

3 Policy Options: Infrastructure and services

3.1 Introduction

ICT infrastructure, together with the multitude of services that it enables and supports, is the invisible but indispensable basis component for developing the information society and building the knowledge economy. It is now widely accepted that investment in the growth of ICT infrastructure and services contributes to economic growth and transformation and improvements in the quality of life. Additionally, the deployment of infrastructure and services is essential to reinforce and support social engagement, social inclusion and cultural enrichment. However, such development objectives can only be achieved within an enabling and supportive environment.

Historically, ICT Infrastructure was treated differentially on the basis of its underlying technological basis, with wireline telecommunications (copper and fibre) treated differently from mobile telecommunications, Internet and signal distribution infrastructure. Similarly, fixed telephony services were treated differently from mobile ones, from Internet and value-added network services and from radio and television broadcasting services. Convergence, however, has increasingly created a unified, largely IP-based network, where signals travel over a variety of platforms across an interconnected infrastructure to a range of multi-function end-user devices, and where the range of services is increasingly blurred and more and more integrated.

A simplistic perspective of electronic communications infrastructure is that it comprises a multiplicity of channels which are required to transmit data and information in a range of formats between various points of a network both nationally and internationally. These channels are both fixed (e.g. coaxial, fibre-optic) and wireless (e.g. microwave, satellite). The Internet is recognised worldwide as one of the most important networks which requires appropriate infrastructure to enable social and economic growth. Thus infrastructure-related policy is increasingly focused on how to effectively ensure affordable universal access to this global public network of networks. Infrastructure is thus the core foundation of an integrated ICT eco-system. Without enabling infrastructure, all other components cannot exist. Policy which governs how a country's infrastructure is developed and managed is therefore fundamental to the supply of services which enable growth.

The 2005 Electronic Communications Act was largely premised on this phenomenon of convergence, and treated infrastructure and services as broad categories of legislation, licensing and regulation, although broadcasting remained distinct. This Discussion Paper recognises that the intervening years have seen ICT infrastructure and services become increasingly integrated and interdependent, forming a complex, highly inter-related environment, and hence they are treated together in the sections that follow (content and the Internet economy and e-services are dealt with in separate chapters/papers because each raises certain specific policy challenges and questions).

3.1.1 Recent policy developments

This chapter/options policy paper must be viewed against recent developments in the policy environment, which include:

- The **National Development Plan (NDP)**;
- The National Infrastructure Development Plan (2012) which includes 18 far-reaching **Strategic Integrated Projects (SIPs)**, currently being co-ordinated by the Presidential Infrastructure Co-ordinating Committee (PICC). **SIP 15**, which focuses on *Expanding access to communication technology*,¹ is chaired by the Minister of Telecommunications and Postal Services and aims to provide for broadband coverage to all households by 2020.

The SIP 15 plan also makes a case that, while the private sector will invest in ICT infrastructure for urban and corporate networks, **government will co-invest for township and rural access, as well as for e-government, school and health connectivity**

- **South Africa Connect**², adopted by Cabinet in December 2013, is an overarching policy for broadband infrastructure, and adopts an integrated, cross-cutting, but citizen-centric approach to broadband.

SA Connect provides for a **four-pronged strategy**, with both supply-side and demand-side interventions, to close the gaps between the current relatively poor status of broadband penetration in the country, and the vision of a seamless nationally-pervasive network, which by 2030 will be universally accessible at a cost and quality that meets the needs of citizens, business and the public sector. Important aspects of this strategy which need to be borne in mind in consideration of this Chapter/Policy Options Paper, include:

- The creation of an enabling regulatory and institutional environment that facilitates broadband rollout whilst preserving the broader public interest;
- The removal of any administrative and regulatory bottlenecks constraining network build-out, and co-ordinating further build to avoid unnecessary duplication, particularly of civil works;
- Stimulating network build by operators through reducing the associated investment risk, and by ensuring demand;
- Reducing government's on-going operational expenditure on cost to communicate through upfront capital expenditure;
- Enabling sharing and co-operation on open access wholesale network build-out and operation through ensuring economies of scale, reducing risk and guaranteeing returns.

These important developments will inform future policy options for the White Paper.

3.1.2 State of the market and market trends

In order to develop appropriate policy for infrastructure and services, it is important to examine the current state of the market and identify some of the market trends.

The fixed line telecommunications market remains a near monopoly under Telkom with minor inroads from its competitors. Fixed line teledensity grew from 9,2% in 1993 to a high of 12,8% in 2000 under the impetus of Telkom's universal service obligations. Since then the number of Telkom fixed lines in operation has declined from 5,5 million to 3,6 million in 2014, or a teledensity level of 6,7%. The 2011 Census shows that fixed line access remains highly racially skewed: Although overall

¹ <http://www.gov.za/issues/national-infrastructure-plan/#SI-SIPs>

² DTSP, "South Africa Connect: Creating Opportunities, Ensuring Inclusion, South Africa's Broadband Policy", 20 November 2013.

household penetration was just over 14% in 2011, only about 6% of Black South Africa households had a fixed line phone. The declining trend is expected to continue.

Mobile connection penetration, however, has grown from a zero base in 1993 to 140% in 2014. This does considerably overstate the number of users, as it includes multiple or inactive SIMs, SIMs used for machine-to-machine (M2M), telemetry and 3G data connections for business and consumers. The 2011 Census pegged household penetration at 89%, very much more evenly spread across all racial groups, suggesting continued fixed-to-mobile substitution and an end-user preference for mobile. The market remains highly oligopolistic, with the two major mobile operators together accounting for a market share of almost 75%. As the market is now largely saturated except for the poorest and most remote households, mobile is expected to continue to grow, but at a slower rate than previously. Multiple SIMs for multiple devices will however stimulate some growth.

Internet access has continued to grow since its earliest days in the 1990s, with recent estimates putting unique Internet user penetration at between 22% and 28% in 2012. Growth in the market has increased considerably since 2008, in part at least due to the rise in connectivity through mobile handsets. Census 2011 suggests that just under 9% of households access the Internet primarily from home, whilst the primary form of Internet access for just over 16% of households is via a mobile phone. Again a steep digital divide manifests itself in Internet, with penetration highest in wealthy, urban, White households and lowest in poor, Black, rural ones. It is likely that future growth in Internet user penetration will largely be driven through smartphone and tablet connectivity. The Internet service provider market is highly competitive with providers numbering in the hundreds.

The penetration of personal computers has grown much more slowly, with Census 2011 reflecting just over 20% of households as owning personal computers. There remains a sharp racial and income divide in respect of household computer penetration, with 70% of White households reporting ownership as opposed to 13% of Black households, and with household penetration of computers only exceeding 50% above the R150 000 annual income bracket. This suggests the cost of computers to be a major inhibitor, with prices unaffordable for the vast majority of South Africans. The advent of tablet computers is expected to change this and will probably be a stronger driver with sharp price reductions in these devices likely.

Broadband penetration is a burgeoning market, with an estimated subscriber base of some 8,2 million as at the end of 2012, or an estimated subscriber penetration of just over 15% - although increasing numbers of users enjoy both fixed and wireless broadband access, giving an estimated unique broadband user base of 6,4 million. The overwhelming majority of these subscribers use wireless broadband as their primary form of access, with ADSL remaining relatively stagnant, at a declining market share of just over 10% in 2012. By contrast, wireless broadband penetration continues to grow and is likely to continue to do so. Vodacom is the dominant provider with a market share of over 60%. Recent trends suggest a growing deployment of fibre-to-the-premises connectivity in both business areas and affluent urban suburbs.

3.1.3 Scope

This Chapter/Policy Options Paper outlines key policy issues and options for the development and provision of ICT infrastructure, including converged electronic communications networks, postal infrastructure and its associated services, to support the delivery of content and integrated services.

Respondents to the Green Paper emphasised the centrality of government in creating an enabling environment to ensure affordable access to the full range of services required for effective participation in a modern economy and society.³ Some submissions covered matters related to “*true infrastructure competition*”,⁴ while others focused on the need to differentiate between service-based and infrastructure-based competition.⁵ Several stressed that policy must focus on ensuring economic and societal benefits and enabling users to access the broadest range of IT products and services to spur innovation, creativity, efficiency, and competitiveness.⁶ Many stressed the need for significant reform of the administration, management and planning of the radio frequency spectrum.⁷

This Chapter/Policy Options Paper thus endeavours to discuss ICT infrastructure and services within the context of an integrated policy framework. Even though the issues are presented independently, the linkages and interdependencies must always be borne in mind. Most importantly, it must be noted that the citizen is the key beneficiary of services and consequently at the heart of the policymaking process.

3.1.4 Key questions

Given the changes that convergence continues to bring to bear on ICT infrastructure and services and the complex environment that is evolving, a number of broad questions need to be taken into consideration in drafting a new and forward-looking White Paper, such as:

- To what extent and in what ways must the current policy and legislative basis for the regulation of ICT infrastructure and services be updated?
- How, in an increasingly converged ICT ecosystem, should policy, law and regulation be framed so as to continue to assist the sector to serve as a key enabler of economic growth, a facilitator of social development and a provider of cultural enrichment?
- How should policy, law and regulation ensure that the needs of the citizen, the user and the consumer remain the centre of attention? This includes the need to explore new ways to ensure that all people have affordable access to the widest possible range of ICT infrastructure and services, and that they are empowered to exploit this access to improve the quality of their lives and to promote their economic well-being. It also includes examining how consumer rights can be protected.
- Whether and how postal services can be adapted and modernised to ensure their continued relevance and value, along with how best to leverage the existing postal infrastructure and network to provide an expanded range of goods and services to people?
- New, currently unforeseen or dimly foreseen issues and challenges will continue to arise and evolve in the sector. How should policy, law and regulation be structured so as to keep abreast of this ongoing

³ For example, Research ICT Africa, inter alia.

⁴ Fibreco

⁵ Cf WAPA and Microsoft.

⁶ For example, the ITA and the LINK Centre.

⁷ Ranging from the ABT and the R2K, through the South African Chamber of Commerce and Industry and the Ethekwini Municipality, to the SACF, Smile Communications and Telkom, to mention just a few.

wave of innovation, to cater for new issues and features as they arise and to manage them in the best interests of the country and its people?

3.2 Postal services

The post office has faced a number of challenges including a disruption of services, labour unrest, intermittent strikes, and failure of good governance. There are a number of reasons for this state of affairs, including weak and ineffective oversight structures, poor management at board and senior management level, the decline of revenues as a result of mail substitution by electronic means and skills shortages. There is currently a government programme to stabilise the post office and ensure the development of a turnaround plan to address the short to medium term challenges. The intervention is currently in progress (November 2014), and is not part of the planning for its long term future, which is the subject of this Discussion Paper.

According to the Organisation for Economic Co-operation and Development (OECD), traditional network industries have been transformed through reforms that have fundamentally changed the way these industries are regulated. The former reliance on state control and regulation has given way to greater reliance on competition and market forces, which has led to a greater focus on efficiency, innovation and meeting the needs of end-users. However, these reforms have largely bypassed the postal sector. The postal sector in most OECD countries, including South Africa, remains dominated by a state-owned vertically-integrated monopoly, still largely protected from the forces of competition.

In the current era the postal services sector is an important component of the economic sector in South Africa, contributing approximately 3,16% to GDP. This includes the courier and express parcel market. Letter post is, however, declining both in terms of volume as well as a percentage of total revenue generated in the sector. The declining trend in letter mail volumes is ascribed to the global recession and electronic substitution effects.

While efforts are being made to bridge the wide digital divide in South Africa, postal services remain important for people and communities who do not have ready access to e-mail or the Internet. It is also crucial to receive and deliver goods. The postal network also serves as a conduit for government to communicate with communities in the most rural parts of the country, as well as communities without access to electronic media. In addition many businesses rely on the postal, courier and express parcel market for daily operations. From a commercial perspective, the sector is required to be of high quality and efficient so that economic activity in the country is supported.

The key considerations influencing a policy review of the postal sector are informed by the changes in the postal market globally, and the particular dynamics of the South African environment. While volumes for basic letter mail services are declining, the demand for parcel services is increasing. This requires a holistic rethink regarding the appropriate approach going forward. Another critical area for consideration is the extent of monopoly protection and the rationale for any such decisions as well as the ability of the industry regulator to play its role in regulating the market.

3.2.1 Future of postal services

Globally the traditional postal service sector is undergoing reform, fuelled in the main by the advent of the digital economy. The proliferation of electronic mail as well as other communication mediums, poses challenges for growth in the postal services market. The critical issue for postal service operators is how to respond to these new technological challenges. Globally there is a trend towards greater corporatisation, commercialisation or privatisation prior to liberalisation of the postal market. The general intention is to create a more efficient governance structure for the postal operator, particularly when it will have to compete with private operators in a liberalised market.

Electronic substitution of traditional mail is accelerating as both consumers and businesses adopt electronic processes across multiple domains. Mail users are shifting from traditional hard copy distribution models to a variety of new ways to digitally communicate, advertise, or transact. The emergence of digital methods of communication has, however, not diminished the role and importance of postal services. The advent of modern networks, and broadband internet in particular, have provided new opportunities for the traditional postal services sector.

The digital revolution presents an opportunity as a *disruptive innovation*⁸ to the traditional business of postal services, and as such there is room for out of the box thinking to build new business models, which leverage off a thorough understanding of the evolving needs of citizens. A postal system can help to provide logistical solutions to integrate data flows, physical flows and financial flows.

Respondents to the Green Paper in the main were supportive of the continued mandate of SAPO in terms of ensuring universal service and most proposed that SAPO utilise its extensive network and presence to support the delivery of government services, including e-government, and to provide Internet service to especially far flung rural communities. Suggestions included:

- A focus more on logistics or provision of services (National Treasury);
- Leveraging SAPO infrastructure for government services such as tax filing, small business support, and Internet cafe services (Sumeer Mohanlall);
- Providing Internet services, delivering books and medicine (Progressive Professionals Forum);
- Providing basic internet services through wireless media, e.g. Wi-Fi access in a community (Provincial Treasury- Western Cape Provincial Government);
- Harnessing SAPO broadband infrastructure as the first touch point for government and other services, particularly in remote and rural areas (South African Communications Forum);
- Setting aside space and resources for training, airtime distribution, sale of end-user equipment; rolling out Wi-Fi hotspots in rural and semi-rural areas; and supporting cross- departmental rollout of further government services through SAPO's extensive network (Telkom).

Thus in terms of the future

- The postal services will have to consider new products and services that reflect the evolving mandate to bind the nation together in a new world where people are increasingly communicating digitally.
- SAPO will have to continue to be the Universal Postal Services Obligation provider. SAPO would thus continue to establish points of presence with a minimum set of basic services for communities.

⁸ A disruptive innovation describes a process by which a product or service transforms an existing market by introducing simplicity, convenience, accessibility, and affordability. (<http://www.christenseninstitute.org/key-concepts/>)

- There will have to be a consideration that sector players contribute to a Universal Services Fund. Any member of the postal sector who is deemed to be providing universal services should to be allowed to claim compensation from the Universal Services Fund.
- The postal sector should become government's strategic partner in the delivery of basic services.

The following options relate to SAPO's legal status. Other options dealing with future objectives are presented in subsequent sub-sections.

OPTIONS

Option One: Status quo

The postal sector and SAPO in particular, would continue to function as per the current circumstances. Consideration of this option, must take into account the very recent problems reported in Parliament in terms of the serious financial problems of the SAPO. On the other hand favouring this option will provide for a continuation of the post office's role in ensuring universal service.

Option Two: Service expansion

Necessary policy reforms would be adopted to allow the Post Office to reconfigure its role over and above the core provision of mail service. Based on a thorough market analysis the relevant market for expansion would be defined. This would provide for service expansion such as:

- A focus on logistics in support of industry and within the e-commerce value chain. This may also include, for example, a role in the delivery of books to schools, and medicines in support health care;
- Provision of Internet access facilities for communities, or Wi-Fi zones for underserved areas. The role of the post office in e-government service delivery would be important;
- SAPO becoming a reseller for air-time distribution, bandwidth vouchers, hardware sales and distribution in anticipation of the demand which will be created through broadband rollout.

Option Three: Full or partial privatisation of the Post Office

Postal reform in some countries has included changes from government to private ownership e.g. full privatisation in Germany and Holland and partial privatisation in Kenya and Japan. Privatisation of SAPO would result in a wholly commercially driven agenda with a focus on revenue generation to sustain its operations and make a profit. In this scenario the Post Office would be independent of government control and fully exposed to the market. Careful consideration would have to be given to the impact this would have on universal service. Partial privatisation would have to be based on a careful analysis of which components of the current business structure may be better suited to privatisation.

- Which of the above are options for a future post office in a digital age? Please motivate the pros and cons of the option you support.

3.2.2 Market structure and competition

Two of the 1998 White Paper defines the postal market and the principles of introducing competition in the SA postal sector. It identifies which services are to be kept exclusive and which are to be open to competition. It is critical to note that it recognises the benefits of competition;

however the policy appears to provide that only once the universal service obligations have been achieved, will the exclusive services be opened to competition. The policy therefore provides that, in order to ensure universal service, a set of reserved services be established, in which the universal service provider receives a degree of monopoly protection.

The monopoly service includes all letter mail, the issuing of stamps and roadside letter box collection as well as street delivery box, address box, phantom box, private box and poste restante delivery. All other services, including parcel and express services, and any future services differing from those defined as reserved, are categorised as non-reserved and are subject to competition and market forces. In the postal sector, barriers to trade usually are in the form of legal monopolies granted to a state-owned incumbent or the legislation around the trade in services for private operators. Countries such as Kenya, Australia, Canada, South Africa and Tanzania have legal monopolies which also serve as trade barriers to those specific market segments, in this case letter mail. The legislation protects the interests of the state-owned incumbent, giving the incumbent an advantage over other competitors.

A modernised and effective competition regime is important for the development of the South African postal market. This would entail regulation of the unreserved market which must be subject to the same regulatory regime as the reserved postal market. Currently, however, there are no obligations and conditions on the unreserved and courier postal operators. It is noted, that although prohibited by law, courier and value added services have encroached into the reserved market. Given the intended policy role of SAPO as government's delivery partner in providing and facilitating crucial services to underdeveloped areas of the country, it is important that its monopoly be retained but in a way that promotes efficiency within the market as well as improves service delivery.

The commercialisation of postal services is an important process of adaptation to make it responsive to market requirements and customer needs in a rapidly changing business environment. The introduction of regulated competition in the postal market will promote competition and ensure that postal operators compete with each other in providing services efficiently and at acceptable levels of quality and price. The overall objective is to transform postal providers into dynamic market-led and customer-oriented enterprises that satisfy the needs and expectations of users, regardless of their geographic location.

Green Paper respondents who commented on this issue were in favour of the retention of a reserved market to ensure and guarantee universal service. The Progressive Professional Forum, for example, argued that the Post Office is not ready for privatisation, given that South Africa is still a developing economy. Other submissions motivated that the postal sector must be segmented in line with international agreements, based on the Universal Postal Union Strategy. The latter provides for three dimensions, namely, Physical, Electronic, and Financial, with associated conditions and obligations. In addition, there were calls that policy should create an environment that attracts increased investments in the sector and allows the development of postal infrastructure and services that support national development goals. Suggestions were made that policy should examine the allocation of responsibilities to postal operators in a competitive multi-operator environment.

The objective of policy reforms must thus seek to develop empowering provisions to licence unreserved and courier postal operators with conditions and obligations. Overall, the intention must be to transform postal providers into dynamic market-led and customer-oriented enterprises which satisfy the needs and expectations of business, communities and individual citizens.

OPTIONS

Option One: Segmentation of the postal sector

Segmentation of the postal sector in line with the international agreements into a Physical, Electronic, and Financial dimension. This option would require a refinement of the definitions of postal markets and the roles that the various licensees would play in these markets. The scope of competition in postal markets would have to aligned to the segmentation in order to preserve the universal postal service objectives. 'Reserved services' for the exclusive right of the public postal operator should be defined to prevent market creaming.

Option Two: Reduce SAPO's monopoly

SAPO's monopoly over mailbox access would be repealed, as it has three negative economic consequences. Those that propose this option state that this monopoly enables the Post Office to raise the cost of its rivals' deliveries, deters vertical integration into mail delivery by businesses with large numbers of routine mailings to virtually every postal customer on a given route (such as utility companies) and raises the cost to the customer of substituting alternative delivery services because the customer's reliance on the Post Office will require him/her to construct a new receptacle for private express deliveries.

The scope of SAPO's monopoly over the delivery of letters could also be substantially reduced.

Option Three: Safeguard universal service provision

Whilst competition can bring important benefits for many customers, it needs to be fair and not at the expense of universal service. It is thus necessary to provide legislation which makes it explicit that protection of the universal postal service takes precedence over competition.

▪ Which is your preferred option?

3.2.3 National Address System (NAS)

Quality addressing and postcode systems are essential for national infrastructure and the socio-economic development of a country. They also form the cornerstone of efficient postal services, facilitating business exchange and hence contributing to a country's economic growth.⁹ In most industrialised countries, a physical address is something that is taken for granted, but in many developing countries, as well as some emerging economies, a significant proportion of the population do not have an address. Without an address, individuals cannot be reached, businesses cannot be identified by potential clients, and public services cannot be delivered properly.¹⁰

In 2012 the Universal Postal Union (UPU) in its 25th congress in Doha adopted the White Paper on 'Addressing the World - An Address for Everyone'. The White paper emphasises that comprehensive

⁹ Universal Postal Union, "About Addressing", <http://www.upu.int/nc/en/activities/addressing/about-addressing.html>

¹⁰ Universal Postal Union, "Addressing the world initiative", <http://www.upu.int/en/activities/addressing/addressing-the-world-initiative.html>

street naming and house numbering provides a basis for communicating and exchanging physical items, while enabling the implementation of national policies for socio-economic development.

Currently, South Africa lacks an effective NAS able to capably and comprehensively identify streets and individual buildings that could facilitate the delivery of mail and other goods. This has a serious impact on citizens, for example, who require an address in range of different situations, including to be able to open and maintain a bank account. Better address coverage further helps private sector actors to expand their market by identifying and providing access to key customers and facilitating goods and service delivery.

OPTIONS

Option one: Status quo

The first option entails doing nothing, if it is deemed that the current address system regime sufficiently addresses the needs of both the citizenry and industry.

Option Two: Development of a NAS and associated database

This entails the establishment of an effective and reliable NAS for the country and a country NAS Database. Policy would have to empower SAPO to be the custodian of national address rollout and the creation and management of the Address Database.

- | |
|--|
| <ul style="list-style-type: none">▪ Is the development of a NAS necessary? Which entity should be made the custodian of the database? What provisions would you like to include in a NAS? |
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3.2.4 Universal service and access

Universal service and access policies stress that all South Africans have the right to an effective, efficient and affordable basic postal service regardless of their geographic location or economic status. While there are different approaches to the definition of a universal postal service internationally, most countries have tended to employ the monopoly service provider and reserved market areas as mechanisms for attaining this. The standard rationale for the reserved area is that it allows postal operators to cover the costs of providing a universal service. Postal infrastructure is seen as a “natural monopoly”.

The following are some of the emerging trends regarding postal liberalisation and the provision of Universal Service Obligations:

- Competition is emerging although most universal service providers remain dominant in their respective markets.
- New entrants introduce new business models, which give customers better targeted and or lower cost services.
- Large mailers have been the primary beneficiaries to date; with improved quality of service, lower prices, and innovation while consumers and small business have seen limited changes or improvement.
- Universal service providers are making important changes, including aggressive cost reductions, increased pricing flexibility, improved service quality and innovation, and diversified revenue, all in response to or in anticipation of postal liberalisation.

Postal services are considered a public service with an associated expectation of universal service. With the introduction of new entrants and enhancement of competition, national objectives such as universal service goals cannot be left only to the incumbent operators.

The Green Paper asked “*What role should operators in the unreserved segment of the market play in so far as universal service is concerned?*” Respondents mostly suggested that all players in the market should be required to share the ‘burden’ of universal obligations, and that the implementation of these obligations must be managed in a manner that is not counter-productive or which defeats the ends of competition. The Progressive Professionals Forum said that the distinction between reserved and unreserved services is a clear one in practice and the distinction should be maintained in the future. They also proposed that operators in the unreserved segment should contribute to a fund focused on the rollout of universal services in the postal sector. Telkom suggested that a universal strategy must begin with a delineation of those areas where market forces address the needs of citizens, and those areas where it does not. Accordingly government funding should be ring-fenced to those areas that fall within the universal service market. Telkom also suggested that if accounting separation at SAPO is implemented to ensure that state funding does not compete with private funding, then all those in the unreserved segment (including SAPO) could be required to make contributions to the Universal Service and Access Fund (USAF). The SACF stated that a market analysis study should be undertaken to determine what would be the best measures for the South African market.

OPTIONS

As far as access is concerned, the policy option is to declare postal network (infrastructure) an essential network. Postal operators having access to each other’s network can bring real benefits to consumers.

Option One: Revision of scope and extension of obligations

A policy revision would revise the scope of universal postal services in South Africa with a view to extending obligations to market players in the unregulated space. This would be based on the fact that, contrary to its original policy objective which conferred exclusive rights to the incumbent operator (SAPO), couriers and value added services have encroached into SAPO’s exclusive markets, resulting in de-facto competition in an area where there should be none. Therefore a mechanism is required which expands obligations to all market players regardless of the market segments in which they operate.

Such a revised policy would introduce provisions requiring all players in the market the ‘burden’ of universal obligations. This would entail a revision of the scope of the universal service provider (USP) in South Africa, in particular extending this obligation to market players in the unregulated space.

However this would have to be informed by a proper analysis of the current postal market in South Africa, inclusive of the cost of providing such universal service obligations, the incumbent’s current position as well as the form that obligations should take. The review should also consider alternative ways of funding universal service.

In order to ensure the provision of universal service, the universal service provider(s) should be given some form of exclusive or monopoly protection in certain aspects of the markets. Furthermore, standards should be set for the universal service provider(s), and conditions imposed through a licence agreement.

- **Does the scope of the USP need to be refined?**

- **Would you agree that obligations must be extended to the unregulated space? Provide reasons.**

Option Two: Establishment of a fund for financing the universal service obligation

The 1998 Postal Policy maintains that provision of universal service obligations should be derived primarily from profits earned on monopoly and non-monopoly activities. It further provides that in order to achieve sustainable profit levels the Minister may in consultation with the Universal Service Provider, set revenue and volume growth targets in licence conditions. However, the monopoly position granted to SAPO has been ineffective as a tool for achieving such obligations. Consequently an alternative means of funding must be considered. The establishment of such a fund however would have to be preceded by a detailed market study, and an assessment of the mechanisms adopted elsewhere (e.g. Sweden, Italy and France).

- **Do you agree that a fund is necessary? Motivate your reasons?**
- **Should you agree that a fund is necessary who should manage the fund?**

3.2.5 Postal Services

3.2.5.1 Definition of postal services

The current definition of postal services is based on traditional postal services. It is therefore proposed that the definition be revised given the expanding and evolving role of postal services in a modern digital era. Revised definitions would have to be based on an assessment of the current and potential market for postal products and services in respect of unmet customer needs. The revised definitions would also consider current and new demands. Examples of new demands could include address management systems, consignment services, direct mail, hybrid mail, electronic transfer of funds, etc. It is proposed that if the definitions are revised these should accommodate the provision of new electronic services and integrated solutions, i.e. activities that are related to, or dependent upon, the postal value chain from an upstream perspective e.g. address database services, targeting services, mail production services, etc., as well as from a downstream perspective e.g. response handling services, fulfilment services, mail room management services, etc.

OPTIONS

Option One: Status quo

The currently legislated definitions of postal services are sufficient and thus no revisions are required.

Option Two: Postal service definitions to be updated to reflect the evolution in service provision

New definitions would be developed to accommodate SAPO's mandate in view of market failure. New definitions would account for the distribution of postal services through modern technological innovation and the application of new technology.

- **Should the postal service definitions be updated? If so what are the key considerations in the definitions, bearing in mind that the definitions provide the scoping of the mandate?**

3.2.5.2 Banking services

The Postbank was established in 1910 as a savings bank. It may not provide loans or overdraft facilities to its customers. It is, however, a member of the multinational financial services organisation, VISA, and participates directly in the National Payments System, PASA. In its 2012 Annual Report, SAPO reported that deposits to the Postbank grew by 6,9% in the year, bringing the total savings under its management to R4 258 million. As at 31 December, 2012, there was an industry total of R151 816 million in 'savings deposits' of which the Postbank deposits represent 2,6%. However, with over six million customers, the Postbank ranks in the top five banks and has a formidable customer base to launch new services and products in the lending, borrowing and investment sectors and thus provide much needed competition in the sector.

The combination of financial services with the postal service predates the modern era. There are examples of other models in which the Postbank is independently situated from postal services. Although institutionally separate from the postal service, the Postbank currently utilises the postal infrastructure, sharing counter space within post office buildings, mainly in those areas where it is too costly for the Postbank to maintain its own branches.

There were varying views on whether the Postbank should be a stand-alone fully-fledged independent banking institution in responses to the Green Paper. Sumeer Mohanlall, for example, was in support of the Post Bank being a subsidiary of Post Office. The SACF, however, said that financial services are value added services to the business of the Post Office and therefore the DTSPS needs to carefully consider whether it is correctly positioned and resourced to provide the stewardship necessary to guide a new bank in this economic climate. They argued that the Postbank should not exist as a subsidiary to SAPO and, that if there is still a demonstrated need for a Postbank, this should rather exist independently of SAPO with a more adequately resourced Ministry. Telkom, on the other hand pointed out that the Postbank provides services to the marginalised sector of the public. They suggested that the Postbank does provide a limited series of banking services and as such should be required to hold a banking licence for the very reason that it serves marginalised communities that require consumer protection.

It is noted that the Postbank has a formidable customer base to launch new services and products in the lending, borrowing and investment environment and thus provide communities it intends servicing much needed financial relief. It is therefore argued that the Postbank must be positioned to facilitate financial transactions on SAPO platforms for individuals without financial accounts.

OPTIONS

Option One: Status quo

No policy amendment would be required. The current process to corporatise the Postbank as a subsidiary of the Post Office would continue. The Post Office would be positioned as a competitor to the commercial banking sector.

Option Two: Establishment of the Postbank as a developmental bank

Policy would extend the mandate of the Postbank to function as a developmental bank. The Postbank would be required to offer services to the unbanked, co-operatives, SMMEs, and other

sectors. This would require a special licence that would allow it to function as a developmental bank outside of the commercial banking licensing terms.

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| <ul style="list-style-type: none">▪ Which of the above options offer the best possible solution, taking into account the evolution of the postal sector, as well as the needs of citizens who are not in reach of banking services? |
|--|

3.2.5.3 Freight and logistics

The postal sector presents its own unique challenges in that it involves not only communications but also transportation and logistics. However current policy frameworks do not include logistics within the sector. Consideration must therefore be given to the development of an appropriate policy and legislative framework recognising that the sector falls both within the communications market and, where physical goods are concerned, within the transportation and logistics markets. It must be noted that postal logistics has a complex transportation network for efficient mail delivery.

Freight and logistics provide an opportunity for a new dimension in the postal business. Logistics may be defined as the process of planning, implementing, and controlling the efficient, effective flow and storage of goods, services, and related information from point of origin to point of consumption for the purpose of conforming to customer requirements. Logistics Post must be able to cater to any demand for moving goods, parcels and consignments in terms of delivery deadline and quality of service, and with appropriate monitoring and tracking ability.

OPTIONS

Option One: status quo

The status quo would remain and the definitions and mandate would not be extended to freight and logistics.

Option Two: Enable an end-to-end logistics service

A policy would be developed providing for the enablement of logistics, transportation management and end-to-end merchandise services to fulfil sector challenges.

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| <ul style="list-style-type: none">▪ Do you agree that the Post Office must undertake logistics services?▪ Is the Post-Office capable of offering such a service, and would this boost the Post-Office's bottom line? |
|---|

3.2.5.4 E-commerce

Direct marketing is a booming sector and transactions via the Internet are increasing at a high rate. It is believed that e-commerce will very soon be a leading way of conducting business. This dynamic business environment needs a highly developed supply chain infrastructure, which could involve high costs and a long lead time to set up. Logistics lead to mail consolidation programmes, a volume-leveraged transportation network and proprietary technology tools to help reduce postage and distribution costs while improving delivery reliability and predictability.

The postal sector allows people and businesses to access the world market from where they are while assuring a local focal point even in the most remote areas. The postal sector is in a strong position to support the South African Internet economy. The potential greatest threat to the postal

industry, the Internet, has therefore emerged as its greatest opportunity to realise greater value from its core assets and strengthen its role as global provider of services for the facilitation of trade and commerce.

Current policy frameworks which govern the postal service do not however provide for its role in the e-commerce environment. The development of policy to provide for a logistics service, as proposed in the foregoing section will partially address the problem. In addition, further policy enhancements are required to position the postal networks in order to meet demands posed by e-commerce and m-commerce initiatives through the application of ICTs and new technologies in postal products.

Postal service must thus evolve to be enablers of e-commerce and catalyse the growth of this market by creating a seamless cross-border network and service. The sector must extend its service portfolio along the entire e-commerce value chain thus being the main intermediary for the entire business, including financial and information services and solutions. Due to the dramatic changes taking place in global commerce encouraged by the rapid evolution of the Internet and the greater accessibility of ICTs, it is important to develop systems to appreciate the postal network as a non-exclusive, easily-accessible delivery mode.

OPTIONS

Option One: Status quo

There are currently sufficient players to support online and thus there is no room for expansion of the postal service in this area.

Option Two: Support of e-commerce and provision of electronic signatures

Policy provisions must be developed, where it is necessary for the Post Office to become a key institution in support of e-commerce and m-commerce growth, and the delivery of packages. SAPO has achieved successes in the areas of e-commerce, hybrid mail and supporting other institutions' electronic transactions. The SAPO Trust Centre has been fully accredited by the South African Accreditation Authority in terms of section 37 of the Electronic Communications and Transactions (ECT) Act and SAPO can now provide Advanced Electronic Signatures. Safe and secure e-signatures are key for vibrant e-commerce development. SAPO must thus harness this unique position as an accredited service providers offering secure transaction services in the country (e-signature service provider). (Refer to Chapter Four: Policy Options - Digital Society, for further options regarding electronic signatures)

- Do you agree that the postal sector must harness its network's key assets to support e-commerce and m-commerce trade? Explain.
- What strategies do you propose for the Post Office to harness its accreditation to provide electronic signatures?

3.2.6 SAPO Infrastructure

The SAPO holds a 25-year licence and is the only operator licensed to provide services within the reserved area. Any review of infrastructure must therefore take into account its potential to alleviate

the infrastructure and service gap. SAPO has developed considerable networked infrastructure to support its services. On the retail side, SAPO infrastructure comprises about 2 497 service points country-wide of which 1 753 are Post Office outlets and 874 are Retail Postal agencies (RPAs). This gives SAPO an extensive and perhaps one of the largest retail footprints in the country, most of which is located in remote areas. The retail network offers services such as mailing, courier, financial as well as agency services including TV licences application and payment, motor vehicle licence renewals, and municipal collections and bill payments, private sector share scheme distribution.

This country-wide network of post offices positions SAPO as a key player in rural connectivity and overall ICT service delivery. Research conducted during the policy review process indicates that Kenya is one of many countries that has realised the value of its postal network infrastructure and made moves towards commercialising the network. This was done through franchising some of its non-profit generating post offices to private operators giving them access to postal network infrastructure.

Post offices are also seen as potential ICT access points that could offer a broad range of services (including e-services), as well as extension of the broadband network to rural areas that do not have broadband coverage. Post offices are therefore considered as potential points of presence for broadband infrastructure provision, and this potentially places SAPO as a key element in last mile provision. In support of both the retail and logistics segments, SAPO has to date invested heavily, in both IT and broadband infrastructure.

While SAPO's internal process and IT systems appear to be world class, its network is not adequately capacitated to provide access to external parties. This works against the government goal of utilising post offices as public access point for ICT infrastructure, related services and financial inclusion. The key issue from an infrastructure perspective is how can SAPO's infrastructure contribute to the objects of SA Connect, and broadband for all?

Green Paper respondents made proposals regarding SAPO's infrastructure on two levels. From the perspective of contributing to infrastructure provision the SACF, for example, argued that SAPO should have high capacity broadband networks built for their exclusive use, but with excess capacities made available to other users in open access business arrangements. They cautioned however that SAPO must not become an operator in the broadband space but must stick to its core business. The Treasury of the Western Cape Provincial Government and Telkom proposed that SAPO play a role in last mile access, by providing basic Internet services through wireless media such as Wi-Fi to local communities. Cell-C was also in support of leveraging the post office's infrastructure for the rollout of broadband and suggested that post-offices provide a useful place for peering or interconnection, or for exchanges.

On the second level, respondents proposed that SAPO has a critical role in providing ICT-related services. In the main, respondents proposed that SAPO should provide access to e-Government services. Others extended this and proposed that SAPO's infrastructure be used to extend multi-purpose ICT type services, including training. The ACEIE at the University of Pretoria pointed out that the Green Paper did not mention the Public Information Terminals (PITs) of SAPO. This is a joint venture between the Department and the Post Office to enable citizens to access information on

government and educational services and to communicate by e-mail. By implication it is suggested that the success of this project needs to be evaluated, as it may be one of the options for SAPO to provide Internet access points to citizens, with minimal infrastructure requirements.

POLICY OPTIONS

The following policy options are not mutually exclusive.

Option One: SAPO's broadband infrastructure is leveraged to offer broadband services in rural and under-served areas.

This could entail the following:

- SAPO broadband infrastructure would be used to deploy last-mile connectivity, with each SAPO branch working with licensees at a local level. This would include the provision that, where feasible, fibre termination points be at post offices.
- SAPO infrastructure, with state funding assistance where necessary, would be increased beyond SAPO needs and the resultant excess capacity would be sub-let to the private sector in open-access low cost strategies to encourage new entrants and innovative entrepreneurs. The terms of utilisation of the SAPO network would be on the basis of infrastructure sharing amongst operators and any other entity wanting to utilise SAPO's infrastructure at a fee agreed to by parties.
- SAPO's infrastructure would be made available for peering or interconnection, or for exchanges.
- SAPO's points of services would be extended to provide Wi-Fi zones within a specified radius of the retail outlet. SAPO could consider partnering with a private player to roll-out Wi-Fi zones, or alternatively investigate how this could become an additional income stream.
- SAPO, however, would not become an operator in the broadband space, but would commit to its core and potentially expanded mandate

- **Do you agree that SAPO's infrastructure could be leveraged as described above? What are the pros and cons of utilising SAPO's infrastructure?**

Option Two: SAPO to provide value-added services over the broadband infrastructure.

Given the existing and the potential expansion of SAPO's network infrastructure, it is potentially ideally placed to provide a host of value-added services to citizens, and especially in rural areas. There was strong support among the Green Paper submissions that the SAPO infrastructure must be leveraged to deliver e-services, including access services. Post offices across the nation, and especially in underserved areas it was argued must become key touch points for government services, especially e-Government. Currently SAPO does provide support for a myriad of government services, such as payment of bills, and licence applications. Given the anticipated escalation of e-government deployment, SAPO is in an ideal position to become an e-government service point. In addition SAPO could also consider other e-services which are of value to communities including, e-banking, e-tax, small business support, online job applications etc.

- **Do you agree that SAPO is in a position to provide the above services? Explain why, and comment on whether expansion into these types of services is warranted in a digital era. Comment also on whether the proposals relate to profitable areas of expansion.**

3.3 Regulating for Converged Networks

The notion of convergence is a current reality, which the EC Act of 2005 has taken note of. It is not possible in the current era for the various types of infrastructure to be planned in isolation from each other or from the services riding on top of them. Technology-neutral regulation therefore becomes necessary, together with a need to review legacy regulation which will defer the benefits of convergence for South Africa.

The realities of a converged market must thus be entrenched in the future White Paper. Regulation needs to evolve to respond to real-world changes associated with convergence, rather than be a barrier to the benefits of those changes. The ICT Green Paper discussed the convergence phenomenon and observed that it will impact on the ICT sector in a significant manner because of:

- Technological convergence which enables previously separate technologies such as telephony, data and video to be transmitted, saved and received using the same devices;
- Platform, application and service convergence as the shift to IP based technologies erodes the traditional boundaries that used to define the underlying infrastructure. The cost of building infrastructure that can deliver all services is declining whereas the speed has increased many folds because of the inherent speed and size of new infrastructure.

The Green Paper observed that convergence is of particular interest to policy makers and regulators as it allows service providers who were licensed in one category to offer services in other categories, thus introducing innovation and reducing the resources that would be needed to expand services.

The objectives which underpin a review of policy in respect of convergence are:

- **Promotion of technology and service neutrality:** This allows for competition that benefits the consumers, lowers the cost of infrastructure roll-out and enables the uptake of new technologies and innovation. It allows service operators to offer multiple services
- **Ensure same treatment of content in all platforms:** Access and distribution of content can be done using different platforms. For this to happen the acquisition, handling, distribution and provision of content should be regulated in an equivalent manner irrespective of the underlying media or platforms
- **Remove bottlenecks and allow for the expansion of the market** through entry of new players and services.

Questions which need to be considered in respect of regulating in a converged environment include:

- How can SA formulate policies and laws that are flexible enough to adapt to the rapidly changing environment?
- What new market structure should replace the current structure – given the need to redefine the market structure taking into consideration that these markets were defined in isolation and distinct ways in the past?
- What are the implications for regulations targeting monopoly pricing and virtual exclusion when convergence encourages integration and use of one platform to deliver integrated services?
- How must policy and regulation deal with like services in situations in which services attract different degrees of regulations depending on their transmission metrics?

The Audio and Audio-Visual Policy Options Paper deals extensively with the specific issues related to the impact of convergence on the broadcasting and audio and audio-visual sectors. It is thus not

dealt with here. The remainder of this chapter will focus on specific matters of policy which broadly stem from the imperatives of a modern converged environment. However, before giving consideration to specifics, it is necessary to consider what policy positions should be included in the White Paper in support of convergence.

OPTIONS

Option One: Unified Technology Neutral Licensing Framework

There would be a unified technology neutral licensing framework to translate technological challenges into opportunities. There would be no distinction between, for example, mobile or fixed services and data or voice services. This option would entail a new legislative approach imposing a detailed convergence framework. This would include effective regulation of those operators which might attempt to use their current market dominance to frustrate the entry of new players in the converged segments where they currently dominate.

Option Two: Shift in the focus of regulation from sector specific regulation towards ex-post competition regulation

The policy would shift the focus of regulation from sector specific regulation or sub-sector specific regulation towards ex-post competition regulation. This approach would shift regulation to competition matters and include increased self-regulation and co-regulation.

Option Three: Maintain the status quo and evolve regulations as and when necessary

The third alternative suggested is that of a regulatory approach through incremental adaptation of rules and regulations to the various converging segments depending on influence, market dominance and effect on the evolution of new services. This is a do-nothing approach that would require the regulator to monitor the situation and evolve regulations as when and if necessary.

- Based on the above options what should the policy and regulatory approach to the convergence of technologies be? Provide substantiating reasons.

3.4 Market structure and Competition

3.4.1 Introduction

This section deals with market structure issues, the different market segments and the state of competition in the sector and each market segment. Respondents to the Green Paper indicated a need for a thorough review of the market structure in the ICT sector and for the introduction of measures to promote robust competition in order to release the outcomes envisaged in the NDP, SA Connect and other national policies. The failure to introduce effective competition and the resultant domination of the market/s by a few industry players has been identified as a primary reason for South Africa's failure to expand affordable and quality broadband services in line with its peers.

In the future a competitive market will be increasingly important for the development of converged services and the provision of a wide choice of content, applications and services. Additionally, a

competitive market should promote the user's ability to access and distribute information and to run applications and services.

3.4.2 Market Reviews

The regulator is empowered in terms of Section 67 of the EC Act to address market failure where it exists. The Act sets out four distinct steps in this regard:

- Defining the market in question;
- Evaluating the effectiveness of competition within the defined market;
- Concluding whether any particular player has significant market power in the market and if so, is this power detrimental to the public interest; and
- If necessary setting pro-competitive terms and conditions on a licensee with significant market power.

It is envisaged that such market reviews of the extent of competition in the various segments will become increasingly important as the sectors converge. Such market analysis will not only identify potential areas that warrant attention of policy and regulation, but also assess which existing interventions could be set aside.

The information required to complete such reviews are typically intensive and only achieved through initial and periodic collection of data about the market. Various concerns have been raised in this regard. First, there is no single authority that publishes market data on an annual or periodic basis. Second there are no formal process in place to request, collate, analyse and public such market data. Third, there are no commonly agreed set of indicators. Needless to say, this lack of public market data does make it difficult for the regulator to fulfil its mandate with regards to market reviews.

Nevertheless responses from the Green Paper process all noted the failure by the regulator to fully implement the competition provisions of the EC Act. This is seen as one of the reasons for the high cost to communicate, the barriers to market entry for many aspirants and the poor state of competition in the various market segments. Some submissions pointed to the dominance of specific sectors by the established incumbents as pointing to a real need for policy to speak to competition issues as a direct function of the structure of the market. Respondents noted that the regulator had only completed one Competition Inquiry – into termination rates – and that this had resulted in specific conditions being imposed forcing operators to lower their termination rates.

Respondents to the Green Paper were almost unanimous of the need for regular market reviews as a basis for interventions by the regulator to direct the market. They argued that regular market analysis and review should therefore be compulsory. It was also noted that the definitions of relevant markets will change over time as the characteristics of products and services evolve and the possibilities for demand and supply substitution change.

OPTIONS

Option One: Status quo

The status quo would prevail – i.e. the current provisions in the ECA would not be amended but rather the focus would be on adequately resourcing ICASA so that it can fulfil its mandates on promoting fair competition.

Option Two: Compulsory review and publication of data on a regular basis

Policy and legislation would specify that the regulator must regularly publish market review analysis, across *all* identified markets. Policy would set the timeline for the completion of the initial market reviews and these could be updated systematically on an incremental basis prioritising the markets with the most significant impact on consumer pricing. In this regard, it is important that the definition of relevant markets is continuously updated to reflect the ongoing evolution of products and services and associated demand and supply changes. The advantage of this option is that all role players would be aware in advance of the markets to be analysed. This would make planning and budgeting easier.

Option Three: A less intensive form of market review

This option proposes a light form of market review that would dispense with some of the current requirements set out in the law. It is important to note the importance of accurate sector data to supplement such a light market review process. The use of a simplified review process could improve efficiencies with the regulator and ensure that outputs have quicker turn-around times.

Option Four: Market reviews by ICASA and Competition Commission

In this option, the Competition Commission would be given the additional responsibilities of defining the markets, recognising that the regulator has been unable to complete all the steps necessary in the market review process since the introduction of the EC Act and that it has not to date defined all markets. ICASA would still be responsible for conducting the market analysis. In addition the regulator would retain the responsibility of monitoring and investigating anti-competitive behaviours in the relevant markets. The advantages of this option are that all markets will be identified and reviewed periodically by the Competition Commission. This is important since the definition of relevant markets will change over time as products and services evolve and the possibilities for demand and supply substitution change.

- **Which of the above option/s are preferable? Substantiate your response.**
- **Please describe any other policy suggestions.**

3.4.3 Understanding the market-gap in support of Universal Service provision

Market structure and competition are critical tools that can be used by government to ensure that all South Africans can access affordable broadband services. The extent of universal access, the gap in the access to services and areas that do not have services will influence the obligations placed on the operators and their monetary contributions to the universal service fund. A clear understanding of the infrastructure and service gap will equally be important in case public funds have to be committed to any plan designed to extend the services to reach all.

Many respondents pointed to the failure of the authorities to provide a concrete picture of the infrastructure and service gaps as indicative of the lack of will to tackle the digital divide in a meaningful manner. The section on Universal Access and Service discusses the definition of universal access, and related matters. This section confines itself to the discussion on how qualitative information will help determine the approaches to the development of the market in order to close the digital divide. These measures will be a function of the extent of the gap to be closed and will be based on the market segments that would not normally deliver on policy aims without any additional interventions.

OPTION: DEVELOPMENT OF INDICATORS

Many respondents pointed to the need for the development of indicators to measure the extent to which access to affordable universal services has been achieved. These indicators could include the type of infrastructure and services available in each of the 240 municipalities, the quality and reliability of the service, the price paid for the service, the number of users and the levels of sharing infrastructure. Respondents to the Green Paper pointed to the institutional gap that may be responsible for the failure to collect such information, noting that the agency charged with reviewing this does not have the powers to force the operators to report to it on these indicators. ICASA is the only entity which can make it compulsory for operators to disclose and provide such information. However work still has to be done to define the indicators so that there is a consistency to the information required. For the success of this option either the regulator is required to collect such information and publish it or more powers must be given to the agency responsible for universal services to force operators to file such information.

- **Please provide your view on how the market gap may be consistently analysed?**
- **Should the regulator assume the responsibility or should the universal service agency uphold its mandate to do so?**
- **What other options are there other than the proposal above?**

3.4.4 Consistent application of competition rules and their enforcement

Respondents to the Green Paper decried the lack of enforcement of competition rules and the time it takes for the regulator to act in cases of infringements that delay access to rival's infrastructure. The local loop unbundling exercise was quoted as a prime example of how, even after the regulator had determined what needed to be done, the development of effective remedial tools took more than five years. This relates to both the consistent applications of the competition regulations as well as the enforcement of decisions taken. The discussion on market analysis provided for regular market reviews and the publication of measures that would be taken if such reviews find that the market is not sufficiently competitive. This section discusses issues that have been identified as warranting consideration in the implementation of the competition framework.

3.4.4.1 Ex-Ante and ex-Post regulation

There is general agreement that as competition takes root in industries, the approach to regulating that particular industry shifts from industry specific regulations towards the application of general competition law. Some respondents to the Green Paper advocated the immediate adoption of this approach, arguing that there is sufficient evidence that competition regulation is adequate to deal with any anti-competitive behaviour prevalent in the market. Other commentators disagreed, arguing that there are pro-competition measures that should be put in place upfront in order to discourage the emergence of anti-competitive tendencies. The question to be answered is whether the broadband market has developed to sufficiently competitive to warrant the relaxation of the *ex-ante* and sector specific regulations? It is noted that there are market segments in which there are still market players with significant market power enabling them to distort competition in both the fixed and wireless broadband services.

OPTIONS: EX-ANTE REGULATIONS

The options focus on the extent to which *ex-ante* regulation is still relevant.

Ex-ante regulation will support coordination of infrastructure rollout; encourage private sector investment; avoids duplication of efforts and promotes general sector efficiencies. Ex-ante regulation will also ensure that the most marginalised communities are prioritised in the license obligations of sector players and the national policies.

The definition of the markets, in this option is a prerequisite. *Ex-ante* regulations would include open access obligations, obligations on accessing the spectrum, the requirements to share infrastructure, structural and functional separation, facilities.

Option One: Status quo

The current provisions in the EC Act would remain in place with no further policy intervention.

Option Two: Ex-ante focused regulation

Current *ex-ante* regulations especially those governing access, interconnection and sharing would be implemented more rigorously. Additional *ex-ante* regulations would be considered, based on the outcome of the broadband value chain analysis currently envisaged by the regulator.

Option Three: Limited ex-ante regulation

In this option, current *ex-ante* regulations would be limited, especially those rules that predate convergence. All existing *ex-ante* regulations would be subject to a cost benefit analysis. In instances where the costs exceed the benefits derived, the regulations would be withdrawn.

- Which option do you prefer? Explain why.
- If regulations need to be tightened, explain which specific areas?
- If regulations need to be loosened, explain which specific areas?
- What are other options, and why are they preferable?

3.4.4.2 Consolidation of market activities: Mergers and acquisitions

Mergers and acquisitions are expected as the market begins to consolidate and sector players strive for efficiencies. Numerous consolidation activities are currently underway in the sector.¹¹ While some see consolidation as necessary in dynamic network infrastructure sectors, others see it as an innovative way to acquire access to scarce resources. These developments warrant consideration as to their potential effect on the application of competition rules. Their impact raises the issue of how a consistent approach to market competition is needed. Currently there is no defining policy on mergers and acquisitions. Each case is treated on its merit. This situation results in uncertainty for both the potential investors as well regulators and policy makers

¹¹ For example, Neotel\Vodacom, MTN\Telkom

It is important to note that in terms of the Competition Act, the Competition Commission has the primary responsibility for all merger approvals. In terms of the EC Act, however, ICASA has the primary responsibility for approving changes in ownership control and in transferring licences. In many instances, joint approvals by the Competition Commission and ICASA are required for mergers to take place.

It remains to be seen what the impact of consolidation will be on competition and overall consumer welfare. What is important is that policy should ensure that mergers and acquisitions do not serve to distort the market by entrenching one dominant player. As such, mergers and acquisitions should be subjected to regulatory and policy oversight to ensure that competition drivers and government objectives are not compromised.

OPTIONS

Option One: Status quo

The current provisions in the ECA would remain. No further policy intervention would be necessary.

Option Two: A more clearly defined role for ICASA

ICASA's mandate for approvals of market consolidation would be made more explicit. In instances requiring approval by the Competition Commission, the competition body would be required to approach ICASA for comments as part of its consultations process.

Option Three: A more clearly defined role for the policymaker

The Minister's role in approvals resulting in market consolidation would be made more explicit. When the Competition Commission and ICASA are confronted with such an application, they would be required in specified instances to consult with their line Ministers. The implications if the respective line Minister disapproves of an application would have to be considered.

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| <ul style="list-style-type: none">▪ Is there need for a specific policy on market consolidation on mergers and acquisition in particular? Motivate why?▪ Is there a clear role for the regulatory in dealing with mergers and acquisitions?▪ Is there a clear role for the policymaker in dealing with mergers and acquisitions? |
|---|

3.4.4.3 Facilities-based and service-based competition regulations

In the electronic communications sector, the debates about the modes of competition centre on the comparison and the determination of the efficacies of facilities-based versus services-based competition. Those who support facilities-based competition claim that in the long term, market equilibrium will be realised when players in the market build their own facilities. Those who support service based competition argue that available facilities, usually of the previous monopoly, should be shared. They argue that competition should be downstream, mainly in the retail market as opposed to the wholesale market.

There were varying views among the Green Paper respondents on this issue, though many (including Telkom, ISPA, Cell C, and the Link Centre) supported the need to introduce *both* facilities-based and

service-based competition to support the escalation of broadband provision across the country. Smile Communications stressed that a hybrid model between facilities-based and service-based competition should be introduced in the short-to-medium term until such time that the market has evolved along the lines required by convergence. In reality the current regime favours both facilities-based and services-based forms of competition.

There was also a strong push that infrastructure-based competition should be introduced in areas that are commercially viable and that service-based competition should be introduced in areas that are economically not viable as market players cannot be expected to compete in these underserved areas. Intel, for example, strongly supported this view. Others though supported smart light-touch regulations promoting facilities-based competition, arguing that where robust facilities-based competition exists, there is less need for regulation. They stated further that regulatory intervention may be appropriate where there is less competition, thereby pushing for the regulator to conduct market analysis and determine the areas that need interventions.

European Commission guidelines may offer some added assistance as they introduce guidelines for state intervention in the provision of broadband access and networks. The concept of *black*, *grey* and *white* areas were used in Europe to distinguish between areas where no infrastructure exists (*white*), areas with only one infrastructure in place (*grey*) and areas where more than one network operator is present (*black*). The Commission is of the view that state aid supporting broadband networks is generally permissible in white areas, but would not be permissible in black areas as state aid would be likely to distort competition. In grey areas, the onus rests on member states to demonstrate that the existing or planned network is not or would not be sufficient to satisfy the needs of the citizens and that there are not less distortive means to reach the stated goals.

OPTIONS

Option One: Status quo

The current provisions remain in place and no further policy intervention would be necessary.

Option Two: Facilities-based competition (FBC)

Regulatory policy would promote multiple sources of facilities-based electronic communications services to the public. FBC would apply to both fixed-line and wireless, unlicensed and licensed providers. It must be noted, that FBC may not be feasible in under-serviced areas.

Option Three: Service-based competition (SBC)

Service-based competition would be introduced where it is not economically viable to compete in infrastructure deployment and where it is necessary to share the risks of building infrastructure. The lack of effective regulation of wholesale markets and the inability to provide incentives to operators to share infrastructure means that wholesale broadband has not been widely accessed, thus affecting the development of service-based competition. Policy would thus consider the merits of a split between wholesale and retail services where significant market power exists and ensure the application of non-discriminatory principles. It is noted that in the EU, service-based competition for broadband access has not been as effective in challenging the incumbents' dominance in local access markets.

This option would have to be complemented by a clear definition of market structure. This would facilitate the development of the appropriate competition remedy in the selected markets.

Option Four: A hybrid approach

In terms of this, there would not be a blanket approach to either FBS or SBC. Instead policy would promote a combination of facility-based and services-based competition *subject to different markets conditions*. This combined approach would be intended to stimulate investment and achieve a healthy balance of competition between incumbents and new entrants.

- **Which of the above options are preferred? Explain why.**
- **Are there any other options which would address the problem? Explain.**
- **Should SA consider guidelines for state aid/intervention and competition forms (infrastructure or facilities) similar to the concept of black, grey and white areas as used in the EU?**

3.4.4.4 Interconnection

The EC Act, recognising that interconnection between competing licensees is a key prerequisite, has substantial provisions dealing with interconnection and its regulation.

ICASA has prescribed regulations to facilitate the conclusion of interconnection agreements.¹² The regulations and interconnection principles contain model terms and condition, including timeframes and procedures for agreements. Subject to these regulations, any licensee can, on request, secure reasonable interconnection with any ECNS licensee, potentially subject to a market threshold determined by ICASA. Interconnection agreements must be filed with the regulator, which is empowered to intervene in respect of interconnection disputes.

Among other things, the regulations require operators to publish interconnection offers, including the location of interconnect facilities, capacity of the facilities, and prices charged. This is to ensure that everyone knows of the interconnection opportunities. The regulations are geared towards transparency in the interconnection engagements between different competitors.

The current regulations do not deal with pricing, the terms of financial arrangements between parties, and requisite levels of service for interconnection. Parties are only required to notify the Authority and file agreements, without ICASA dealing with the terms of the agreements. The bigger operators still have price-setting potential over the smaller competitors who seek to interconnect as the only way of survival.

Interconnection revenues have traditionally been a major revenue stream for mobile operators. Pre 2009, fixed-mobile and mobile-mobile interconnection rates came under increasing scrutiny, and were deemed to be disproportionately high in relation to cost and to have a substantial impact on the cost to communicate. ICASA was pressured to relook at the interconnection rates which were seen to be a competition hindrance and unfair to smaller operators. Following a market study and a disputatious process, the regulator recently issued regulations in this regard, establishing call

¹² ICASA (2010) 'Interconnection Regulations, 2010', Notice 282, Government Gazette No 33101, 9 April 2010.

termination rates along a 'glide path' of progressive reductions, and providing for asymmetric termination pricing.¹³ There are, however, currently no rules for data or IP interconnection.

While interconnection regulations are important and have the potential to level the playing field, they are constrained by what the regulator can or cannot do to regulate the financial arrangements between the parties entering into connection agreements. Interconnection regulations cannot be enough without the full implementation of the competition sections of the EC Act, which can impose pro-competitive remedies in case of unfair discrimination or abuse of dominance.

Comments received in respect of interconnection issues concerned whether all providers should be required to offer interconnection or just those with significant market power (Link Centre); the ushering in of the interconnection framework for transit network operators (ABT); the implementation of an asymmetric interconnection regime that should be adapted by the regulator in particular to calls originating from the underserved areas and remote rural areas (USAASA); and that the points of interconnection of the fixed networks and the mobile networks should be at the same physical location (Telkom).

- **Are the current provisions governing interconnection sufficient?**
- **Should the legislative specifications regarding interconnection be strengthened or amended through imposing additional requirements or removing others (e.g. by providing for the regulator to set interconnection pricing without engaging in a Chapter 10 market study, or by including IP interconnection, or by explicit provision for asymmetry, or in any other way)? Please make specific recommendations.**

3.4.4.5 Roles of State-Owned Companies (SOCs)

Another element for consideration in relation to the market structure is the role of state-owned entities whose activities influence the subsectors to a significant degree. Public owned entities are creatures of policy to the extent that they're designed to enable government and society to achieve policy ends. A review of the market structure is premised on the need to review the entirety of the policy framework given that some of the policy objectives haven't been realised. The roles of SOC's must thus be appropriately considered and delineated so as to assist in meeting objectives such as universal service and access.

¹³ ICASA (2014) 'Call Termination Regulations, 2014', Notice 844, Government Gazette No 38042, 30 September 2014.

In the current situation state-owned companies have a significant impact on the country's ICT market structure. For example:

- Telkom and Broadband Infraco are the country's leading long-distance backhaul providers. Together, they own almost 50 000 kilometres of long-distance fibre spanning the entire country and every province. As such, the retail prices that mobile operators charge their subscribers are significantly impacted by Telkom and Broadband Infraco's wholesale pricing.
- Telkom also plays a significant role in the Fibre-to-the-Home / Fibre-to-the-Business market as it owns and controls the country's fixed-line local loop. If the local loop had been unbundled by 2011 as per Ministerial Policy Directions of 2009, the country would possibly have had additional competition, operators, technologies and services in the local loop space. Prices for ADSL or even XDSL, might even be cheaper than they are today.
- Although unsuccessful, Sentech was the first ICT licensee to offer high-speed wireless broadband. Since its launch of MyWireless, a slew of wireless broadband providers have entered the market and gone on to transform the data market, the voice market, the wireless market and the broadband market in the country.
- The utilisation of Broadband Infraco's network has enabled it to reduce the cost of connectivity in the long-distance market by between 60% and 80%. Broadband Infraco has also established Points of Presence in 28 under-serviced areas identified in its I-ECNS licence.

The market structure and levels of competition will impact on the availability of services for universal provision. This demands that measures be taken to aggregate public sector demand and to promote consolidation. The prerequisite for effective direction of both public and private sector players to meet universal service obligations is a thorough understanding of the degree of coverage and access to services by all. The obligations to be imposed on the sector and the role of government funding can only be contextualised within an understanding of a gap that has to be filled and the areas that have to be extended coverage.

Government SOC's currently operating at a national level include Broadband Infraco, Sentech and SITA. Each of these entities has founding legislation that mandates it to meet specific access and services objectives. At present none of these are active in the telecommunications retail market. Sentech has exited the retail market, while Broadband Infraco provides wholesale services. SITA operates a closed network that provides services to government departments. It is important to note that the public funding provided to Infraco, Sentech and SITA excludes the public funding made available to the numerous broadband projects at provincial and local levels of government.

In addition to owning these companies, government also holds shares in public listed entities such as Telkom, Vodacom and MTN. These listed entities compete with SOC's in the marketplace. In one sense, public funding is used to compete with private funding. In another sense government is potentially inherently conflicted. The line Minister is both policymaker and the shareholder representative for the listed entities. Invariably the line Minister should make policy that advances public interest but destroys shareholder value (in affect destroying value in its own shareholding).

The recommendations of the Presidential Review Committee on state-owned entities (SOEs) must be noted in formulating policy options. The following are some highlights from the report:

- The need for clarity on the multiplicity of roles of the state as shareholder, policymaker, regulator and/or operator, among others;
- Recognition that SOEs are critical in attaining the objectives of the developmental state;
- Profit and non-profit objectives of SOEs must be clearly defined
- Government should adopt a policy for mandatory periodic reviews of SOEs
- Government should adopt appropriate funding principles and models
- Government should ensure consolidation of the SOEs into the following groupings:
 - Commercial: Able to maintain and replenish market capitalisation autonomously from the state.
 - Development finance institutions: Able to maintain and replenish market capitalisation autonomously from the state.
 - Statutory corporations: Provide basic and essential services
 - Non-commercial SOEs: Dependent on state funding.

Rationalisation of SOCs is in-line with the National Broadband Policy. The definition of the market structure and the identification of the broadband access gap should guide the review of the mandate of SOEs going forward.

OPTIONS

Option One: Status quo

The current provisions would remain in place.

Option Two: Government sells its stake in listed entities

In this option, government would sell its shareholding in Telkom, Vodacom and MTN. The Minister would cease to be the shareholder representative and government would forego dividends from these entities.

Option Three: Consolidate all SOC's into one national entity

Government would consolidate the ownership structures of Infraco, Sentech, and/or SITA (including the provincial and metro broadband initiatives) into one national entity. This entity would in turn become the basis for open access and networks.

Option Four: Consolidate some public listed entities with some SOC's

In this option, government would consolidate the ownership structures of some public listed entities with some SOC's. The Malaysian model in which the fixed incumbent was tasked with providing universal broadband and access with direct government subsidy for fibre rollout, is a case in point.

- **To what extent do state-owned companies influence market structure and performance?**
- **What measures are necessary to aggregate public sector demand?**
- **What policy measures are required in respect of the role of SOCs in the market?**
- **Should any public entities be consolidated with private entities? What would be the rationale for doing so?**
- **Should a policy measure specifically state that SOC's should not be competing in markets where private entities are already operating?**

3.4.5 Broadband and internet infrastructure

Electronic communication network infrastructure development is an on-going national challenge. The challenges of lack of connectivity and low penetration of especially broadband and Internet infrastructure in the rural areas of South Africa are acute and exacerbate the digital divide. Policy interventions and collective efforts are needed to build the information society and a knowledge economy in South Africa in order to achieve improved socio-economic development.

Broadband services in South Africa are delivered over copper lines, fibre optics, by satellite, and wirelessly. The broadband market structure is characterised by a large number of market players which do not effectively compete against the dominant market players as a result of constrained access to funding or regulated resources. Both the mobile and wireless markets are dominated by vertically integrated players including MTN and Vodacom and to a lesser extent Telkom, Neotel, and Cell C, all of which have invested substantially in the deployment of networks in economically feasible high density population areas.

Previous and current government policies and market interventions by the regulator have failed to promote effective competition, particularly in rural areas which to a large extent remain underserved or unserved.

There are various segments of the broadband infrastructure value chain that policy should consider in order to advance affordable universal service and access. Such infrastructure segments, which serve to influence the structure of the market, include the following elements: International connectivity, domestic backbone, metropolitan networks and last mile access networks.

3.4.5.1 International Infrastructure

International infrastructure is that which provides South Africa with connectivity to the rest of the continent and internationally. This comprises undersea cables and satellite.

3.4.5.1.1 Undersea cables

International connectivity is provided via undersea (or submarine) cables. Currently, South Africa is connected to the rest of the world through four submarine cables which provide a combined capacity of 11.5 terabits per second of international connectivity. This capacity is available on a wholesale basis from at least five providers. There are additional undersea cables under construction which will further increase the international capacity. These undersea cables connect South Africa with Europe and Asia, as well as with other African countries through the various landing points on the east and west coast of the continent. In addition, South Africa is connected to neighbouring countries through cross-border networks.

Since the introduction of undersea cable competition in 2009, this segment has displayed effective competition and prices have dropped dramatically which has driven demand for international capacity. Despite this growing demand, there is still considerable capacity available to meet future needs. Given that effective undersea cable competition has been established, the focus should be on interventions to extend the connections between South Africa and the SADC region in order to develop South Africa into a hub of broadband activity in the region.

- **Are there any further policy measures which are needed to ensure that optimal use of undersea cables continues to promote affordable local access?**

3.4.5.1.1.2 Satellite

The South African market has for some years attracted the attention of satellite space segment operators with many satellites being equipped with spot beams covering the Southern African region. The list of companies that own and operate communications satellites serving the local market include Intelsat, Eutelsat, RASCOM, Hellas-Sat, RSSC, AsiaSat, YahSat and Avanti Communications. Services are mostly used by businesses in both metro and rural areas. Services are resold through operators including Telkom, Vodacom, Sentech, MTN Business, QKON and Internet Solutions, plus smaller downstream service providers.

Satellite service is generally regarded as a last resort high cost option if terrestrial technologies cannot economically reach an area not connected to terrestrial networks. However, satellite technology can offer cost-effective solutions where there are no other options. Unlike terrestrial networks, satellites can provide coverage nearly everywhere: Urban and rural, densely or sparsely populated using a single platform.

Satellite-based services are ideal for the delivery of electronic communication services in rural areas where other solutions such as optic fibre and wireless are either infeasible or will take too long to deploy. Extensive satellite capacity is available over South Africa in C-band, Ku-band and Ka-band from numerous commercial satellite operators. Satellite capacity leases are generally available for periods no less than three years. The entire terrestrial broadcasting network is fed via satellite capacity leased from a commercial satellite operator.

Currently there are no locally based satellite operators, and as such there is little control over the costs of satellite connectivity.

OPTIONS

Option One: Status quo

The status quo would be maintained. This involves paying for transponder capacity from foreign satellite operators. The high cost of leasing capacity remains a challenge.

Option Two: South Africa to invest in its own satellite

This would require government to invest in its own satellite so as to provide an alternative connectivity solution for areas that are currently underserved or unserved and that are not suitable for terrestrial connectivity. This would require securing of an orbital slot for South Africa. Other models of investing in this satellite could be considered, such models include: Collaboration with other sectors to have different payloads on the satellite that could be used for different services, i.e. military, civilian, etc. This would require a consideration of a multi-stakeholder approach.

Option Three: South Africa to find a host for its transponder on either existing or future foreign satellites

This option would entail finding a host for South Africa's transponder on existing or future foreign satellites. This would enable the country to have some form of ownership on the payload.

- **Is satellite connectivity a viable option to address connectivity where terrestrial options are prohibitive?**
- **Which of the following options described above are preferable?**

3.4.5.2 National Backbone Infrastructure

South Africa has made significant investments in the rollout of national broadband backbone networks which entails, the long distance fibre optic links, including regional (rural) district extensions. Backbone connectivity is provided by a number of private and state-owned enterprises. Telkom's backbone network is the most extensive, connecting most cities and towns. This is followed by Broadband Infraco which covers major national routes. These networks are complemented by additional backbone networks on high-demand routes between Johannesburg, Cape Town and Durban (Dark Fibre Africa and FibreCo), and by fibre networks between Johannesburg and East London (FibreCo) and between Pretoria and Musina (Liquid Telecom).

South Africa therefore has an extensive long distance fibre network and approximately 86% of the South African population resides within 10km of access to fibre. A policy framework for the provision of and access to National Backbone infrastructure is a critical step towards attaining universal access to broadband. In particular, policy should take into account the fact that the majority of the current backbone networks are not available on an open access basis. Furthermore, policy should seek to promote the deployment of Points of Presence (PoPs) in all 270 municipalities.

OPTIONS: POINTS OF PRESENCE

Option One: Impose PoPs on licensees

ICASA would incorporate the deployment of PoPs as part of universal service and access obligations.

Option Two: Government investment on PoPs

Rather than rely on the private sector, Government would invest in the rollout of PoPs through public entities such as municipalities, state owned companies, SAPO etc.

- **Do you agree that it is necessary to promote the deployment of Points of Presence (PoPs) in all 270 municipalities? If so please motivate whether this should be achieved through obligations on licensees or whether Government should undertake the responsibility.**

OPTIONS: BACKBONE CONNECTIVITY

Option One: Create a single National Broadband Network (NBN)

This would be unified infrastructure built on open access principles. The single network would comprise fixed and wireless elements from state and privately owned networks. It would offer wholesale services to all licensed service based operators on a transparent and non-discriminatory basis. Considerable obstacles to a successful roll-out of the NBN include:

- Agreement on the ownership structure of the network (role of government vs. mobile operators, relative shareholdings).
- Accommodating the different levels of willingness and capacity to invest that is likely between mobile operators.
- Governance of the entity.
- Setting a suitable return on investment and setting of wholesale pricing.
- Managing and accommodating business risk (e.g. that traffic may be substituted over time by an alternative technology, perhaps operated by one of the shareholders).
- Ensuring the commercial strategies of the co-investing operators are kept confidential; and
- Making optimal commercial decisions on running, developing and expanding the network, without the benefit of a clear retail link to end customers

The Single National Broadband Network could be implemented by means of a joint venture model, i.e. a special-purpose vehicle (SPV) which makes the model scalable and permits alternative investment sources.

The consideration of this option must be informed by the current study being undertaken with regards to market structure and open access, as well as work related to Digital Readiness in terms of the SA Connect policy.

Option Two: Create a new state-owned National Broadband Network Company (NBNC) to provide rural broadband connectivity

The current access gaps point to the need to intervene in the provision of broadband infrastructure and services where there is market failure, which in the South African context, is mostly rural areas. Policy would be developed to create a new state-owned company focused on providing connectivity to rural areas through network deployment in these unserved and uncompetitive areas. Considerations of this option would include: The definition of the rural areas by the regulator, the viability of creating this new state owned company and its management and operations.

The focus of the NBNC would be on rolling-out both core and wireless broadband services on an open access basis. Wireless access services could be provided in areas where private operators are not willing to deploy infrastructure and services. In addition the NBNC could also have a mandate to roll-out PoPs in underserved areas. This obligation could be negotiated in its licence terms and conditions with ICASA.

Furthermore, in an effort to service Government as an anchor-tenant on its network, NBNC should pursue collaborative efforts with other SOCs and organs of State to realise seamless procurement of network services for the benefit of critical public service institutions and to avoid unnecessary duplication of broadband infrastructure.

Option Three: Public outsourcing

This option would involve the use of private and public sector assets to increase efficiency and would be heavily dependent on public funding. It would focus on aggregating public demand and maximising the use of public sector funding. Government would award a contract to a private sector firm to construct and operate a broadband network on its behalf. In this option, government would fund the entire network and the infrastructure would remain in government ownership.

Option Four: Allow market forces to provide national broadband infrastructure

Market forces would provide national broadband infrastructure through the multiple fixed and wireless networks of the public and private sectors. This market-led approach would rely on effective regulatory tools and mechanisms to extend the network to reach all South Africans and address gaps and bottlenecks in the rollout of broadband. This would include the restructuring of the market into an open access regime in which all players with significant market power (SMP) would be required to offer services in line with open access principles and to interconnect with other networks.

This would require a more proactive regulator capable of regulating all aspects of the market to vigorously develop and enforce competition regulations where necessary taking into account new open access market regulatory demands. The market would lead roll-out of broadband services with public resources plugging the gaps in areas where the market cannot offer services profitably.

- **Which of the above options provide the best means to ensure backbone connectivity? Please also comment on the specific terms described in each of the options.**
- **What other options are there to provide for backbone connectivity? Please motivate?**

3.4.5.3 Metro Infrastructure aggregation

Most municipal areas have considerable core network infrastructure much of which belongs to Telkom. Some municipalities have built their own municipal fibre networks to serve their needs. The Metro network is a regional network comprising a number of interconnected aggregation/switching sites. Dark Fibre Africa has built nearly 8 000 km of metro ducts and fibre in all major metros and a number of secondary cities providing open access dark fibre on a wholesale basis.

The current metropolitan area networks have limited network infrastructure in townships, highlighting the unequal deployment of infrastructure. Furthermore, there is lack of coordination in the rollout of broadband in metropolitan areas and this has resulted in unnecessary duplication of effort and networks. In addition, there have been challenges in the municipalities' practices in the provision of way leaves and other approvals critical to create an enabling environment for the deployment of broadband. There is therefore a need to coordinate, harmonise and expedite the rollout of broadband at the levels of local, provincial and national government. Moreover, policy must ensure that metro networks are linked to the national broadband network for seamless provision of broadband services.

OPTIONS:

Option One: Development of rapid deployment policy

In line with the EC Amendment Act (2014), the policy would support the development of a rapid deployment policy to cover the activities of various national, provincial and local authorities in dealing with the various permissions that are required to roll-out infrastructure. This policy would facilitate access to rights of ways and way-leaves in order to allow for rapid deployment of infrastructure. It will make provision for streamlining of local planning permissions, particularly in harmonising current legislation with the bylaws of municipalities for rapid deployment.

[NOTE: *There is a more detailed set of options relating to Rapid Deployment further on in this section. See ‘Measures to fast track rapid deployment of infrastructure’]*

Option Two: Use of government facilities as sites

This option would use public sites, such as police stations, schools, clinics and government sites, as anchor tenants, thus reducing the required funding from government. The aggregated demand of the public sites would promote the business case for networks, especially in rural areas. This option is consistent with SA Connect’s proposal to have Government as an anchor-tenant to aggregate public sector demand. Consider, for example, that SAPO has over 1 200 depots, a large number of which are located in under-serviced communities, and which can serve as PoP sites.

Should this option be favoured, consideration must be given to the constitutionally-defined areas of responsibility of national, provincial and municipal government.

Option Three: Public investments

This policy option could be used as an intervention in areas that are not commercially viable. Government would fund the entire network construction and own the infrastructure. An example of such a model is the City of Cape Town, which has deployed its own fibre network, initially for the purpose of connecting municipal offices but with excess capacity being made available to the market.

- **Which of the above options are preferred modes of aggregating metro and municipal infrastructure? Explain.**
- **What other options may achieve this objective? Explain.**

3.4.5.4 Last mile Infrastructure: Access networks

Research has identified the access network as the largest gap in national broadband infrastructure provision. Broadband access is provided via mobile, fixed wireless, ADSL and, to a very limited scale, satellite and fibre-to-the-premises (FTTP). Mobile coverage is the most extensive, though mobile broadband access is primarily afforded to profitable urban areas and data costs are relatively high. It is critical to extend broadband access in order to provide universal broadband service but this is largely dependent on the assignment of high demand spectrum (700 & 800 MHz) to mobile operators.

In the fixed-line market, Telkom is the sole provider of ADSL connectivity, though it has only 800 000 subscribers. The cost and points of interconnection into the Telkom network remain a challenge for most internet service providers offering internet services over ADSL. Fixed wireless is available in limited areas and fibre to the premises (FTTP) to a very limited extent at a high cost. The high costs of network deployment are forcing operators to explore measures such as infrastructure sharing in order to reduce costs. Open access policies may provide further opportunities to reduce cost by promoting wholesale access to network infrastructure or services. In this regard policy should promote open access to all platforms, namely fixed and wireless.

The issue of asymmetrical treatment of fixed and mobile broadband and the need for technological neutrality in this regard was raised in Green Paper submissions. It was argued that policy is required to establish a wholesale segment of mobile operations so that mobile operators are required to offer

wholesale solutions on their networks in a similar manner to requirements set for the incumbent fixed operator. This implies a form of functional separation of the network and retail activities of the mobile operators in the mobile data services market.

In a converged environment, unbundling the local loop (LLU) should include unbundling of copper, fibre and wireless infrastructure to allow access to other licensees. With regards to LLU, the regulator undertook a rigorous process to obtain public view around implementation of LLU. This process underscored how divided the sector is on LLU, the different forms and whether it would achieve rural connectivity, lower prices and increased competition. Owing to the technical and process complexities associated with the implementation of LLU as well as a requirement to understand what the impact of LLU will be, ICASA decided to do a Regulatory Impact Assessment.

Last mile infrastructure gaps may thus be addressed through policy on open access principles.¹⁴ The regulation of infrastructure sharing and mandating open access on all access platforms, including fixed, wireless and fibre is necessary. The sharing of infrastructure can take place at a number of different levels, viz. civil infrastructure, transmission media and internet protocol level.

OPTIONS

Access network is the segment of the network that connects end-users to the first aggregation point of the metropolitan area network. Based on submissions, three options are proposed:

Option One: the status quo prevails, and ICASA's Regulatory Impact Assessment continues.

Option Two: Advance LLU and make it accessible as an essential facility on non-discriminatory and reasonable terms and with a price control.

Option Three: Mandate open access on all access platforms including fixed, wireless and fibre.

Option Four: The unbundling of the local loop should include bit stream access and other associated IP protocols presently largely controlled by incumbents.

- Which of the above options or combination of options are best suited to achieve 100% last mile connectivity? Explain.
- What other options are there? Motivate your recommendations?

3.4.6 Measures to fast track Rapid Deployment of Infrastructure

Government must consider how significant non-cash and indirect investments in infrastructure can be made. The role of municipalities is especially important in this regard. The anticipated escalated infrastructure rollout programme provided for in SA Connect and SIP 15 planning, will place a huge

¹⁴ Currently the definition of Open Access has not been decided upon. However, The SA Connect Policy uses the Organisation for Economic Cooperation and Development (OECD) characterisation as a working definition for open access: "Open Access arrangements share some common elements, they refer to wholesale access to network infrastructure or services that is provided effectively on a fair and reasonable terms, for which there is some degree of transparency and non discrimination".

load on local government - it is estimated that as many as eight thousand towers may be erected in just a single year.

In responding to the Green Paper, the South African Local Government Association (SALGA) noted that municipalities struggle on several levels with the rollout of broadband networks:

- Uneven IT skills and knowledge across municipal administrations to properly guide and negotiate with service providers;
- Limited national or provincial engagement, consultation and support to municipalities to align and fast track such broadband projects; and
- The lack of transparency concerning the services provided and associated costs by private sector companies.

There was strong support in the Green Paper submissions which encourage fast-tracking guidelines for rapid deployment, and the use of innovative application processes.

OPTIONS

Note, the options below are not mutually exclusive. They may be considered independently of each other, and when coupled they may synergistically promote investment in infrastructure.

Option One: National coordination centre

A **national coordination centre**, working together with the SIP 15 infrastructure team would be established to support rapid deployment and interface with local municipalities to fast track rights of way and way-leave approvals.

Option Two: Measures to fast track Rapid Deployment

The **implementation of a Rapid Deployment Policy**, which would include

- **Standardisation of application and approval processes** for rights of way, way-leaves and servitudes to local municipalities;
- **Digitisation or automation of the application process** to expedite applications and avoid bureaucratic red tape and enable transparency using on-line tracking mechanisms; this could be supported by the development of a national GIS system making it easier to identify available sites;
- **Transparency of data** in terms of the provision of publicly available fibre maps and relevant information on usage of fibre. Currently, according to SALGA's submission, information on where fibre is laid in the ground is not openly available to the public or local government and there is no legal requirement on those entities that have this data to share it. To ensure a sustainable, open and citizen-oriented implementation of the network roll-out of broadband development plans, the fibre maps and relevant information on usage of fibre needs to be made openly available, and policy provisions introduced to enable this.

Option Three: Indirect Investment

There are also alternative avenues for government to speed up the implementation of infrastructure and to provide indirect investment which may be viewed as a form of co-funding. Measures which are proposed are:

- Funding trench digging via the Public Works Fund to assist with fibre laying;
- Making government high sites available for broadband equipment installation.

Option Four: Provision of short courses and workshops to skill local government officials

The Local Government Sector Education & Training Authority (LGSETA) and the Media, Information and Communication Technologies SETA would jointly assess the skills gap at local government and plan training interventions to capacitate officials to effectively deal with applications relating to infrastructure investment. The private sector could be called on to assist with both the gap assessment and the content of training courses. In the short term, short workshops should be considered to bridge the gap but over the longer term there would be a bigger pool of skilled persons to deal with infrastructure issues at the local level.

- **These options respond to the various issues and problems highlighted in Green Paper submissions. When considered together do the proposed options address the challenges experienced at local government with regards to infrastructure deployment? What amendments or alternative options could be considered?**

3.5 Infrastructure Sharing and Open Access

3.5.1 Introduction

Infrastructure is a fundamental component of the ICT ecosystem as it provides the veins through which all data and information flows. Since the mainstreaming of the Internet in the late 1990s era, a key concern of government has been the provision of an enabling infrastructure to enable the array of social and economic benefits. The SA Connect policy notes the negative impact of the lack of always available, high speed and high quality bandwidth in the country

The Green Paper highlighted the fact the electronic communications environment, like other market segments of the communications sector, is subject to technological changes due to convergence that has enabled different services to be delivered using the same infrastructure and received by the same devices. It pointed out the disruptive and beneficiary effects of convergence and posed questions in relation to the policy and regulatory approaches which need to be reviewed to provide regulatory certainty and a market structure facilitating innovation and the introduction of new services. The following sub-sections provide a synopsis of the responses from the Green Paper submissions, with regards to these influencing factors.

3.5.2 Open Access System

The Green Paper discussed the need for the creation of a policy environment that fosters competition, universal access to services and affordable quality services. It noted that there are many bottlenecks still prevalent in the South African ICT market that frustrate effective competition and render the South African market more expensive than peer countries. It also noted the modest results achieved to date through the use of the competition clauses of the EC Act. One of the major bottlenecks identified related to that of access to critical and essential infrastructure. This issue is also highlighted in the National Broadband Policy (SA Connect) which highlights that access to critical and essential infrastructure will determine the failure or success of achieving published broadband targets. The broadband policy notes the relatively poor level of broadband penetration, and that South Africa has lost its status as 'continental leader' in broadband and Internet in the last two decades. Among various provisions, the broadband policy proposes the creation of *"a fair and competitive environment, particularly enabling service-based competition through the enforcement of the wholesale access regulation to dominant market players' networks and mandatory open access to infrastructure rolled out through public investment"*. The Green Paper noted that a

predictable and technology neutral competitive environment premised on open access principles can deliver better results.

Objectives of promoting an open access regime include:

- **Creating a clear access regime that is enforceable:** There are operators with significant market power that can leverage access to their infrastructure to maintain dominance and deny market access to competition.
- **Creating a uniform access regime that takes into consideration all technologies and services:** Different operators have been treated differently depending on the technology used. The fixed network has been expected to provide infrastructure access whereas the mobile sector has not been faced with a similar expectation despite the dominant position of the mobile market. This needs urgent attention as the number of licensed and unlicensed operators is increasingly demanding market access.

Many submissions to the Green Paper pointed to the lack of effective regulation of open access as a primary reason for the failure to achieve the public policy ends in the ICT sector. While the majority of submissions favoured open access, there were calls to ensure balance between, on the one hand, allowing providers to recoup investment in broadband infrastructure thus encouraging further such investment, and, on the other, preventing excessive profits and ensuring universal access and service to remote and disadvantaged communities.

The position taken by incumbents towards opening up their networks to competitors was cited as a reason for high costs, slow take-up of broadband services and the prevalent slow speeds. It was observed that the EC Act mentions an open access regime only once and does not provide sufficient details which, in turn, have hampered the work of the regulator to enforce or determine the perimeters of an access regime.

Some submissions pointed to the need to balance the requirements for an open access regime with the reality that more investments are needed in the last mile for connectivity. The need to ensure a return on investment by those who invest in the last mile was cited as a reason why policy should be balanced and cautious.

The research undertaken during the policy review process also concludes that the last mile fixed access network needed significant investment to connect homes, public facilities and businesses. In addition research indicated that there is a need for the definition of the principles that must characterise the open access system. Further research has been conducted to close this policy gap and options will deal with this aspect.

Many respondents, in supporting an open access regime, also urged for the associated definitions to be fast-tracked. The need for definitions was called for to distinguish between open access on the physical layer, network layer or service layer in order to bring certainty to the market about obligations and expectations when building connectivity services. One of the respondents pointed out that open access at the physical layer is technically and commercially complex and requires extensive collaboration and commercial agreements; open access at the network layer they stated is less complex and already widely done (e.g. JINX); and open access at the service layer will allow high

levels of innovation and development, especially in the Over the Top (OTT) services over IP space (e.g. Skype, Facebook, Microsoft Office 365, Netflix).

The SA Connect Policy uses the Organisation for Economic Cooperation and Development (OECD) characterisation as a working definition for open access:

“Open Access arrangements share some common elements, they refer to wholesale access to network infrastructure or services that is provided effectively on a fair and reasonable terms, for which there is some degree of transparency and non-discrimination”

There are other working definitions that could be considered including the definition of the Body of European Regulators for Electronic Communications:

‘Mandated wholesale access whereby operators are offered effective, transparent and no discriminatory whole-sale access to the subsidized networks’

In supporting the development of policy to effect an open access regime, an initial founding framework is required in terms of definitions. The foregoing discussion provides two definitions of open access. However research by the DTPS has indicated that there might be a need to go beyond these definitions in order to make the open access regime definitions useful for regulation. In this regard it is proposed that the definition contain elements of operational and technical characteristics in the definition of principles. The operational characteristics should be measurable and should be easily used to determine the extent to which a given service is provided on an open-access basis. Technical characteristics will detail the level at which an operator offers access to its networks. This differentiation could be useful in determining the elements of the network that would require mandatory open-access requirements to avoid duplication and those which would not require mandatory access in order to direct investment to those elements. The following definition is thus proposed:

A network which satisfies all of the following criteria will be considered an open-access network:

- **Offers effective access to the infrastructure.** Effective access will be defined as attainable access easily accessed in reasonable locations using standardised interfaces. The service must be unbundled to a sufficient degree so the access seeker does not have to purchase services it does not need. The quality of service should be suitable to the access seeker’s needs and requests for variants of a service should be accommodated where technically feasible.
- **Offers transparent services.** The service pricing, terms and conditions of access to the network must be available to interested parties and the regulator. The billing for services should be transparent and clear. The timeline and processes for procurement, fulfilment, assurance and billing should also be transparent and clear. There should be no cross-subsidisation and operational and financial information should be available to access seekers to demonstrate that services are rendered in a cost effective manner
- **Offers access in a non-discriminatory manner.** The access provider will be required to provide services on a non-discriminatory manner and will not favour services affiliated with its company. This will involve ensuring equivalence of inputs and outputs, the safe guarding of confidential information, the separation of systems and processes and prevention of conflicts of interest among staff.

POLICY OPTIONS

Option One: Status quo

The status quo would prevail. One of the submissions against open access argued that open access regulation is still in the experimental stage and the jury is still out as to whether it is the right policy choice especially in circumstances where large investments are needed for extending data networks.

Option Two: Adopt the principle for open access, but not provide for a definition

The second option is to adopt the principle for open access, but not to provide for a definition upfront. Instead the regulator, should, from time to time, provide definitions for open access, based on prevailing conditions in the environment.

Option Three: Implement an open access regime, as per the current broadband policy

The third option would be to implement an open access regime, as per the current broadband policy. This would entail providing a definition of open access in legislation based on the criteria described above.

- Which of the three options do you favour? Provide reasons.
- Should you support option three, please comment on the criteria.

3.5.3 Infrastructure Sharing

The principle of infrastructure sharing seeks to promote effective competition, avoid duplication of investment in infrastructure, reduce cost of services and realise universal access objectives. The EC Act introduced a horizontal licensing regime to promote competition among licensees. Notwithstanding this, the market remains structured among vertically integrated incumbents with multiple licences. These incumbents continue to compete downstream with multiple service providers creating anti-competitive incentives. Such anti-competitive behaviour includes the unavailability of the incumbent's networks at various segments or levels of the network.

In cases where such networks are available through regulation, incumbent operators impose high costs for leasing such facilities. New players therefore resort to building their own networks instead of relying on third party infrastructure, which in certain cases remain unprofitable. This leads to unnecessary duplication of infrastructure and hinders competition particularly in the services segment of the market. For example, at an infrastructure level, most operators' network (fibre, ducts), especially active infrastructure, is not available to other licensees. Competing through the facility-based model is capital intensive, thus posing a barrier to entry into the sector for most players. This necessitates policy to encourage competitive infrastructure sharing. Key issues which need to be addressed include a determination on which level of infrastructure provision is infrastructure sharing intervention required and if LLU policy needs to be advanced.

A majority of Green Paper respondents indicated support for the advancement of local loop unbundling, and more-so as a principle of open access and facilities leasing. Other respondents argued that the policy should not limit LLU to copper local network only but should also consider access platform technologies such as wireless. The exception to this position was MTN which argued

that LLU should be restricted to unbundled access to the copper local network and bit-stream access/xDSL services. Cell C proposed that the local loop should be made accessible as an essential facility on non-discriminatory and reasonable terms with price control. WAPA argued that the EC Act explicitly obliges essential facilities providers to lease such facilities upon request subject to technical and financial feasibility; and that a request for access to the local loop is a facilities leasing request and should be seen to be such. Strong support was also evident for the coordination of infrastructure rollout to enable network extension through the regulation of “one build” civil works or mast erection, in line with the SA Connect Policy.

Other issues raised in submissions included the separation of the business of incumbents (both mobile and fixed line) as a key intervention to facilitate infrastructure sharing. ISPA emphasised a need to consider both retail and wholesale markets to determine which market needs to be regulated. Allowing network competition to extend networks and services, with likely duplication of resources and infrastructure in a resource constrained environment, needs to be weighed against the effects of having a single common carrier backbone that offers fair, open access to its facilities in a competitive services sector. Thus structural separation of the local loop and backbone activities may be required. Internationally, Open Reach and British Telecom are a successful example of such structural separation.

Infrastructure sharing will promote the objective of the NDP to ensure affordable access to an array of ICT services. To this end, policy must seek to provide for the maximisation of use of facilities through infrastructure sharing. Furthermore, in keeping with the object of the EC Act, facilities leasing should promote an environment of open, fair and non-discriminatory access to broadcasting services, electronic communication networks and to electronic communications services.

OPTIONS

Option One: Status quo strengthened

ICASA’s capacity to enforce existing facilities leasing legislative provisions and therefore broadband infrastructure sharing would be strengthened. This would include requirements for network licensees to interconnect networks, make facilities available at cost-based rates plus a reasonable rate of return, and for the regulator to identify essential facilities and ensure access by competitors. Regulatory powers would include requiring infrastructure licensees to publish reference offers outlining commercial and contractual terms and conditions for access to specific wholesale offerings. This would facilitate more speedy negotiations and possible dispute resolution amongst licensees.

Option Two: Regulate infrastructure sharing at various levels of the network

Infrastructure sharing would be regulated at specific levels of the network as required. This would include the **infrastructure layer** of the network, through enabling sharing of passive infrastructure such as masts and ducts, and the **transmission media layer**, through enabling the sharing of copper (LLU) and fibre infrastructure. A thorough market analysis into the behaviour of incumbent operators would be essential to determine policy and regulatory interventions.

Option Three: Local loop unbundling

Local loop unbundling is a specific application of open access and facilities leasing. Technological developments are changing the landscape of “essential facilities”. For example, technology has introduced the wireless local loop (WLL). Policy would thus make provision for other access technology platforms of the local loop, including unbundling of copper, fibre and wireless infrastructure to allow access to other licensees, based on open access principles.

Option Four: Encourage active network sharing

This option would include core network sharing or national roaming based on market competition analysis. An appropriate legal and regulatory framework would be developed to ensure smooth roaming arrangements between operators without any uncertainty. This option thus relates to the creation of policy promoting competition in the active infrastructure segment of the market.

- **A strong argument has been made in submissions for the promotion of network sharing. Which combination of the above options will in your view most effectively support the objective of the NDP of ensuring affordable access to ICT services?**

3.6 Universal access & service (UAS)

South Africa as an emerging economy is faced with a number of developmental challenges. Out of a population of 52 million people in 2011¹⁵, some 45% lived below the poverty line, an unemployment level of 22% and income inequality among the highest in the world, with a Gini co-efficient of 0,7. About 68% of households had radios¹⁶ according to the Census and 75% televisions. Only 15% of households had a fixed line phone, 24% a computer/s and only 25% access to the Internet at home. Although the country has made great strides in the area of mobile telephony, resulting in mobile teledensity figures of well over 100% (with just under 90% of households reporting mobile phone access), broadband penetration has lagged, with just under 7% of the population having access to broadband, the majority of them via 3G.¹⁷

In recognising the importance of access to infrastructure, services and content in accelerating social and economic development, government adopted a National Infrastructure Development Plan. The aim of the SIP 15, in this regard is to attain broadband coverage for all by the year 2020.

The vision for ICT related policy (see Introduction of this Discussion Paper) emphasises the right of access to communications infrastructure, content and services by all citizens in all areas on non-discriminatory terms. One way of ensuring access to services by all citizens is through universal access and service (UAS) programmes. UAS refers to policies adopted by governments to ensure that citizens have equal and fair access to a point of communication. While traditionally UAS programmes were aimed at providing fixed telephony, in the current era, the focus has shifted to mobile telephony, Internet and broadband (fixed and wireless).

A distinction is made between universal service and universal access to communication services, although the two terms are often used interchangeably. **Universal service** is aimed at direct provision of telecommunications, broadcasting or postal services to *individuals or households*.

¹⁵ Unless otherwise indicated, all figures in this paragraph are from the 2011 Census conducted by Stats SA.

¹⁶ This does not include car radios or access to radio on other devices but only radio sets in households.

¹⁷ Arthur Goldstuck, ‘Internet Access in South Africa 2012’, World Wide Worx (Pty) Ltd, Johannesburg

Universal access on the other hand is aimed at increasing access to communication services on a shared basis, such as on a *community or village-wide level*, regardless of geographic location or income level.

The Access Gap diagram below, drawn from ITU international best practice, assists in developing policy and regulatory interventions to facilitate UAS. The diagram distinguishes between areas where access can be achieved by good regulation, those areas where once-off interventions in the form of smart subsidies or strategic programmes can close the gap by bringing them within the sphere of commercial feasibility and those where long-term subsidies and ongoing interventions are required. UAS policy aims to reduce or eliminate *all* the gaps indicated in the Access Gap figure. However, much of the focus and nuance of UAS policy inevitably is targeted at the areas of the greatest gaps, which usually entail the *smart subsidy zone* and the *true access gap*.

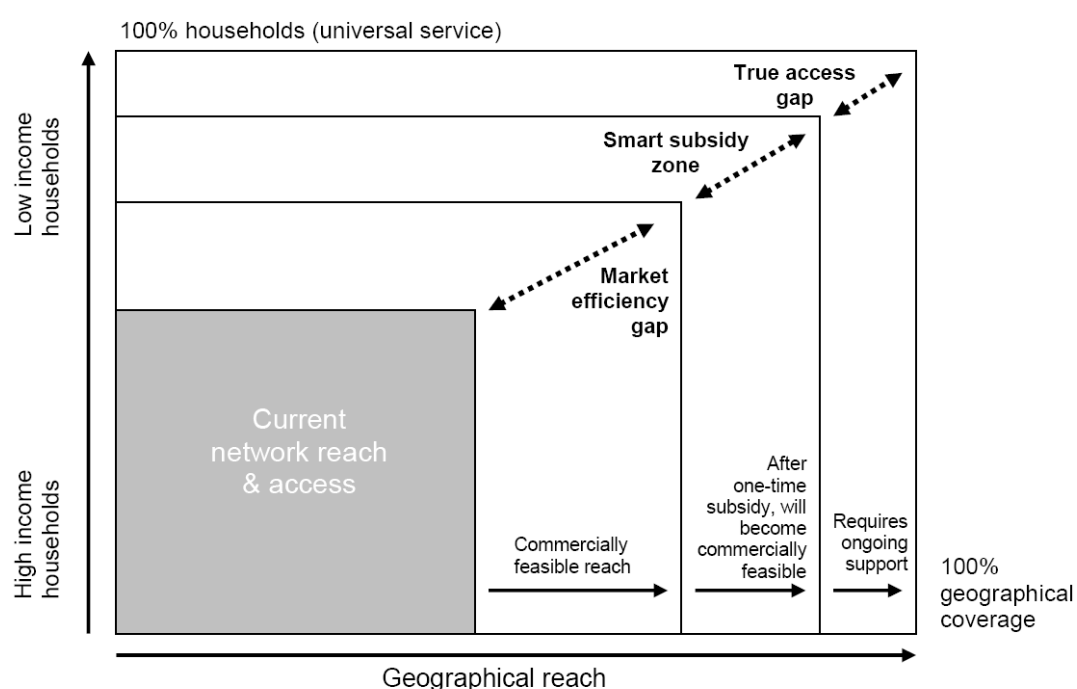


Figure 1: The Access Gap (Source: Infodev, 2009¹⁸, p10)

3.6.1 Universal Access and Service Legislation and Regulation

Universal access and service has been at the centre of policy and regulation since the call in the Reconstruction and Development Plan for “*universal affordable access for all*”.¹⁹ The 1996 Telecommunications Act had as one of its foremost objects, to “*promote the universal and affordable provision of telecommunication services*”.²⁰ This focus on universal access and service has

¹⁸ InfoDev, ‘Universal Access and Service’, 2009, Executive Summary, Module 4, ICT Regulation Toolkit and International Telecommunication Union available online at <http://www.ictregulationtoolkit.org/Mod4ExecSummary> (Note: Versions of this diagram appear frequently in international best practice. It has evolved and been developed since its original appearance in Navas-Sabater, Dymond & Juntunen, 2002, p8.)

¹⁹ ANC, Reconstruction and Development Programme, 1994, Section 2.8.4.

²⁰ Telecommunications Act, Section 2(a).

been carried through to the EC Act which also aims to “*promote the universal provision of electronic communications networks and electronic communications services and connectivity for all*”.²¹

The EC Act contains a number of provisions designed to ensure universal access and service:

- **Universal Service Obligations:** ICASA may (after consultation with USAASA, and considering the Minister’s determinations as to what constitutes universal access and service) impose universal service and universal access obligations on designated licensees.²² ICASA has recently completed a review of these obligations (ICASA, 2012), and revised its USOs associated with spectrum for Cell C, MTN, Neotel and Vodacom (ICASA, 2014);
- **Universal Service and Access Agency of South Africa:** The EC Act provides for the functions and governance of the USAASA;²³
- **Universal Service Fund:** South Africa’s Universal Service and Access Fund (USAF) is governed by the EC Act, which requires ICASA to set the levy payable by operators towards the fund (Section 89 (2)), and empowers USAASA to make disbursements in line with provision (see relevant sub-section below).
- **USAF levy:** ICASA has set the levy for licensees at 0,2% of annual turnover (less MDDA contributions for broadcast licensees) (ICASA, 2011) and channels contributions from licensees through to Treasury. It has also defined under-served areas (ICASA, 2012). No determination of “*needy persons*” has ever been made by the Minister, and expenditure from the USAF by USAASA has been extremely limited, falling far short of contributions;
- **e-Rate:** The Act also provides for at least a 50% discount on Internet services provided to public health establishments, schools, colleges, public further education and training institutions and higher education institutions. ICASA prescribed E-Rate Regulations in 2009.

3.6.2 Universal Access and Service (UAS) in the Era of Convergence

Convergence has implications in developing UAS policy, given that it has altered the original scope of UAS. Whereas in 1995 universal service was regarded as putting a fixed phone line in every household wanting the service, in a converged era, the notion has expanded to include the convergence of voice and data into a single service. It can be expanded to address the convergence of voice, data and video services, including traditional broadcasting services. The scope of UAS policy must be sufficiently broad so as to encompass and cater for convergence and it must be sufficiently flexible to achieve the goals identified in the NDP of universal access and availability to a wide range of converged services at a “*cost and quality at least equal to South Africa’s main peers and competitors*”.

The foundation of UAS policy rests on having a clear set of definitions for Universal Service, Universal Access, and related concepts.

²¹ Electronic Communications Act, Section 2(c).

²² Electronic Communications Act, Section 8.

²³ Electronic Communications Act, Chapter 14. The structure, role and governance of USAASA, along with options for the future, are discussed in the paper dealing with institutional frameworks.

3.6.2.1 Definitions of UAS

It is critical to have common understanding and agreement on the key pillars and the resultant definitions that make up UAS in the context of convergence in order to:

- Guide policy formulation governing UAS;
- Support the formulation, implementation and monitoring of suitable regulations;
- Guide industry in implementing Universal Service Obligations (USOs); and
- Assist citizens to exercise their right to universal, affordable access to the full range of ICT infrastructure, services and content.

In addition, policy must:

- Ensure a clear understanding of what constitutes Universal Access and Universal Service, along with meaningful distinctions between the terms, both in terms of definition and in terms of policy objectives and their legislative and regulatory implementation.
- Provide for practical definitions to give effect to the right to universal, affordable access to communications infrastructure, services and content, paying special attention to the exercise of this right by the poor, by marginalised communities, and by persons with disabilities so that there is no discrimination on the basis of disability.

In terms of Chapter 14 of the EC Act, USAASA must make recommendations to the Minister regarding definitions for universal access and service. The Agency did finalise these following public consultation and the Minister issued a gazette in line with the Act in 2010. The definitions do reflect the tenets of a converged environment:

Determination in respect of Universal Access	
1.	(a) Universal access is provided where all persons in all areas and communities are able to obtain quality, affordable and usable access to a publicly available minimum set of quality - (i) electronic communications network service and electronic communications service, including voice, messaging and data electronic communications service and, in the case of data, including a broadband connection, and access to emergency services using free calls and messaging; and (ii) broadcasting service, including television and sound broadcasting service
Determination in respect of Universal Service	
2.	(a) (i) Universal service for Electronic Communications Services is provided where all persons if they require it, are able to obtain quality, affordable and usable access to a minimum set of electronic communications network service and electronic communications service, on either a household or individual basis, including a voice and data electronic communications service and, in the case of data, including a broadband connection. and access to emergency services using free calls and messaging, where all services are offered on a non-discriminatory basis. (ii) For the purposes of this determination, affordable means at a rate (including connection and usage charges, but not subscriber equipment charges) that does not exceed a defined percentage of a household's total expenditure. (b) Universal service for Broadcasting Service is provided where all persons have access to a diverse range of television and sound broadcasting services, in terms of three categories of Broadcasting Service, that cater for all language and cultural groups, including persons with disabilities, and which provide entertainment, education and information.

Figure 2: Current Definitions of Universal Access and Service (Gazette No.32939, 08 February 2010)

Although the Gazette also provided targets for universal service and access which “*apply for a maximum period of two years or until amended or substituted*”, the targets have not been pursued in any visible manner, and at this time have not yet been amended or substituted.

3.6.2.2 Pillars of UAS

Universal access and service is conventionally understood to rest on three critical pillars.²⁴ Together these pillars provide guidance for policy formulation and regulatory and programmatic intervention aimed at achieving universal access and service. The three also provide useful focus areas for assessing the effectiveness of UAS interventions. They are:

- **Availability** – network coverage of the inhabited geographic territory;
- **Affordability** – ability of users to pay for access to infrastructure and services, including access to devices and networks, cost of service and consumption (e.g. calls, data, content), with targets often set as a percentage of family income;
- **Accessibility** – ability of all inhabitants to use the service concerned (regardless of location, gender; race, disability).

Respondents to the Green Paper made a number of suggestions regarding definitions for UAS. There were suggestions that the SADC Guidelines on Universal Access and Services be followed, which provide for ongoing convergence of infrastructure, services and content in the ICT sector, and that provision be made for the full range of services beyond fixed and mobile telephony to include Internet, broadband and broadcasting. Meredict’s submission, for example, proposed that data, voice, video and multimedia be encompassed in the definition.

Both SALGA and Broadband Infraco highlighted the three pillars of a UAS policy, viz. affordability, accessibility and access. While SALGA emphasised affordability, Broadband Infraco suggested that *awareness* of the use and benefits of communications must be incorporated as a fourth pillar. ISPA called for clarity between “*universal service and access*” and “*universal affordability*”, pointing out that the overlapping relationship is evident in the SA Connect Policy. The Media Policy and Democracy Project (MPDP) also proposed an expanded view of UAS, and suggested that capabilities and literacy’s to use ICTs must be included, and that UAS must enable participation in public life.

OPTIONS

Option One: Status quo plus

The current definitions would remain in place (see above) as these do encompass convergence in terms of providing for voice, data, and content, although access to broadcasting services is still defined separately. The definitions also provide for availability and affordability. It would be necessary to amend these to specify that the definitions should be reviewed periodically and provide for a maximum period within which definitions must be revised.

²⁴ ITU, World Telecommunication Development Report 1998: Universal Access

Option Two: Expand the definitions

This would accommodate submissions made on extending the term beyond the constructs of availability, affordability and accessibility. Proposals appear to align with two additional pillars which the ITU has recently identified:

- **Awareness** - citizens need to be properly informed of the existence of available infrastructure and services, and of their potential benefits;
- **Ability** - users need to possess the necessary skills to take advantage of the infrastructure and services, such as literacy, language fluency, ability to use a computer and navigate the internet.

This option would also include additional definitions, such as that for Persons with Disabilities (see next sub-section).

- **Which is your preferred option? Please motivate.**
- **If you propose expanding the definitions as per option 2, please comment on the proposed expansion.**
- **If neither options one or two are acceptable, please provide alternative recommendations.**
- **Do you agree that provisions must be added to provide for periodic review? If so how often should definitions be reviewed?**

3.6.2.3 Responsibilities for developing definitions

The EC Act splits responsibilities for definitions between USAASA, the Minister and ICASA as follows::

- **Universal Service and Access**
 - USAASA is required to recommend to the Minister the definitions for Universal Service, Universal Access, after a public participation process (section 82(3));
- **Underserved areas**
 - ICASA must make a determination in respect of underserved areas (section 88 (2))
- **Needy persons**
 - The Minister is required to determine:
 - Types of needy persons to whom assistance may be given;
 - Persons who may apply for assistance and the manner in which such application may be made;
 - The manner in which and persons to whom subsidies may be paid (section 88(4)).

Although, as indicated above, definitions of Universal Service and Access and Underserved areas were gazetted in 2010, definitions of needy persons have not yet been published. ICASA did, however, publish draft Underserved Areas Definitions in 2011. These included a list of municipalities which could be defined as underserved areas, according to data from the 2007 Stats SA Community Survey. The methodology of determining these areas was not explained, and they did not seem to be aligned with the proposed definition. The draft stated that the list should be reviewed and updated at least biannually. In September 2012, ICASA published an explanatory memorandum related to the Underserved Areas Definitions. ICASA also has in place a Code of Conduct on Persons with Disabilities, which it is currently in the process of updating.

It has been argued that splitting of responsibilities has had the effect of non-synchronisation.

OPTIONS

Option One: Status quo

The current arrangements would remain.

Option Two: Consolidate responsibilities for the provision of definitions

The responsibility for developing and reviewing definitions would be consolidated. There are a number of alternatives, including:

- Agency/Entity charged with UAS responsibility (if it is not the regulator);
- The regulator;
- The relevant government department.

▪ **Please comment on the above proposals. Provide reasons as to which entity is best suited to assume responsibility for *all* definitions**

3.6.2.4 UAS and persons with disabilities

Section 88(1) of the EC Act provides that money in the USAF may be used for the payment of subsidies, for, amongst other things, *“the assistance of needy persons towards the cost of the provision to, or the use by, them of broadcasting and electronic communications services”*. While the current definitions for universal service and access refer to *“all persons”*, it is implied that persons with disability are encompassed. The definition for universal service for broadcasting, however, does specify persons with disabilities as indicated above.

It is noted that, although the Act gives the Minister the responsibility of defining needy persons, this has not been done to date. USAASA did, following its 2010 consultative process, recommend a draft definition for needy persons, this has yet to be published. The proposed definition for needy persons provided for in the USAASA recommendations is:²⁵

‘Needy persons’ are persons (either collective or individual) who qualify through the application of a means test, considering a combination of factors, such as financial means, disability, age or other vulnerabilities: devised by the Agency; or devised by one or more public service organisations or institutions, which are selected for this purpose by the Agency.

Some respondents to the Green Paper made further recommendations on the definition of needy persons. In a detailed submission the South African National Deaf Association (SANDA) made a number of recommendations for incorporation into the definitions for UAS, including:

- The incorporation of "universal design" requirements into the design of general-purpose products to ensure maximum usability by all without the need for adaptation or specialised design.
- The term ‘communications’ should be defined in line with UN specifications to include *“languages, display of text, Braille, tactile communication, large print, accessible multimedia as well as written, audio, plain-language, human-reader and augmentative and alternative modes, means and formats of communication, including accessible information and communication technology”*. This, the Association said, would remove generalisations and support the development of clear regulations for the sector.
- The term *‘language’* should include signed as well as spoken languages and other forms of non-spoken languages.

²⁵ USAASA, “Position paper and recommendations to the Minister of Communications and the Independent Communications Authority of South Africa regarding definitions of universal service, universal access, under-served areas and needy persons”, April 2009.

- The definition for “persons with disabilities” in the UN Convention on the Rights of Persons with Disabilities should be incorporated i.e. “those who have long-term physical, mental, intellectual or sensory impairments which in interaction with various barriers may hinder their full and effective participation in society on an equal basis with others”.²⁶

OPTIONS

Option One: Status quo

Option Two: The term “needy persons” to be amended to reflect current discourse.

Option Three: Implement the USAASA recommended definitions for “needy persons”

Option Four: Reconsider all of the definitions, including that of “needy persons”, and provide specific definitions for persons with disabilities.

Option Five: Retain current requirement that ICASA develop a Code of Conduct for persons with disabilities (undefined in the ECA).

- | |
|--|
| <ul style="list-style-type: none"> ▪ Which of the following options best addresses the concerns raised in terms of a lack of clarity on persons with disability? ▪ Is it appropriate to encompass persons with disabilities into the definition of “needy persons”, or should a separate provision be made? ▪ Is the term “needy persons” still appropriate? If not what would be a more suitable term which addresses the original intention of the ECA? |
|--|

3.6.3 Meeting the Access Gap

Respondents to the Green Paper identified a number of impediments to the closing of the access gap:

- The focus of business has been on small elite and urban areas where there are substantial returns on investment driven by demand for advanced ICT services;
- Lack of appropriate regulatory mechanisms to encourage licensed operators to invest and achieve the economies of scale in the Access Gap areas, such as incentives linked to spectrum allocation or allowing localised monopolies in underserved areas, supported by direct government interventions; and
- Lack of demand-side pressures created in underserved areas through e-Government and similar programmes.

The affordability of access is seen as the greatest barrier. Proposals to address this included:

- Reducing the cost of providing services through greater use of wireless technologies;
- Stimulating the demand-side to make access to communications services more desirable;
- Stimulating the supply side, including promoting access in rural areas through infrastructure sharing and the targeted use of public funds to extend the backhaul network to rural areas; and
- Reviewing current universal service obligations and funding to determine the most effective way to address basic connectivity needs of those not served by other aspects of the strategy.

Suggestions made for policy options to meet the access gap include the need for:

²⁶ UN, ‘Convention on the Rights of Persons with Disabilities’, www.un.org/disabilities/convention/conventionfull.shtml

- A detailed Access Gap Analysis to ensure that USOs and USF financing are not employed in competitive market segments;
- An examination of appropriate technologies to be used to address the Access Gap; and
- Proper costing of the Access Gap.

Meeting UAS in broadband might require a different approach to that adopted previously. South Africa in making public investment decisions will have to take into account not only existing NGN infrastructure but also concrete plans by operators to deploy such networks in the future. Broadband investment tends to be investment ahead of the market and this should be recognised. Other countries experiences could prove useful in this regard. For example, the EU has published State Aid guidelines designating areas that could justifiably be awarded funds. Funding of areas with competitive provision already available is unlikely to be justifiable in terms of these. The Guidelines prohibit any public funding that distorts or threatens competition to ensure that private investment is not crowded out.

▪ **In undertaking a holistic review of interventions intended to close the access gap, what principles and programmatic approaches are needed?**

3.6.4 Universal Service Obligations (USOs)

USOs remain a recognised and widely used tool to promote the availability of infrastructure and services to all citizens. In most countries USOs initially concerned basic voice services but with ubiquitous mobile networks offering affordable voice communications, this goal may be considered to have been met in most countries. Broadband connectivity is now the main target, either in terms of households connected (e.g. Korea is targeting 100% household penetration) or access for all citizens via community broadband centres.

As noted at the beginning of this section, ICASA has the option under the ECA of imposing universal access and service obligations on licensees. Such obligations have historically been included in the licences of major telecommunications operators (Telkom, Vodacom, MTN, Cell C, and Neotel) as well as in some spectrum licences. They typically include geographic coverage, the provision of payphones or community service telephones, and, latterly, access for schools and public health institutions.

The SA Connect broadband policy notes, however, the *“failure to enforce USOs”* reflecting considerable public debate on their effectiveness, appropriateness and continued relevance. In 2010, ICASA began a comprehensive review of the USO framework to *“establish the need for a revised USAO regulatory framework and the development and publication of regulations, if necessary”* (ICASA, 2012). This culminated in the publication in 2012 of a Findings document, which concluded among other things that:

- The USOs imposed to date remain binding on licensees;
- Any USOs not yet implemented should be suspended;
- A *“pay or play model [should] be invoked”*;
- The determination of USOs should be influenced by a broader range of considerations than merely the category of licence;
- The imposition of USOs should not be subject to detailed market access gap studies.

ICASA subsequently issued revised USO regulations applicable to Cell C, MTN, Neotel and Vodacom which reduced the number of public schools to be connected, removed SIM card and handset rollout obligations and included a requirement to provide Internet access 'schools connectivity', subject to an allocation of schools to be determined by ICASA (2014).

There were several submissions on the issue of USOs. Qualcomm suggested that USOs should be reconsidered so as to address universal access to broadband services. The Link Centre cautioned that experiences to date show how easy it is to get such obligations wrong and that any future requirements should be extremely carefully considered, be of limited and appropriate application and subject to revision on an ongoing basis in the light of changing circumstances in the sector.

A number of submissions, including those of USAASA, the SABC, and Vodacom, argued for no differentiation, stating that in the converged environment operators in the different sub-sectors should be treated the same and have similar obligations with regards to USOs and the USF. Others though argued that there *should be* differences in the treatment of operators in the different sub-sectors in so far as USOs are concerned (ISPA, Progressive Professionals Forum, Cell C).

National Treasury held a slightly different view and submitted that rather than assigning obligations to the different licensees (which could have varying financial implications especially across different services), licensees across all services should be required to make a specific contribution to the USAF. They did caution that the administration of USAF would have to be improved to achieve maximum impact.

POLICY OPTIONS

Option One: Status Quo

ICASA would retain its discretion to impose USOs on licensees after consultation.

Option Two: Differential Treatment of Licensee USOs

ICASA would be required to differentiate between licensees in different sub-sectors (e.g. telephony versus broadcasting versus Internet access versus broadband provision) in imposing USOs. Any such requirement would need to be based on objective criteria differentiating between classes of infrastructure and service, and may present problems in the face of ongoing convergence in the sector and may be dependent on what licensing categories are adopted in the White Paper.²⁷

Option Three: Removal of USOs

Given historical problems with specifying, imposing and enforcing compliance with USOs, related provisions would be removed and licensees instead required to contribute to a properly managed Universal Service Fund. This may require that mandatory contributions to the USAF would increase.

Option Four: Strengthening the USO Framework

An improved USO framework would ensure that obligations are clearly defined, robust, capable of satisfaction and enforceable.

²⁷ Options for the categorisation of licences are dealt with elsewhere in this chapter.

The strengthening of the USO regime for South Africa might include provisions specific to:

- The alignment with determinations on universal access, universal service, underserved areas and other relevant definitions to be kept relevant through periodic review.
- Achieving UAS in respect of broadband.
- A requirement for a dedicated periodic consultation process with stakeholders to consider issues, including appropriate target levels of service or access, a timeline for reaching such targets, the level of service to be provided, mechanisms for monitoring and enforcement.
- Periodic reporting requirements for operators in respect of targets achieved and compliance on the part of licensees with their USOs.

- **Which option do you prefer and why?**
- **If you prefer either of the last two options, please include specific proposals for how USO differentiation should be specified/how the USO framework should be strengthened to address the challenge of affordability.**
- **Should USOs be offset against USF contributions, and, if so, in what way?**
- **If an Open Access model is adopted how would that change the implementation of USOs?**

3.6.4.1 Obligations for Wi-Fi Hot spots

Wi-Fi technology based on the IEEE 802.11 family of standards continues to gain momentum in the South African market. This is fuelled by the low costs of the technology and its increased prevalence in end-user devices including smart-phones and tablets. Public access at Wi-Fi hotspots in built up areas is becoming commonplace and the number of free offerings is increasing. Wi-Fi is an important means of accessing the Internet for individuals, communities and businesses. The consideration of how Wi-Fi can be used to drive universal service and access is thus an important issue to address.

There are many trials taking place to assess this, such as the proof-of-concept trial in Khayelitsha and Mitchells Plain by the City of Cape Town. SA Connect (Digital Development Policy decisions) include provision of free public Wi-Fi at selected points reached by the public sector networks to stimulate demand and provide access to government services. The policy action points include integration of Wi-Fi into public sector, school, health and community networks. In addition, the fact-tracking of the implementation of Wi-Fi at public facilities by agencies responsible for these facilities and networks is called for. Mechanisms will be explored to support and encourage municipalities to establish municipal-wide free Wi-Fi networks aimed at enabling access and innovation.

New research conducted on behalf of international Wi-Fi provider iPass indicates that by 2018, South Africa will have one Wi-Fi hotspot for every 122 people. The research found that Wi-Fi hotspots in South Africa improved 10% in 2014, to 8 611 commercial hotspots (including 2 256 cafes, 3 211 retail areas, 3 099 hotels and 39 airports) - up from 7 796 in 2013. iPass predicts that Wi-Fi hotspots will increase by a further 26% in 2015 to 9 859 spots and will include 10 planes and 3 529 retail areas. The number is then expected to sky-rocket 2 817% in 2016 to 11,897 commercial hotspots and 215 514 community 'homespots'.²⁸

²⁸ <http://businesstech.co.za/news/telecommunications/72316/sa-wi-fi-growth-mapped/>

Respondents to the Green Paper commented on Wi-Fi from two perspectives. Some respondents argued for the use of licence-exempt spectrum over which Wi-Fi connectivity is provided. This is dealt with in the sub-section on Spectrum below. Others, such as the Right to Know Campaign and the Western Cape Provincial Treasury called for the rollout of Wi-Fi networks in marginalised communities. SALGA noted that due to limited national planning, several municipalities have already successfully implemented their own broadband and free Wi-Fi projects.

OPTIONS

Option One: Status quo

Market forces would continue to drive rollout of Wi-Fi. It should be noted that there is no guarantee that the poorest communities, especially those in rural areas, will benefit from this.

Option Two: Impose obligations on operators

In the past there were obligations on operators such as Telkom to provide public telephone services. Given penetration of mobile voice telephony, this has largely become obsolete. Existing obligations would therefore be revised or new requirements set focused on provision of Wi-Fi hotspots in underserved communities. The obligations for Wi-Fi would be aligned to the policy decisions in SA Connect.

- Which of the above two options is preferred?
- In the case of option two, should these obligations be extended to all operators?

3.6.5 Universal Service and Access Fund (USAF)

Current international approaches to universal service funds are somewhat divided, as two recent global studies show. After examining 64 such funds around the world, of which a quarter were found to be “inactive”, the GSMA concluded that universal service funds “*do not appear to be the most appropriate mechanism to achieve universal service and further social and economic development*”.²⁹ On the other hand, a recent ITU examination of 69 such funds worldwide, while finding similar problems of low or non-existent levels of activity, went on to make a number of strategic recommendations, including the need to ensure that funds are enabled to “*respond to rapidly changing and evolving priorities*”, that they are placed under the control of an “*independent unit*” and managed “*in a transparent, autonomous and competitive manner*” and that they need to be utilised to “*address broadband access*”.³⁰

In South Africa, a universal service fund (USF), now under the rubric of the Universal Service and Access Fund (USAF), has been in place since 1998. Arrangements governing the fund are somewhat complex. It operates under administrative control of USAASA (but in accordance with the instructions of the Minister), but the level of contribution to the fund is regulated (subject to a legislated cap of 1% of annual turnover) by ICASA, which also collects and submits to Treasury operator contributions to the fund, but without accounting for these to USAASA.

²⁹ GSMA (2013), ‘Survey of Universal Service Funds: Key Findings’, GSM Association, London, <http://www.gsma.com/publicpolicy/wp-content/uploads/2013/04/GSMA-USF-Key-findings-final.pdf>

³⁰ ITU (2013), ‘Universal Service Fund and Digital Inclusion for all Study’, <http://www.itu.int/en/ITU-/Conferences/GSR/Documents/ITU%20USF%20Final%20Report.pdf>

Disbursements from the fund are limited to “*subsidies*” in a range of areas, including “*needy persons*” (as determined by the Minister with the assistance of USAASA), network rollout by ECNS licensees (subject to competitive tender), the acquisition of services by schools and colleges, the “*establishment and operation of community centres*” offering access to ICT services, or any other area as determined by the Minister with the concurrence of the Minister of Finance.

The USAF has been the subject of controversy, and has been widely criticised for failing to disburse funds on any significant scale. In addition, no audit or financial statement in respect of the USF is available.

An assessment of policy regarding the USAF is necessary to ensure that:

- A UAS levy is fairly and equitably imposed on all licensees in the ICT sector;
- The funds appropriated are efficiently, appropriately and effectively utilised in support of universal access and service in South Africa; and
- The utilisation and disbursement of the monies in the fund is transparent and subject to the necessary fiduciary controls.

Accordingly, a number of policy questions have been identified:

- To what extent does a universal service fund remain relevant given convergence?
- How should control and oversight of such a fund be streamlined so as to simplify and balance the competing jurisdictions of ICASA, USAASA and the Minister?
- How can the management and governance of the USAF be strengthened to ensure effective, transparent and accountable use of funds?
- Should the funding priorities of the USAF be extended to cater for the expanded scope of ICTs given convergence, advances in technology and market developments?
- Who should be responsible for the management of the USAF? Should it remain under USAASA, or be transferred to ICASA (the most common international best practice), or assigned to an independent board (also common international best practice), or to an existing funding entity such as the DBSA or the IDC?

The issues around the USAF, given the general consternation around its effectiveness, attracted many comments and proposals in the Green Paper submissions. Note that this section focuses only on the USAF and not on USAASA as this is dealt with in a separate chapter of the Discussion Paper dealing exclusively with institutional frameworks.

With regards to the **management and control of the USAF**:

- A number of submissions called for the USAF to be placed under the control of ICASA. Research ICT Africa, for example, argued that affordable universal access should be at the core of all regulatory decision-making anyway and that the administrative institutional duplication is wasteful and has historically lent itself to misappropriation. Cell C called for ICASA to be properly capacitated to manage the USAF, while Vodacom suggested that all matters relating UAS and universal access to broadcasting services be entrusted exclusively to ICASA.
- Other submissions, for example from the Link Centre and the SABC, called for the funds administered by the USAF and those by the Media Development and Diversity Agency (MDDA) to be consolidated into a single fund under the control of a single, independent governance structure. Others however proposed that the MDDA remain separate.

With regards to the **disbursement of funding from the USAF:**

- MTN argued for the funding to be unlocked for application as subsidies in *both* the demand and supply side, and suggested that the fund should focus exclusively on areas where private investment cannot be expected to reach, such as bringing fibre backhaul to rural areas.
- Intel suggested the fund should be used as a targeted and time-bound instrument to incentivise private sector investment in identified service gap areas, managed in a transparent manner, and reviewed annually. Citing examples from Malaysia and Turkey, Intel further suggested using the USAF to connect and equip students with broadband, devices, and content. It proposed that the USAF be deployed in a competitively and technically neutral way in consultation with industry and civil society.
- The SABC called for funding to be made available to the public broadcaster to extend its coverage. Note it also proposed that it be exempted from contributing to the Fund.
- The Progressive Professional Forum called for differential treatment by the USAF for operators in the different sub-sectors, and suggested a mandatory review of the fund every five years.
- USAASA called for the USAF to be used to support extension of the network backbone to regional centres where there is no backbone. In a similar vein, Fibreco suggested that USAF funding be most effectively deployed to build out regional distribution networks (i.e. provincial backbone networks) needed for connecting underserved areas to the national backbone links already in place or under construction.
- The National Community Radio Forum suggested the fund could be used to support community broadcasting signal distribution activities.
- Intel proposed changes to the current USF levy, suggesting a “*comprehensive, fixed charge on end-users*” rather than the current percentage of operator revenue levy, which it described as a “*distortive usage-based*” charge.

OPTIONS: MANAGEMENT AND CONTROL OF THE USAF

Note:

- The options proposed here are not mutually exclusive.
- As no submissions called for the discontinuation of the USAF, and only one advocated changes to the USAF levy, these are not included as specific options. Stakeholders can nevertheless make submissions on this should they wish.
- Please also consider responses to these options in tandem with (i) the proposal to establish a larger, ICT-Development Fund, of which the USAF becomes a component (*refer to the Infrastructure Investment sub-section of Chapter Six: Policy Options - Industry Growth*); (ii) options regarding USAASA (*presented in Chapter Seven: Policy Options - Institutional Frameworks*).

Option One: Status Quo

The USAF would continue to be controlled by USAASA and the Minister, though the funding priorities could be extended and transparency and accountability requirements strengthened.

Option Two: Management of the USAF by ICASA

Management and control of the USAF and the disbursement of its funds would be assigned to ICASA.

Option Three: Independent Management of the USAF

Management and control of the USAF would be assigned to a newly created independent entity, or to a new fund based on a merger of the MDDA and USAASA, or to an existing independent entity

such as the DBSA or the IDC. Under this option, consideration could be given as one of the alternatives, to evolving the USAF to become a component of a larger ICT-Development Fund.

- **Which option do you prefer and why? Please give concrete details if recommending any changes to the status quo.**
- **If you favour any options not specifically listed above, please make and motivate concrete and specific suggestions.**

OPTIONS: SCOPE OF THE USAF

As above, the options below are not mutually exclusive.

Option One: Amalgamation of the USAF with the MDDA fund

The USAF and the MDDA would be merged and existing funding priorities of both entities extended in line with this. Note that the MDDA Act current provides for division of funds between community media and small and micro media enterprises. Similar separations could be set for other funding streams and priorities.

Option Two: Increased Discretion in the Disbursement of UAS Funding

The current relatively legislative circumscription of the disbursement of funds from the USAF would be removed. The entity managing the fund would be required to develop criteria and an annual plan for the deployment of monies in the fund, possibly through a public stakeholder consultative process, and possibly subject to third party approval by Parliament, or the Minister or ICASA. Increased scope may include earmarked funding for broadband deployment and uptake, and thus support infrastructure and services and the creation of demand, as proposed in several submissions.

Option Three: Improved Governance and Accountability of the USAF

The USAF would be required to publish separate annual audited statements and an annual report, and to commission independent research into its impact in achieving UAS targets.

Option Four: Guidelines on the Use and Disbursements of the USAF

Clear and unambiguous guidelines would be published providing unambiguous guidance on the scope of the fund and the procedures to be followed to access the fund. In addition, specific requirements on transparency so that contributors to the fund have visibility as to how the funds are utilised would be introduced, in line with the PFA. The guidelines must be synchronised with the UAS definitions at all times.

- **Which option/s do you think would best meet objectives? Please be concrete and specific.**
- **You are welcome to make additional proposals not specifically listed above. Please though include concrete and specific suggestions.**

3.6.6 e-Rate

The EC Act requires licensees to offer an e-rate discount of at least 50% on Internet services provided to public health establishments, schools, colleges, public further education and training institutions and higher education institutions. ICASA's 2009 E-Rate Regulations largely restate the provisions of the ECA (ICASA, 2009).

The e-rate was criticised by some stakeholders since its introduction under a 2001 amendment to the then Telecommunications Act. The 2014 amendments to the EC Act sought to address some of the criticism by ensuring the e-rate is applicable at both wholesale and retail levels.

There were a limited number of submissions to the Green Paper that dealt with the question of the e-rate. A number of these called for a comprehensive review of the e-rate, its application and its impact (Intel, LINK Centre). Other submissions argued that the e-rate be extended to additional beneficiaries. Vodacom called for this to include rural clinics, while Intel went further to call for the inclusion of a range of other public institutions which require broadband services for their core function such as public libraries, clinics, hospitals, correctional facilities and police stations.

Some submissions called for the e-rate to be increased above the current 50% minimum (Intel), with the Progressive Professionals Forum (PPF) calling for Internet access to be entirely free at schools. The PPF also argued for zero-rating of specific, educational content. The LINK Centre called for the e-rate subsidy to be claimable from the USF. No submissions which called for the discontinuation of the e-rate.

POLICY QUESTIONS

Given that submissions largely centred on the application of the e-rate, no options are presented. However, taking into account the submissions, the following questions are posed.

- **What form should the e-rate take in the future?**
- **Should the e-rate be extended to additional beneficiaries, and, if so, which ones?**
- **Should the e-rate be increased above the current 50% minimum?**
- **Should the e-rate be claimable from the USAF?**
- **Should educational content and websites be zero-rated (i.e. free), and, if so, how can this be reconciled with the principle of net neutrality (discussed elsewhere in this document)?**

3.6.7 Consumer Protection and Quality of Service

The vision for the ICT policy stresses that South African users of communications services are entitled to consumer protection. As penetration of service increases there is bound to be greater concern on consumer protection in a digital environment. Policy in respect of consumer protection and quality of services is necessary to ensure:

- The rights of consumers in the ICT sector are adequately protected;
- Quality of service standards are appropriate, clearly specified and adequately enforced;
- There is proper transparency and publicity on the monitoring, reporting and enforcement of consumer protection and quality of service; and
- Concurrent jurisdiction between ICASA and the National Consumer Commission (the NCC) is effectively managed in the best interests of consumers.

Consumer protection across the board is governed by the 2008 Consumer Protection Act (CPA), an overarching piece of legislation, which establishes the NCC and the National Consumer Tribunal. The

CPA provides for a regulator such as ICASA to apply to the Minister of Trade and Industry for industry-wide exemption from the provisions of the CPA. ICASA has indicated its intention to do so, but the current status of this process remains unclear. There is currently no requirement in the ECA for ICASA to negotiate a memorandum of understanding with the NCC.

Consumer issues in the ICT sector are largely dealt with in Chapter 12 of the EC Act. The Act requires ICASA to prescribe codes of conduct for ECNS, ECS licensees and broadcasting service licensees (ECA, Section 54). Code of Conduct regulations were issued by ICASA in 2008 and 2009 and set out standards of conduct by licensees in respect of consumers.

The ECA also requires ICASA to issue regulations setting out minimum quality of service standards for licensees via End-user and Subscriber Service Charters. These regulations were issued in 2009 and cover issues such as the provision of information regarding services, rates and performance procedures; provisioning and fault repair services; protection of private information; charging, billing, collection and credit practices; complaints procedures and remedies. A separate set of regulations (ICASA, 2012) sets out the format in which licensees are required to report compliance with these charters, and the reports are made available on the ICASA website. The EC Act further mandates ICASA to prescribe regulations setting out a Code on Persons with Disabilities requiring licensees to ensure that their services are “*accessible and available to people with disabilities*”. The code was issued in 2007.

ICASA is currently formally reviewing both the End-user and Subscriber Service Charters and the Code on Persons with Disabilities.

Co-regulatory/self-regulatory codes of conduct have been established by both ISPA and WASPA to deal with the handling, adjudication, enforcement and publication of consumer complaints in their respective spheres.

Particular problems which have been highlighted include the following:

- ICASA conducts its own quality of service testing and publishes the results from time to time. Such reports are frequently criticised by the operators.
- The EC Act requires ICASA to establish a Consumer Advisory Panel. ICASA established this Panel in 2010, but suspended it the following year.

The provisions relating to consumer protection under the Electronic Communications Transactions Act will be dealt with under the Chapter/Policy Options Paper dealing with e-services. Provisions of the Protection of Personal Information Act are dealt with in the same chapter.

There were a limited number of submissions dealing with consumer protection and quality of service regulation. In respect of co-jurisdiction, MTN called for greater co-ordination, and proposed that ICASA apply for the necessary exemption in terms of the Consumer Protection Act. The SACF, on the other hand, felt that ICASA is already over-burdened with issues directly related to the provision of ICT services, and suggested that consumer protection issues be assigned to an independent neutral institution, with technical assistance from the regulator to deal with technologically-specific issues related to consumer protection.

In relation to the questions of co-regulation and self-regulation, WASPA pointed to its success in dealing with consumer complaints raised against WASPs, and suggested this as a model for effective consumer protection mechanisms and self-regulatory models in SA.

Treasury suggested that ICASA's quarterly quality of service reports obviated the need to develop a "customer satisfaction measurement".

POLICY QUESTIONS

The role of ICASA in relation to general consumer protection issues is covered in Chapter Seven: Policy Options - Institutional Frameworks. Due to this and the dearth of submissions on specific requirements in relation to infrastructure and services, policy questions are posed rather than policy options presented. When answering the question, please make concrete and specific recommendations.

- **What changes, if any, should be made to strengthen ICASA's powers and competence to regulate, monitor, enforce and publicise consumer protection and quality of service codes and standards?**

3.6.7.1 Type Approvals

Type approval regulations are necessary to ensure that third party equipment connected to the communication networks meets the necessary technical parameters to prevent interference and ensures good quality of service and safety. Conformity to technical standards is therefore essential for the interoperability of the equipment and networks. Type approval regulation also protects consumers against the purchase of sub-standard devices and against illegal or 'grey' imports.

Type approval is granted to a product that meets a minimum set of regulatory technical and safety requirements. It means that the product is guaranteed to meet certain requirements for its type, whatever that may be.³¹ Section 35 of the EC Act states that

No person may possess, use, supply, sell, offer for sale or lease or hire any type of electronic communications equipment or electronic communications facility, including radio apparatus, used or to be used in connection with the provision of electronic communications, unless such equipment, electronic communications facility or radio apparatus has, subject to subsection (2), been approved by the Authority.

ICASA may pass regulation which exempt equipment which has been approved for use by the European Telecommunications Standards Associations or other competent standards body where the equipment complies with type approval standards prescribed by the Authority. ICASA issued Regulations in Respect of Technical Standards for Electronic Communications Equipment in 2010, prescribing national standards for the performance and operation of equipment and electronic communications facilities, including radio apparatus, particularly with respect to electromagnetic compatibility.³² ICASA in 2013 issued new Type Approval Regulations, dealing with procedures and fees and the maintenance of an equipment register, as well as Labelling Regulations.

³¹ Association of Regulators of Eastern and Southern Africa, "Policy guidelines on equipments [sic] type approval and standards", undated.

³² ICASA, 'Regulations in Respect of Technical Standards for Electronic Communications Equipment', Government Gazette 32885, 22 January 2010.

During the Green Paper consultations, companies involved in electronics manufacturing and distribution pointed out that the process of applying for type approvals and labelling was often beset by delays, resulting in loss of earnings.

QUESTIONS

- Are the current provisions in the EC Act covering type approvals and labelling adequate?
- What suggestions do you have to improve the process for granting type approvals and labelling?

3.7 Spectrum management

This section focuses on the planning, allocation, assignment and management of frequency spectrum, a scarce national resource, in order to ensure maximum public value. The section is premised on the notion that spectrum as a public resource must be focused on delivering public value. The optimum and effective utilisation of spectrum from social, economic and technical perspectives to enable the achievement of the developmental goals in the NDP Vision 2030 is the first point of departure for the policy options herein. In addition, the options are in support of the National Broadband Policy and its positions regarding broadband for all.

3.7.1 Context

The 2010 Radio Frequency Spectrum Policy for South Africa characterises spectrum as a *“limited natural virtual resource where, in certain frequency bands, the demand for spectrum far exceeds the amount of spectrum that is available. The radio spectrum is available equally in every country, and is a resource limited by technology and management capability. It is not a consumable resource. Management of the radio-frequency spectrum is subject to Government authority and spectrum must be managed efficiently so as to be of greatest benefit to the entire population.”*³³

Radio Frequency Spectrum (hereafter Spectrum) was a key focus in the Green Paper which highlighted concerns about spectrum pricing, the fact that spectrum demand will inevitably increase as society moves through the “information age”, creating a need for ever more “Information Bandwidth”.

In planning and allocating radio frequency spectrum, South Africa must take into account the outcomes of the International Telecommunication Union (ITU) World Radio-communication Conferences (WRCs).

Spectrum management takes place within a regulatory framework comprising policies, legislation, regulations and procedures. Spectrum policy must provide for the harmonisation of spectrum bands to ensure spectrum efficiency and regional economies of scale in radio equipment.

The radio frequency spectrum is a key resource for many essential communication services in society such as, mobile, fixed wireless and satellite communications, television and sound broadcasting, transport, radiolocation, (Global Positioning Systems) radio navigation, safety of life and many other

³³ RSA, ‘Radio Frequency Spectrum Policy for South Africa’, *Government Gazette*, No 33116, 16 April 2010.

applications. Radio technology supports public services such as defence, safety and security as well as scientific activities (e.g. meteorology, earth observation, radio astronomy, space research, etc.). Radio-communication, which is reliant on the electromagnetic spectrum, is one of South Africa's most dynamic technology sectors. South African society and the entire industry rely on radio frequency spectrum, a resource where the demand far exceeds the supply.

Use of the radio frequency spectrum should contribute to the promotion of national interests, development and diversity, including increasing the amount of spectrum available for assignment, improving sharing conditions among different radio communication services and increasing the number of licences dedicated to community radio and television broadcasting services

ICASA estimates that 450 MHz of spectrum, below the 3,5 GHz range, is available for assignment for broadband services, but cannot be utilised presently because other services are using this spectrum. There is therefore a need for the migration of these services including the delayed migration of the broadcasting services. The issue of TV white spaces has been raised and many have argued that the advent of cognitive radios capable of identifying unused spectrum could open avenues for spectrum sharing. The availability of the TV white spaces spectrum is seen as a way of increasing the amount of spectrum that could be released for the deployment of broadband services. However, traditional broadcasters have expressed caution in relation to this, and emphasised that spectrum policy must take into account the current and future needs of broadcasters. They raised concern that if this is not considered they would migrate in order to give lucrative spectrum to broadband services that will ultimately use this to compete against them.

Submissions on spectrum focused on two questions:

- What considerations should inform the new spectrum policy and regulatory regime?
- If there is a need for a separate agency to regulate the spectrum?

This section focuses on the new spectrum policy, spectrum planning and spectrum pricing. The issue of whether a separate agency should be established to regulate spectrum is dealt with more detail in Chapter Seven: Policy Options - Institutional Frameworks which looks specifically at ICASA's mandate.

3.7.2 Spectrum Policy Objectives

The 2005 EC Act provides limited guidance to the regulator in terms of the allocation and assignment of spectrum, focusing on issues such as efficiency, avoidance of interference, harmonisation with ITU agreements and compliance with the national band plan, taking into account the needs of security services, and the promotion of digitisation.

The 2010 Radio Frequency Spectrum Policy for South Africa goes considerably further, setting out eleven policy objectives that should be met:

- Establish the environment within which national spectrum policy objectives are implemented;
- Establish principles for spectrum management;
- Promote transparency and openness in spectrum management;
- Establish the framework for radio frequency spectrum planning so as to ensure the efficient and effective usage of the radio frequency spectrum;
- Set guidelines for spectrum usage;

- Establish principles for spectrum fees;
- Contribute to the promotion of national interests, development and diversity within the framework of Government strategic objectives;
- Provide for the allocation of spectrum for safety of life services;
- Provide for the allocation of spectrum for government services;
- Promote universal service and access; and
- Provide for the allocation of spectrum for scientific research.³⁴

A number of Green Paper submissions advocated varying *underlying objectives* to guide spectrum management. In the main respondents called for **effective and efficient management of radio frequency spectrum to ensure agility, flexibility and adaptability in spectrum administration.**

Objectives for spectrum related policy put forward included that:

- South Africans realise the maximum possible economic & social benefit from the use of spectrum as national strategic resource;
- Radio frequency spectrum policy supports and is in alignment with the SA Connect Broadband policy, especially with regards to universal access and service in rural areas.

Policy objectives should be, unambiguous, measurable, achievable, realistic and time dependent. Current objectives should be reviewed to ensure this. For example, one critique is that the policy objectives provide for the establishment of *principles for spectrum management*. There is a view that principles must prevail in the first instance and that objectives must be carved accordingly.

OPTIONS

Option One: Maintain the current eleven objectives as set out in policy

Option Two: Review the current policy objectives

The policy would be reviewed to develop a more concise set of objectives with clear guidelines. Policy objectives and principles would need to be delineated. The objectives should be stated in accordance with a set of broad principles for an effective spectrum policy and management regime that serves to achieve economic and social benefits South Africans. In addition objectives should be aligned with the broadband policy.

Option Three: Incorporate some or all of the objectives into legislation

- | |
|--|
| <ul style="list-style-type: none"> ▪ Should the current objectives be reviewed as proposed above? If so, which of the objectives need to be reviewed? ▪ Should the objectives be incorporated into legislation? Which ones are candidates for incorporation? |
|--|

3.7.3 Principles underlying spectrum management

As highlighted, it has been proposed that a set of policy principles be clearly articulated to ensure a consistent regulatory and management framework. Almost all respondents to the Green Paper,

³⁴ RSA, 'Radio Frequency Spectrum Policy for South Africa', Government Gazette, No 33116, 16 April 2010.

commented on issues to consider in managing the allocation of spectrum. Some of these are clearly linked to the current *objectives* outlined above. The responses have been consolidated and summarised as follows:

- **Recognition that allocation and management of spectrum takes place on a global platform:** South Africa, together with international partners must influence global policies such as those at the ITU, to ensure that these do not, even inadvertently, negatively impact on the developmental objectives of the country.
- **Managing unused licensed spectrum:** The hoarding of spectrum by users is not conducive to efficient spectrum usage and this practice should be discouraged at all costs. Spectrum management policy should strictly apply “use it or lose it” principles to all spectrum licensees. Passive science services, due to the nature of their operation, will be exempt from this provision.
- **Priority of access to spectrum related to safety of life (*currently a policy objective*):** The international spectrum regulatory framework has as one of its founding principles the availability and protection from harmful interference of frequencies provided for distress and safety purposes. A safety service is any radio-communication service used permanently or temporarily for the safeguarding of human life and property. It is recognised that safety services require special measures to ensure protection from harmful interference and this must be taken into account in the assignment and use of frequencies. Priority of access to spectrum must be given to safety of life services including public safety and security communications.
- **Allocation of spectrum for research, development and innovation (*currently a policy objective*):** The radio spectrum facilitates a range of scientific applications used for research purposes. Currently, radio frequency spectrum for trial and testing is assigned on a case-by-case basis. A proposed research and development spectrum allocation will encourage a research and development mind-set. In addition scientific applications should not compete for spectrum with commercial applications. It is in the national interest that the needs of active and passive scientific research are taken into account when allocating spectrum. In addition, spectrum policy must be crafted to spur entrepreneurial activity and innovations among local companies to grow the electronics manufacturing and software development sector,
- **Spectrum for wireless technologies:** Wireless technologies are more appropriate for the provision of electronic communication services in rural areas due to the population distribution, lack of infrastructure, terrain etc. Spectrum usage should be used to promote universal access and service.
- **Contiguous frequency assignment:** The adoption of contiguous frequency assignments to promote spectrum sharing, as this is the most spectrum efficient and feasible means to encourage this.
- **Holistic approach to spectrum planning to accommodate additional multiplexes:** Spectrum plans must adopt a holistic approach accommodating the creation of additional multiplexes and catering for future spectrum needs for broadband, Digital Terrestrial Television (DTT), digital radio as well as possible future technologies to ensure capacity for new audio-visual and content services.
- **Regular spectrum audits:** Necessary to weed out any 'ghost' services.

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|---|
| <ul style="list-style-type: none">▪ Do you agree with the above principles?▪ Are there any principles which should be removed?▪ What other principles should be added? |
|---|

3.7.4 Spectrum planning and management

The management of the radio spectrum combines administrative, regulatory and technical procedures to ensure the efficient operation of radio communication equipment and services. Spectrum management is the overall process of regulating and administering access to and use of the spectrum. A primary goal is to ensure optimal use of radio spectrum in social, economic and

technical terms. The RF spectrum is a national resource, much like water, land, gas and minerals. Unlike these, however, RF is reusable. The purpose of spectrum management is to mitigate radio spectrum pollution and maximise the benefits of usable radio spectrum. The ITU constitution recognises “*the sovereign right of each State to regulate its telecommunication*”. Effective spectrum management requires regulation at national, regional and global levels. There are several variables one must consider when managing the spectrum resource:

- Political issues, both national and international;
- The effect of spectrum use on society;
- Economic impacts; and
- Technical considerations.

In general, respondents to the Green Paper lamented the perceived failure to assign high demand spectrum. The incumbents argued for the immediate assignment of high demand spectrum even though some of the spectrum cannot be allocated given that services using it must still be migrated. There was general agreement also on the need for more effective management of this scarce public resource.

Many submissions also endorsed the need to ensure that the public realises full economic value from the utilisation of the spectrum. There were suggestions that spectrum allocation should be awarded on the basis of licensed operators’ commitment and ability to roll out and expand services on a commercially sustainable basis in marginalised communities. Some respondents however cautioned against making economic value the single determinant as there are social and cultural values that can be advanced through an appropriate spectrum policy.

The need for a policy to prioritise new entrants through setting aside spectrum for a common carrier licence to provide wholesale access was also raised. These submissions argued that since the spectrum is finite and cannot be parcelled out to many operators, policy should recognise the need for a common facility that will help everyone to deliver services. Others argued that anyone given the privilege of access to this scarce resource should have a minimum set of common carrier obligations enabling other service providers to provide services over their networks.

Submissions also urged that radio frequency spectrum policy should be driven by objectives of efficient spectrum usage and that the policy must provide overarching guidance for the utilisation of spectrum in the broad public interest. Calls were made for a coordinated and harmonised national approach to spectrum usage, with set conditions for the availability and efficient use of radio spectrum by various services to support specific national objectives and to provide greater predictability and certainty to current and future use. Policy certainty was also seen as crucial to the development of a favourable investment climate.

The submissions on spectrum management were diverse, with a plethora of inputs on how spectrum should be managed and on various approaches to allocation. Some of the important issues raised include the need to:

- Permit the flexible use of spectrum to the extent possible;
- Harmonise spectrum use with international allocations and standards, except where national interests warrant a different determination;
- Make spectrum available for use in a timely fashion;
- Facilitate secondary markets for spectrum authorisations;

- Clearly define obligations and privileges associated with spectrum authorisations;
- Ensure that appropriate interference protection measures are in place;
- Reallocate spectrum where appropriate, taking into account the impact on existing services; and
- Ensure timely and effective enforcement that is commensurate with the risks posed by non-compliance.

The following sub-section presents a series of options based on a careful review of the inputs.

3.7.4.1 Spectrum Allocation

Spectrum allocation is defined by the ITU as “*entry in the Table of Frequency Allocations of a given frequency band for the purpose of its use by one or more terrestrial or space radio-communication services or the radio astronomy service under specified conditions*”. In terms of the current provisions of the EC Act, the Minister represents South Africa in the ITU. This includes the allocation of the radio frequency spectrum to various radio-communication services.

The ITU convenes World Radiocommunication Conferences (WRCs) every four years. The purpose of a WRC is to review, and, if necessary, revise the Radio Regulations, the international treaty governing the use of the radio frequency spectrum. Following each WRC, South Africa updates its national allocation plan in accordance with the decisions taken in so far as these affect the Republic. Following approval of the national allocation plan by the Minister, ICASA is then able to assign spectrum (licence operators) within the allocation framework.

The foregoing provides a description of the status quo. There have however been calls for a review of the roles and functions in relation to spectrum allocation.

OPTIONS: ROLE FUNCTIONS

Option One: Status Quo

The status quo as describe above would prevail. The Minister represents South Africa at ITU on all spectrum issues and approves of the national frequency plan and has the right to make spectrum policy and issue guidelines on spectrum fees. ICASA develops the national frequency plan setting out spectrum allocation for the Minister’s approval, assigns spectrum and issues spectrum licences.

Option Two: Reduced Role for Minister

Some or all of the existing ministerial prerogatives would go to ICASA (or a spectrum management agency if established).

Option Three: Increased Role for Minister

Some or all of ICASA functions would go to the Minister.

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| <ul style="list-style-type: none"> ▪ Which of the above options is preferred? ▪ If either Option 2 or Option 3 is preferred, please suggest which functions should be allocated to whom (between the regulator and the Minister) |
|--|

OPTIONS : SPECTRUM ALLOCATION PRINCIPLES

Note, that the following options are not mutually exclusive.

Option One: Spectrum provision for an open access network

An open access model is advocated in the SA Connect broadband policy to facilitate competition and ensure universal service and access is achieved. High demand spectrum should thus be set aside for an open network that will sell wholesale access to new and established operators.

Option Two: Must carry obligations for high demand spectrum recipients

All operators given access to the so-called “high demand spectrum” must be subjected to minimum obligations to allow other service providers to access their networks.

Option Three: Spectrum band harmonisation

Spectrum policy must provide for spectrum band harmonisation including the adoption of contiguous band assignments to promote sharing of spectrum.

Option Four: Competitive bidding

In terms of spectrum pricing, it is important for the price charged to reflect the true value of spectrum as a scarce resource. For this to take place, a competitive bidding process needs to be accommodated in the spectrum assignment model.

Option Five: More multiplexes to accommodate future terrestrial services

In order to accommodate future television technologies like High Definition, Ultra High Definition and 3D more multiplexes should be catered for during the digital migration phase

Option Six: Licence exempt spectrum

- **Which of the above options or combination of options should underpin the spectrum allocation regime? Provide motivations for preferred options.**

3.7.4.2 Spectrum Assignment and Licensing

ICASA is responsible for assigning spectrum to ECNS licensees. Traditionally spectrum has been assigned through a comparative administrative process (beauty contest), or on a first-come first-served basis. The EC Act and the National Spectrum Policy, however, provide that when there are competing applications or the demand for radio frequency spectrum exceeds the amount available, other approaches, including market approaches, could be adopted for the assignment of frequencies.

Market based approaches to spectrum management such as spectrum auctions, spectrum sharing, and spectrum trading are considerations for certain licences. In such instances, spectrum is placed in the hands of users that most value spectrum. This also enhances efficient use of spectrum.

OPTIONS

Option One: Status quo

Maintain current spectrum licensing regime i.e. discretionary assignment or a command and control approach.

Option Two: Market-based approach

Implement primarily market-based spectrum licensing through competitive bidding and the use of auctions.

Option Three: Promote spectrum commons / licence exempt spectrum in bands which are suitable

Policy provisions would highlight the value of licence-exempt spectrum usage and seek to promote it through directing that suitable further bands be allocated to the licence-exempt on a secondary basis or that the transmission restrictions on existing licence-exempt bands be relaxed.

Option Four: Hybrid model

Implement a hybrid spectrum licensing model combining elements of the current regime and market-based and spectrum commons approaches.

- **Has the current spectrum licensing regime met Government objectives as well as national needs?**
- **Which of the above options do you think would best meet the objectives of policy?**

3.7.5 Spectrum Pricing

One way of managing demand for a limited resource is to charge fees for its use. Spectrum users are therefore required to pay for the privilege of using this resource through spectrum fees. Spectrum fees also reduce the rationale for “hoarding” spectrum. Spectrum is not “owned” by a licensee – the licensee has a right of use. The fees to be paid for the usage of the radio frequency spectrum should be based on factors that take into account the inherent properties of the radio frequency spectrum, such as the frequency band, congestion in the particular band, and other factors such as bandwidth, coverage, degree of loading, spectrum efficiency of the equipment used, economic factors and geographical area of operation.

3.7.5.1 Spectrum pricing for all user services

Section 7 of the National Radio Frequency Spectrum Policy of 2010 provides that all spectrum users should be liable for the payment of spectrum fees unless the spectrum user is exempted from payment through appropriate policy directions issued by the Minister.

South Africa introduced the Administrative Incentive Pricing (AIP) model in 2012. The goal of AIP is to promote efficient spectrum use. Prices are set by the regulator at a level that seeks to promote efficient spectrum use and not simply recover spectrum management costs. The idea is that if spectrum pricing reflects its value, a user with unused or underutilised spectrum will choose to return it rather than pay the charge.

The current spectrum pricing regime does not distinguish between licensees that use the spectrum for commercial purposes to generate profit and licensees that use the spectrum for non-commercial purposes.

OPTIONS

Note the options are not necessarily mutually exclusive.

Option One: Maintain the status quo

The AIP model introduced in 2012 would be maintained. All users of spectrum would be liable for the payment of spectrum fees unless exempted from payment through a policy direction issued by the Minister.

Option Two: Distinction between commercial and non-commercial pricing model

The spectrum model would distinguish between licensees that use the spectrum for commercial purposes and those that use the spectrum for non-commercial purposes, such as emergency services, defence, research and development.

Option Three: Designation of categories for fee exemption

Policy directions are required to identify users that should be fee exempt. A policy direction designating all categories that would qualify for fee exemptions would be issued. All other users currently not paying fees would have to start paying a fee.

- Which of the above options do you support, and why?
- Do you agree that the AIP model should continue to apply to all users of spectrum irrespective of purpose of use? Which other model would you propose?
- Should auctions be included as a pricing model, and if so, which auction variant must be preferred?
- Are there any other means of addressing non-payers of spectrum if they do exist and do think they should be exempted?

3.7.5.2 Spectrum pricing for government services

The use of spectrum by Government is essential for, among other things, national safety and security and aeronautical and maritime applications. As Government at various levels begins to turn to the Internet to increase efficiency of service delivery, it might need spectrum allocation. For example, the City of Matlosana proposed that licences for spectrum for municipalities, should be issued to enable it to provide e-services to citizens, especially the poor. Of course in this regard, there are other options, which might not necessitate needing a licence.

Government departments in their submissions lamented the high costs of accessing the spectrum to deliver public services. They questioned the need to make public services pay for the use of a public resource. They also questioned why public entities are required to pay the same fees as commercial entities. On the other hand, the Link Centre was of the view that spectrum fees function as an important incentive to efficient utilisation of assigned spectrum, and that spectrum fees should therefore also apply to government entities.

OPTIONS

Option One: Maintain the status quo

As currently, all providers would be treated the same, including government.

Option Two: Special pricing for spectrum assigned for government services

The spectrum assigned for specified government services (e.g. safety and security, aeronautical, maritime, education, health) would be priced differently to spectrum assigned for commercial use.

Option Three: No-fee option for government

No-fee spectrum would be set aside for government public services. Government and the regulator would be compelled to analyse public sector spectrum needs and review this every five years.

- Which of the above options do you support, and why?
- Are there any other means of addressing governments' concern, other than those proposed?

3.7.5.3 Compensation for the cost of migration

Migration or reframing of spectrum is a recognised feature of spectrum management. Currently there is no policy on compensation for the costs incurred by licensees in migrating services from one frequency band to another.

The 2013 frequency migration plan stipulates that the users of spectrum to be migrated shall not be entitled to be compensated for the cost of the migration, and *"to the extent that if possible, the cost of migration should be minimised by considering, amongst other things, the duration of the licence and economic life time of the equipment"*.

OPTIONS

Option One: Incoming licensee compensates the outgoing licensee for the cost of migrating

Option Two: The licensee that is required to migrate covers its own costs

Option Three: Migration only occurs at the end-of-life of equipment when costs are minimal

Option Four: A portion of proceeds from the sale of spectrum (e.g. the digital dividend) would be used to fund migration

- Which of the above options is viable to compensate licensees for the costs of migration? Motivate your preferred option.

3.7.6 Other issues

3.7.6.1 Spectrum trading

Spectrum trading is complementary to other market-orientated mechanisms for allocating spectrum. Spectrum trading should be allowed, for example, in certain bands used for civil telecommunication in order to simplify authorisations. Policy reforms in this regard will facilitate the migration of spectrum to those that can generate the greatest value for society and promote the efficient and optimal usage of spectrum by enabling more licensees to obtain access without having to depend only on the regulator for frequency assignments.

The 2014 amendments to the EC Act provide that ICASA may, taking into account the objects of the Act, prescribe procedures and criteria for—

- The amendment, transfer, transfer of control, renewal, suspension, cancellation and withdrawal of radio frequency spectrum licences; and
- Permission to assign, cede, share or in any way transfer a radio frequency spectrum licence, or assign, cede or transfer control of a radio frequency spectrum licence as contemplated in subsection. (Section 31(3))

OPTIONS

Option One: Maintain the status quo

The status quo would be maintained.

Option Two: Additional restrictions on spectrum trading

Limited trading would be allowed, but with additional restrictions specified in legislation: For example, trading could be restricted to certain bands or subject to pricing restrictions.

Option Three: Spectrum is freely tradeable

Spectrum would be freely tradeable, including letting, sub-letting ceding, sharing and transferring, subject only to notifying ICASA

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| <p>▪ Which of the above options do you support, and why? Are there any other means or ways of trading you can propose?</p> |
|--|

3.7.6.2 Spectrum Sharing

Increased spectrum sharing will become more and more important to address scarcity of available spectrum. In a given spectrum band, adoption of one form of spectrum-sharing usually precludes many other sharing possibilities. Since policy must change slowly to protect legacy systems, a policy decision in favour of one form typically precludes the alternatives for many years.

Dynamic Spectrum Access (DSA) - the opposite of the current static spectrum management policy – is one way of facilitating this. DSA has broad implications that encompass various approaches to spectrum reform.

OPTIONS

Option One: Dynamic Exclusive Use Model

The basic structure of the current spectrum regulation policy would be maintained and spectrum bands licensed to services for exclusive use. Flexibility would, however, be introduced to improve spectrum efficiency. Two approaches could be proposed under this model:

- ***Spectrum property rights***: The approach allows licensees to sell and trade spectrum and supports technology neutrality. The economy and market would play a more important role in driving the most profitable use of this limited resource. Note that even though licensees have the right to lease or share the spectrum for profit, such sharing is not mandated by the regulation policy
- ***Dynamic spectrum allocation***: This approach aims to improve spectrum efficiency through dynamic spectrum assignment by exploiting the spatial and temporal traffic statistics of different services. In other words, in a given region and at a given time, spectrum is allocated to services. This allocation, however, varies at a much faster scale than the current policy. Based on an exclusive-use model, however, these approaches cannot eliminate white space in spectrum resulting from the bursty nature of wireless traffic.

Option Two: Open Sharing Model (spectrum commons)

This model uses open sharing among peer users as the basis for managing a spectral region. Advocates of this model draw support from the success of wireless services operating in the unlicensed ISM band (e.g. Wi-Fi). Centralised and distributed spectrum sharing strategies have been initially investigated to address technological challenges under this spectrum management model.

Option Three: Hybrid model - Hierarchical Access Model

Built upon a hierarchical access structure with primary and secondary users, this model can be considered a hybrid of options 1 and 2. The basic idea is to open licensed spectrum to secondary users and limit the interference perceived by primary users (licensees). Two approaches to spectrum sharing between primary and secondary users have been considered: *spectrum underlay* and *spectrum overlay*. Compared to the dynamic exclusive use and open sharing models, this hierarchical model is perhaps the most compatible with the current spectrum management policy and legacy wireless systems

- **Do you agree that the sharing model should be applied to ensure effective and efficient management of spectrum? Is so, why? If not, why?**
- **Which option do you think would best advance effective and efficient management of spectrum? Why?**

3.8 Emerging issues

Technologies are innovative ideas that are commercialised and mainstreamed so that some value is derived. The continuous deriving of value from a technology defines the trend of that technology. A key factor in measuring a trend is its ability to impact, evolve and transform businesses and individuals. Generally there are two categories of trends, viz. disruptor and enablers. Disruptors are trends that create a sustainable positive disruption in transforming business, government and society. Enablers can be defined as technology developments that alone or in combination with related technologies, provide a way to generate giant leaps in performance and capabilities of a user or user group.³⁵

There were limited questions on technology trends and new innovations in the Green Paper, and hence few submissions. Notwithstanding, a future White Paper will need to be cognisant of

³⁵ Deloitte. 2014. What are technology enablers; and why are they relevant?
[online: <http://deloitteblog.co.za/2014/02/06/what-are-technology-enablers-and-why-are-they-relevant/>]

emerging issues and how they might impact on users and therefore policy to ensure policy is an enabler rather than inhibitor.

This section presents an overview of some of the emerging issues requiring policy consideration. The intention is not to provide an exhaustive list of trends, given that technology innovation is constantly taking place. Given the effect of Moore's Law,³⁶ it is becoming increasingly difficult to predict the effect of faster processors and more compact devices.

Note: *There are also several other emerging issues and trends dealt with in other chapters*

3.8.1 IP based technologies

The Internet Protocol suite brings together different transmission layer protocols into a single, standardised protocol architecture, which can be utilised by applications for different communication purposes. As a result, any application that supports TCP/IP will also be able to communicate over any IP-based network. The predominantly used IP based technologies are Voice over IP (VoIP), Internet Broadcasting, and Wireless Mobile Technology.

IP-based technologies make it possible to distribute many applications over a single network. In the IP-based environment there is no longer any need to build distinct and separate networks for voice, data, audio and video. This significantly decreases costs associated with network roll-out, and network operations.

On the application side, IP-based technologies impact positively in that they remove the need for specialised networks for application providers. New service providers are able to enter the market or create a new market by connecting to any available IP-based network. It is therefore possible to expand service delivery and competition with appropriate policies and regulations.

The shift to IP-based technologies present a major challenge to the current regulatory structure that still distinguishes between electronic communications network operators based on the kind of platform they operate on. In theory, electronic communications licensees could offer any type of service and data, but the current legislation requires the holding of a broadcasting licence to offer broadcasting services. The current provisions do not take into account the inherent capabilities of the IP-based network to transmit any kind of data to any device that can receive it.

In the options below, questions are posed rather than options. In responding to these, the effects of IP based technologies should be considered. These include:

- Service providers offering equivalent voice and data services which are not regulated;
- A growing user demand and sophistication exerts growing pressure on spectrum;
- An increasing pressure for networks and services to become more interoperable, with users expecting to transfer seamlessly between networks;
- Increased pressure on regulation to keep up with the market changes;
- The need for regulators to ensure an even and competitive landscape for services for all players, which by implication is a requirement to level the playing field via policy.

POLICY QUESTIONS

³⁶ Moore's Law is a computing term which originated around 1970; the simplified version of this law states that processor speeds, or overall processing power for computers will double every two years. See <http://www.moorelaw.org/>

The framing of potential policy requires a response to the following issues:³⁷

ISSUE 1: Universal access/service provisions

Should access to IP-based networks, in particular via high-speed links, also be subject to universal access/service provisions?

ISSUE 2: Consumer protection

A key policy question is whether, and if so to what extent and how, provisions relevant to consumer protection should apply to the use of IP-based networks or the provision of IP-based applications, taking into account the traditional differences in the treatment of public and private networks.

ISSUE 3: Supervision of dominant market players

To what extent and how, should the regulator be tasked with supervising suppliers of IP-based networks or IP-based applications, taking into account the traditional differences in the treatment of public and private networks?

ISSUE 4: Emergency services

To what extent and how, should emergency service provisions apply to IP-based networks or IP-based applications?

ISSUE 5: Access for persons with disabilities

To what extent and how should access provisions for persons with disabilities apply to IP-based networks or IP-based applications, taking into account the traditional differences in the treatment of public and private networks?

ISSUE 6: Security (e.g. law enforcement, cybercrime, legal intercept) and privacy protection

Whether, and if so, to what extent and how, provisions related to security and privacy should apply to IP-based networks or IP-based applications, taking into account the traditional differences in the treatment of public and private networks?

- **Please respond to the questions posed. Highlight areas which you feel are not important. Please also add any other policy implications of IP-based technologies which you believe require policy consideration.**

3.8.2 Over-the-top (OTT) services

Many users of communications services are currently using OTT services. OTT refers to services provided over the Internet rather than solely over the provider's own managed network (OECD, 2013, p. 20).³⁸ Examples of OTT services include chat applications (e.g. Whatsapp, Wechat, Facebook Messenger), streaming video services (e.g. Netflix, Amazon Prime, YouTube), voice calling and video chatting services (e.g. Skype, Google Hangout, Facetime) and new services such as videogame streaming (e.g. Twitch). Internet based broadcasting-like OTT content services are dealt with

³⁷ These questions were extracted from: ITU, "A Handbook on Internet Protocol (IP)-Based Networks and Related Topics and Issues", 2005 <http://www.itu.int/ITU-T/special-projects/ip-policy/final/IPPolicyHandbook-E.pdf>

³⁸ http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2418792

extensively in audio-visual policy options in Chapter Five, and thus this section will not deal with these.

The implications of OTT services in economic terms, is that OTT players which rely on IP based networks to reach their customers do not make any direct contribution towards the cost of providing it. Some network service providers have argued this causes them harm. In the USA, for example, network carriers have reacted to OTT. Unuth (2014) reports that when Apple's iPhone was released, AT&T imposed a restriction on VoIP services over its 3G network. After pressure from users and the US regulator, the restriction was finally lifted. It is understood that US providers have realised they can't fight that battle, and that they should content themselves with reaping the benefits of offering good 3G and 4G connectivity for those who use OTT services. Some network service providers even have their own OTT service (which is finally not really OTT, but rather an alternative to it), with favourable rates to its customers.³⁹

The ITU makes the following points about OTT services:⁴⁰

- Proliferation of content and applications services is to be welcomed – they add utility for users. Some new OTT services did not previously exist and do not undermine the current operator business models (e.g. location-based GPS mobile services). However some new OTT services may threaten the economics of investing in fast broadband networks (e.g. internet television).
- Change is inevitable. As network operators migrate to next generation networks, voice services will become software applications riding over the network. During this transition, policy-makers are finding different paths to balancing innovation, investment and competition.
- Regulators cannot hold back the tide of changes to maintain the status quo. To a large extent, existing operators are able to change their business models to stay afloat. For example, OTT services manifest themselves on networks as traffic. If network builders and operators align revenue models more with traffic, their financial position is more secure. This would reverse current trend.
- These changes are disruptive and inconvenient for those with a stake in existing arrangements, but the benefits of change outweigh the costs. For example, VoIP leads to dramatic reductions in the cost in telecommunication and this has beneficial impacts on the development of business and economic growth. India found that VoIP opened up new employment opportunities with call centres serving overseas markets.
- Regulators generally support innovation. They prevent fixed and mobile operators from blocking or degrading competing services.

A key policy issue thus is whether OTT services should be regulated or not. For instance the Telecom Regulatory Authority of India (TRAI) took a decision in August 2014 not to regulate OTT. TRAI's argument was that the mobile operators recover their losses through increased data revenue. Mobile operators had claimed that the use of applications such as Skype and WhatsApp would annually cost them over US\$822 million in lost revenue. There are similar claims that also being made here in South Africa by the mobile operators.

- **Should OTT services in South Africa be regulated?**
- **If so, how?**

³⁹ Unuth, N, "What is OTT?", 2014 <http://voip.about.com/od/markettrends/a/What-Is-Ott.htm>

⁴⁰ ITU-infoDev "ICT Regulation Toolkit: Regulating 'Over-the-Top' Services", undated, <http://www.ictregulationtoolkit.org/2.5.1>

3.8.3 Conclusion

- Are there any issues that you believe have been neglected?
- Can you suggest any benchmarks and targets which may be incorporated to monitor progress against policies objectives?