>
<td>- Licence exemptions. There is significant technological potential to introduce services onto the spectrum which do not create interference for other users and so can be provided without a licence. Will ICASA capitalise on this potential?</td>
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<tr>
<td></td>
<td>- Restrictions not lifted in this period (and this was assured in Telkom licence).</td>
<td>PTN. No change</td>
<td></td>
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<tr>
<td>Licence exemption</td>
<td>ICASA has right to make licence exempt categories</td>
<td>New:</td>
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<td></td>
<td>- No significant licence categories become exempt.</td>
<td>- USALs come into effect post May 2002. Licensed to roll-out infrastructure and services to under-serviced areas, which were areas with a teledensity under 5%, to be defined by the Minister.</td>
<td></td>
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<td></td>
<td><strong>ICASA</strong> also has the key power to transfer licences from the old to the new framework and to create licence exempt categories.</td>
<td>- Sentech is granted a multimedia licence and a carrier’s licence.</td>
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| **Significant change in overall licence framework** | - room for new entry and many technology distinctions discarded to facilitate convergence. |
| **ICASA gets increased independence.** | - All services licences to be decided by ICASA. These are “class” (local or provincial) and “individual” (national) ECS licences, which are retail services that exclude underlying infrastructure. |
| **Minister retains control over key segment.** | - Minister must invite applicants for new individual ECS licences. |
| **Major upcoming events.** | - ICASA also has the key power to transfer licences from the old to the new framework and to create licence exempt categories. |

**Notes:**
- ICASA has the key power to transfer licences from the old to the new framework and to create licence exempt categories.
- Significant change in overall licence framework – room for new entry and many technology distinctions discarded to facilitate convergence.
- ICASA gets increased independence. All services licences to be decided by ICASA. These are “class” (local or provincial) and “individual” (national) ECS licences, which are retail services that exclude underlying infrastructure. Class infrastructure licences also now decided by ICASA.
- Minister retains control over key segment. Minister must invite applicants for new individual ECS licences.
- Major upcoming events. ICASA also has the key power to transfer licences from the old to the new framework and to create licence exempt categories.
| Roll-out obligations and social pricing | Telkom's licence conditions obligated it to install 2.69 million new lines of which 1.677 million had to be in under-serviced areas. It also had to install 120,000 payphones and connect 3,174 villages and 20,246 priority customers (e.g. schools). These obligations were not associated with any social pricing commitment. If it did not meet these targets it would be significantly penalised. - Telkom fulfilled their obligations within the first 4 years, but then disconnected many of the lines because of failure of customers to pay. In the final year, they chose to pay the penalty as opposed to roll out. Vodacom and MTN licences conditions obligated them to achieve population coverage of 60% within two years and 70% within four years. They were also required to install 22,000 and 7,500 community service telephones (CSTs) respectively. CST roll-out commenced with a special social pricing scheme of zero interconnection charge and R0.90 retail call charge - These targets were easily met, and Vodacom even exceeded its roll out obligations. Cell C was required to cover 6% of the territory and 40% of the population within two years, and 8% of the territory and 60% of the population within five years. They were also required to roll out 52,000 CSTS within 7 years. - Cell C easily met its targets and exceeded its CST obligations | **E-rate.** The Amendment Act provided for (what would become called) an e-rate, which obligated provider to offer Internet access to educational institutions at 50% of retail rates, at a date to be determined by the Minister. - September 2004 Ministerial directive called for the implementation of the e-rate by Feb 2005 **CST pricing.** Though the retail rate remained at 90c, interconnection charges for CST increased to R0.04 in Jan 2002, and increased further to R0.06 in Jan 2005 **Obligations resulting from award of 1,800 MHz spectrum.** For 1800 MHz spectrum that Vodacom and MTN received in 2004, they had to - within 5 years - each provide 2.5 million new SIM cards and 125,000 phones. The tariff package related to the SIM card was supposed to be a "non-competitive" prepaid package to be decided between the mobile operators and approved by ICASA. - Implementation of non-competitive rate not yet approved by ICASA **Obligations resulting from the award of 3G spectrum.** For the 3G spectrum the operators had to provide internet access to 140 institutions for people with disabilities within three years, 5,000 schools within eight years. The E-rate also likely apply to these services. **Neotel licence obligations.** Neotel must make PSTS available to 50% of the population within five years and 80% of the population within ten years. They must also provide high speed internet connectivity to 2,500 public schools or further education and training institutions and 2,500 rural public clinics. Again, the E-rate is likely to apply. | No significant change post-2006. Main impact of the ECA on subsidisation issues is that the ECA shifted the responsibility of defining areas that are under-serviced from the Minister to ICASA. |
### Direct Subsidisation

<table>
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<tr>
<th>Universal Service Agency (USA) established by Telecommunications Act. Main role was to administer the Universal Service Fund (USF) for direct subsidisation of the sector.</th>
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<tr>
<td>- Fund used for the payment of subsidies (i) to assist needy persons to obtain access to services and (ii) to Telkom and any other holder of a licence to finance their roll-out obligations. Once the roll-out obligations phase came to an end (at a date determined by Minister) the monies would be paid exclusively to needy persons. ICASA also had the authority to define the categories of needy persons.</td>
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<tr>
<td>- The fund was established from licensee contributions. Minister could set the date from when funds would become payable, whereas the regulator would determine the basis for calculating the contribution. Parliament would determine the amount to be paid out from the fund in any given budget cycle.</td>
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<tr>
<td><strong>In a 1997 policy directive, the Minister placed a cap on the total annual contributions to the USF at R20 million of which a maximum of 50% could come from Telkom. Note, the Act indicated that determining the basis of calculation was an ICASA responsibility.</strong></td>
</tr>
<tr>
<td><strong>In 1999, working around these constraints, ICASA determined that the contribution would be 0.16% of their annual turnover for telecom operators and R1,500 and R1,000 per annum for VANS and private telecoms network service operators. Contributions would start in April 1999.</strong></td>
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<tr>
<td>Several changes brought about by amendment:</td>
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<tr>
<td>- In addition to needy persons and licensees fulfilling roll-out obligations, subsidies could now be paid (i) to facilitate the provision of multimedia services, (ii) to schools and other educational facilities for buying internet services, (iii) for the establishment of centres for access, and (iv) to small businesses to construct their own infrastructure.</td>
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<tr>
<td>- Minister instead of ICASA could now determine the categories of needy persons.</td>
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<tr>
<td>- Small businesses could now apply to ICASA for under-serviced area licences. Under services areas are areas with a teledensity of less than 5% as determined by the Minister. These licensees would be able to obtain funds from the USF.</td>
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<tr>
<td>- The Amendment Act replaces the R20 million cap with a cap of 0.5% of turnover.</td>
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<td><strong>In 2003 ICASA changed contribution to 0.2% of annual turnover; other licensees would pay R1 as an annual contribution.</strong></td>
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### Pricing Obligations

<table>
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<tr>
<th>The Telecommunications Act mandated the Minister to regulate Telkom charges.</th>
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<tr>
<td>- In 1997, the Minister decided to use a price cap mechanism. Fee increases would be capped at the CPI less a productivity factor of 1.5%. The maximum increase in an individual service would be 20% in real terms.</td>
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<tr>
<td>- The cap applied to all retail services offered by Telkom but excluded wholesale services and services where Telkom faced competition (VANS).</td>
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<td>- This regime would apply for three years ending in May 2000 and thereafter a regime determined by ICASA would apply.</td>
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<tr>
<td>However, ICASA began its review of the rate regime only in December 2000 and published its findings in April 2001.</td>
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<tr>
<td>- In the meantime a regulatory vacuum occurred in which Telkom was able to raise prices above the old price cap.</td>
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<td>- ICASA proposed changing the productivity factor to 5%, decreasing the maximum individual service price increase to 5% and introducing a separate residential sub-basket.</td>
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<tr>
<td>- These changes were finally accepted by the Minister in November 2001, except for the productivity factor which remained at 1.5%.</td>
</tr>
<tr>
<td>ICASA undertook their second review of the rate regime applied to Telkom in 2004/2005.</td>
</tr>
<tr>
<td>- ICASA proposed constraining individual price increases to 5% and increasing the productivity factor to 3.5%.</td>
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<tr>
<td>- These were accepted by the Minister in July 2005. The regulations are effective until July 2008.</td>
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<th>Changes to direct subsidisation from ECA</th>
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<td>- The main impact of the Act on subsidisation issues was to increase the maximum % contribution to the USAF to 1%.</td>
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Previous price regulations are effective up until July 2008. New regulations will likely form part of an ineffective competition analysis, outlined below.
| **Ex ante regulation of ineffective competition** | **Telecommunications Act (1996):**  
- None besides for price cap, as above | **Telecommunications Amendment Act (2001):**  
- Price cap, as above  
- Provision made for SNO to gain non-discriminatory access to Telkom facilities (on resale basis) for two years after being licensed. Any dispute would be settled by regulator. | **Electronic Communications Act (2006):**  
- Regulator must define relevant markets, SMP operators and whether competition in these markets is ineffective. Pro-competitive conditions can be imposed upon firms with SMP in ineffectively competitive markets.  
- Pro-competitive conditions may include access and obligations, non-discrimination, transparency, price accounting and price controls  
- Specific provision for regulation of essential facilities, including the local loop and undersea cable landing station. Unlikely to have to prove ineffective competition for regulation of these markets. |

| **Ex post regulation of ineffective competition** | **Telecommunications Act (1996):**  
- The regulator may prevent Telkom from acting in a way that might result in an undue advantage over a potential future competitor (licensee)  
- Uncompetitive actions: The regulator may prevent any licensed telecommunications provider from taking actions that could unfairly benefit or discriminate against a third party | **Telecommunications Amendment Act (2001):**  
- No change | **Electronic Communications Act (2006):**  
- Greater specification for how to deal with ex post disputes. |
| Interconnection | TelecommunicationsAct (1996): | - Telkom and other telecommunication service providers to provide interconnection services on request (access obligation) so long as request is “reasonable”
- Regulator will rule on disputes of reasonableness (by considering technical feasibility relative to efficiency effects).
- Regulator may propose conditions of agreement where they cannot be agreed and these conditions are imposed if the period for renegotiation expires
- The regulator also had to provide guidelines for interconnection (negotiation framework, service quality, price principles)
- Minister to declare interconnection fees and charges for Telkom to be valid for three years

ICASA Interconnection Regulations (2000):
- Non-discrimination and transparency obligations are imposed
- Interconnection charges must a) match structure of underlying costs and b) not exceed retail charges
- “Major operators” of essential services (declared by the regulator) must provide interconnection at long run incremental cost (LRIC).
- Major operators defined as having more than 35% market share unless can prove lack of market power
- Telkom declared major operator in July 2001. However, no LRIC obligations were forthcoming.

Telecommunications Amendment Act (2001):
- Regulator given greater power – can now impose, as opposed to only propose, conditions of interconnection if firms in dispute

ICASA Interconnection Guidelines (Draft only, 2005):
- Further expansion on pricing details, but no major changes

Electronic Communications Act (2006):
- Non-discrimination became a feature of the legislation as opposed to just the regulations
- Licensees with insignificant market power may be exempted from interconnection obligations

Draft Interconnection Regulations (2007) released under the Electronic Communication Act:
- If telecommunications service provider has Significant Market Power (“major operator” term removed), then must provide interconnection based on LRIC

| Ownership and Investment | Trends in privatization: | Pre-1996: Telkom is historically a fully state owned enterprise, and Telkom also has a 50% share in Vodacom
- 1996: Sentech Act transforms Sentech into public company
- 1997: State sold 30% of Telkom to Thintana, a consortium of SBC (USA) and Telekom Malaysia (Thintana has control of the majority of positions on operational committee until 2001).

Continued trends in privatization:
- 2001: Government sells 3% shareholding in Telkom to Ucingo
- 2002: Two new licences allow Sentech to carry international telephony and multimedia communications (i.e. broadband)
- 2003: Telkom lists on JSE and NYSE with Initial Product Offering (IPO) including Government-owned shares representing 25% of Telkom. Part of the share issue targeted historically disadvantaged people and groups.
- Government left with approximately a 40% stake
  In licensing the SNO, Government took a 30% stake through Transnet and Eskom

Continued trends in privatization:
- 2007: State owns 38.9% of Telkom
- 2007: Instead of selling the fibre optic network owned by Transnet/Eskom, Government incorporates Infraco as a public company and expropriates the network to it.
  Initial investment of R975m for Infraco to manage (and invest in) national backbone, which is to be leased to SNO.
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i Promote the universal and affordable provision of telecommunication services (2a)
ii Make progress towards the universal provision of telecommunication services (2c)
iii Ensure that, in relation to the provision of telecommunication services, the needs of the local communities and areas are duly taken into account (2g)
iv Ensure that the needs of disabled persons are taken into account in the provision of telecommunication services (2h)
v Ensure fair competition within the telecommunications industry (2i)
vi Encourage the development of a competitive and effective telecommunications manufacturing and supply sector (2e)

vii Promote the provision of a wide range of telecommunication services in the interest of the economic growth and development of the Republic (2b)
viii Promote the development of telecommunication services which are responsive to the needs of users and consumers (2f)
ix Promote the development of telecommunication services by persons from historically disadvantaged groups; (2)

x Encourage ownership and control of telecommunication services by persons from historically disadvantaged groups; (2)
xi Promote the development of human resources in the telecommunications industry (2n)

xii Ensure that, in relation to the provision of telecommunication services, the needs of the local communities and areas are duly taken into account (2g)

xiii Promote the stability of the telecommunications industry (2k)

xiv Encourage investment and innovation in the telecommunications industry (2d)
xviii Develop the Information, Communication and Technology (ICT) strategy for the Republic, in order to bridge the digital divide (2s)
xix Promote and facilitate the convergence of telecommunication, broadcasting and information technology (2a)

xx Promote the development of telecommunication services by persons from historically disadvantaged groups; (2)

xxi Promote the development of telecommunication services by persons from historically disadvantaged groups; (2)

xxii Encourage the development of human resources in the telecommunications industry (2n)

xxvi Promote an environment of open, fair and non-discriminatory access to broadcasting services, electronic communication networks and to electronic communications services (2g)

xxviii Develop and promote SMMEs and cooperatives (2p)

xxix Promote the development of telecommunication services by persons from historically disadvantaged groups; (2)

xxx Ensure information security and network reliability (2q)

xxxi Promote stability in the ICT sector (2r)

xxxii Ensure the provision of a variety of quality electronic communications services at reasonable prices (2m)

xxxiii Ensure efficient use of the radio frequency spectrum (2p)

xxxiv Promote the interests of consumers with regard to the price, quality and the variety of electronic communications services (2n)

xxxv Ensure that broadcasting services and electronic communications services, viewed collectively, are provided by persons or groups of persons from a diverse range of communities in the Republic (2k)

xxxvi Subject to the provisions of this Act, promote, facilitate and harmonise the achievement of the objects of the related legislation (2o)