The evolution of broadband policy and regulation in South Africa

Arthur Gladwell Kekana

0517242A

A Research Report submitted to the Graduate School of Public and Development Management, University of the Witwatersrand in partial fulfillment of the degree of Master of Management in ICT Policy and Regulation

March 2013

ABSTRACT

The liberalization of the telecommunications sector in South Africa has brought about vast improvement in the take-up and use of mobile telephony, however the opposite can be said of broadband penetration. As recently as 2012, there has been some degree of stagnation in fixed telephony and broadband access. This research report explores the evolution of broadband policy and regulation over the past decade, 2003-2012. Several themes from international trends are used, as guidelines of what an integrated, efficient broadband policy should address what governance and policy leadership is necessary for driving broadband policy initiatives across all spheres of government. The study proposes a conceptual framework that informs the analysis in comparing and contrasting the national broadband policy and plans, as well as provincial and local government's policies and plans against desirable characteristics, such coordinated planning and implementation of broadband across government. The research analyses the current state of the country's national broadband policy and plans across the three spheres of government. The analysis considers the contextual differences between the trends studied and the local data collected in the formal research phase, for the benefit of identifying the strengths and weaknesses of the South African broadband plans. The conclusion focuses on the incentive structure needed to extend the development of the broadband ecosystem in terms of infrastructure, services, applications and user involvement in the country.

DECLARATION

I declare that this report is my own, unaided work. It is submitted in partial fulfillment of the requirement of the degree of Masters of Management (in the field of Information Communication Technology, Policy and Regulation) at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at any other University.

Arthur Gladwell Kekana

_____

March 2013

DEDICATION

This work is dedicated to my wife, Manageng, my daughter, Kgomotso and my two son's Naledi and Kopano for their understanding throughout the period of this study.

ACKNOWLEDGEMENTS

I would like to thank God for the grace and mercy directed upon me, Thank you.

I am grateful to:

My supervisor; Luci Abrahams for the guidance and patience throughout the research study process.

My fellow students for encouragements throughout the study process.

Helpful participants in the target population for their invaluable assistance and co-operation in providing insightful information for the purpose of this research project.

The staff at the Library of Management for their continued assistance throughout my studies.

TABLE OF CONTENTS

LIST OF ABBREVIATIONS

A-DSL	Asymmetric – Digital Subscriber Line
CATV	Cable TV
DoC	Department of Communications
DSL	Digital Subscriber Line
ECN	Electronic Communications Network License
ECNS	Electronic Communications Network Services License
FTTx	Fibre to the premises
GDP	Gross Domestic Product
GDS	Growth and Development Strategy
HDSL	High Rate DSL
ICT	Information and Communications Technology
ICASA	Independent Communications Authority of South Africa
ISAD	Information Society and Development
IT	Information Technology
ITU	International Telecommunications Union
ISP	Internet Service Provider
KZN	Kwa-Zulu Natal
MoC	Ministry of Communications
OECD	Organizations of Economic and Cooperation Development
PGDS	Provincial GDS
RIA	Research ICT Africa
SDSL	Symmetric DSL
SME	Small and Medium Enterprise
SMME	Small, Medium and Micro Enterprise

SOE	State Owned Enterprises
VDSL	Very high data rate DSL

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1: INTRODUCTION AND BACKGROUND: THE SOUTH AFRICAN STATE OF BROADBAND EVOLUTION

1.1 INTRODUCTION TO BROADBAND

Access to and usage of broadband infrastructure, broadband-enabled technologies and the associated e-services is seen to offer potential for economic growth and social development. Broadband development can bring substantial benefit to the productivity, education, e-inclusion and economic development in general, therefore innovative productive practices in business, government, education, health care and daily life are now critically dependent on the ability to communicate information quickly and independently, meaning that the prerequisite for broadband development is an increase in broadband access and use, (Trkman, Blazic &Turk, 2008:101). In support of the view that broadband has an important economic value for both Government and its citizens, a recent study by the World Bank (2010) found that for every 10 percentage-point increase in penetration of broadband services, developing countries may experience an increase in economic growth of 1.34 percentage points. For an economy like South Africa, which has experienced relatively slow broadband growth over the past decade, attention to the expansion of broadband access and usage would be an important objective for electronic communications sector policy and regulation.

To this end, the introduction of broadband policy in 2010 was perhaps nine years behind the curve of broadband market development as the major players, including the metropolitan municipalities had all long adopted their specific broadband strategies and a mobile broadband substitution effect may already be emerging, It is therefore unlikely that the National policy will change the direction of market developments in the near term, certainly

not to the extent that is will see broadband infrastructure development in low income areas (Abrahams & Goldstuck, 2010:139). Thus, one can argue that this extended period without a National broadband policy could have been responsible for South Africa's poor performance against its African peer countries as evidenced by the latest Research ICT Africa (RIA)'s household and individual ICT survey which revealed that of the 10 African countries surveyed for the use of computer for internet browsing, South Africa ranked 5th at 71%, behind the likes of Kenya (88.6%), Rwanda (87.7%), Nigeria (75.8%) and Namibia (75.8%) (Gillwald & Stork, 2011).

Thus, the lack of broadband access in many parts of South Africa can be attributed to poorly coordinated broadband policy amongst national, provincial and local government, as well as lack of effective regulatory capacity in so far as getting access and pricing of broadband services at reasonable levels to stimulate broadband uptake, for example, not long ago, South Africa and Namibia shared the same mobile termination rates and had similar end-user prices. Today, Namibia enjoys amongst the cheapest mobile prepaid prices in Africa, as a result of the slashing of its termination rates close to cost, which pressured the incumbents towards cost-based pricing, thereby increasing demand and remaining highly profitable (Calandro, Gillwald & Stork, 2012:1). While many consider South Africa to be at the forefront of internet speeds on the continent, the data reveals that the country only managed to make it into 114th position on the global internet speed index, resulting in being placed 6th on the African rankings, with average download speed of 2.85Mbps, trailing Ghana (4.78Mbps) as Africa's number one, Zimbabwe (4.65Mbps), Kenya (4.46Mbps), Libya (4.27Mbps) and Madagascar (4.25Mbps) respectively (Fripp, 2012). South Africa continues to fall behind its peer African Countries in terms of the global 2011 ITU fixed broadband penetration rankings, where the country ranked number 104th with broadband penetration rate of only 1.8% trailing behind countries such as Seychelles with the penetration rate of 8.9% followed by Mauritius and Tunisia at 5.9%, Algeria at 2.8%, and Egypt at 2.2% (Broadband Commission, 2012).

Therefore, poor policy co-ordination and ineffective regulation will not only negatively affect economic growth but is likely to compromise the country's position on international rankings while creating a hindrance for citizens to access and use broadband enabled services for economic and social benefit.

Table 1: South African country statistics

COUNTRY INFORMATION		YEAR	DATA	SOURCE
Demographics	Population	2011	50, 586,757	Stats SA
	Population Density (km2)	2011	41	UNDESA
Economic Indicators	GDP (USD)	2011	555,340	IMF
	GDP per Capita (USD)	2011	10,777	
ITC Indicators Per 100 people	Fixed	2010	8,43	ITU
	Mobile	2010	100,48	
	Internet	2010	12,3	
	Fixed Broadband	2010	1.48	

Source: Ovum, 2012

In line with this view, Abrahams & Goldstuck (2010:138) reported that in the decade to 2010, the landscape of electronic government policy has been bleak, consisting of three main policy documents – (1) *Electronic Government: The digital future*, (2) the *2003 White Paper on e-Education* and (3) the *2006 ISAD Plan,* The e-government policy adopted a technology, IT security and e-administration angle and did not express itself on the role of electronic

media in improving public services through e-health or other services applications. The e-education may have been satisfactory in print, but in practice e-education did not take off in any significant way. The ISAD Plan drew attention to e-health and e-education, but coming from one of the smallest government departments with no leverage, very little attention was paid to it by other national departments or provincial administrations. South Africa received its first broadband policy in 2010, after almost a decade without any meaningful policy that would take advantage of, and exploit the benefits associated with the use of broadband services. This extended period of policy dormancy is referred in this document as the “The decade of policy dormancy” or “decade of dormancy” which has been accompanied by high broadband prices that continues to present an undesirable situation for South African society which is seemingly losing out on economic and social benefits associated with the use of broadband services.

Effective policy and regulation requires good governance because institutions need to practice effective decision-making, strategy, management and leadership in order to achieve their objectives. It would therefore be necessary to understand how the current broadband policy and regulation in South Africa is affected by the quality of governance in the relevant institutions, namely the Ministry of Communications and the Independent Communications Authority of South Africa (ICASA) and whether the economic value of broadband is well understood by all stakeholders. Furthermore, it would be important to understand the role of active citizenry in influencing change within the broadband landscape, because understanding governance requires an understanding of the relationships between government and citizens and their respective roles in influencing development in any sphere. Thus without understanding the relationship between broadband policy governance, proactive regulation, the economic value of broadband services as well as the role of active citizenry in the policy development process, it could be difficult to turn this period of dormancy into a period of development where the development of broadband policy or

strategies will effectively accelerate the diffusion of broadband access and services to promote economic growth and social development in South Africa for the benefit of its citizens.

If the economic value of broadband is well understood, then what could have led to the slow development of the broadband policy in South Africa and how could regulation have responded to the high prices experienced in the sector? Can policy governance and leadership on the part of the Ministry of Communication address these challenges or can the role of active citizenship influence the broadband policy development and implementation that would see South Africa ascend the world rankings in terms of broadband penetration indexes?

Therefore, understanding the reasons for lack of broadband policy and implementation will be essential to positively respond to the causes, thus this research aims to investigate how has governance affected broadband policy formulation, implementation, regulation and penetration between 2003 and 2013, by analyzing the relationship between policy governance and leadership required to ensure effective implementation of the broadband policy and proactive regulation that creates an environment where access to broadband services move towards universal levels and where the role of active citizenry is characterized by the ability to freely and voluntarily participate in the development and implementation of policy for their own economic and social benefit.

1.2 WHAT IS BROADBAND?

Broadband is generally defined as a high speed data transmission services to transmit data and multimedia content, usually from the internet. Broadband is defined by the International Telecommunication Union (ITU) Standardization Unit as a “transmission capacity that is

faster than primary rate Integrated Services Digital Network (ISDN) at 1.5 or 2.0 Megabits per second" (ITU, 2003), while the Organization for Economic and Co-operation and Development (OECD) defines broadband as any Internet connection with a download speed of 256kbps.

Irrespective of the precise definition, broadband services may be delivered through various different technologies. The most widespread technology is, so far, the *Digital Subscriber Line* (DSL) technology, which relies on the existing telecommunication copper network to provide connection speeds ranging from 256 Kbps to 52 Mbps, depending on the specific type of DSL (Asymmetric DSL (ADSL), High Rate DSL (HDSL), Symmetric DSL (SDSL) and Very High Data Rate DSL (VDSL)). The second most widespread technology is the *Cable Modem*, which provides faster connection speeds than the DSL (in the range of 1 to 10 Mbps), allowing for the simultaneous passage on the TV cable of triple-play services: voice, data and television. Other relevant technologies for the provision of broadband services include *Satellite*, *Fixed Wireless Access* (FWA), *Power Line Communications* (PLC, based on the electricity transmission network), *Mobile Wireless* and, most importantly in terms of quality and potential, *Optic Fiber*. Deployment of the latter allows the building of an Internet Protocol-based network that is normally referred to as *Next Generation Network* (Belloc, Nicita & Rossi, 2009: 1).

The South African broadband policy defines broadband as always available, multimedia capable connection with a download speed of at least 256 kbps (Nyanda, 2010). However, these are just technical definitions. The wide range of broadband indicators, the lack of homogeneity in broadband data transfer speeds and bandwidth, and a broad diversity of regulatory and geographic factors do not facilitate an accurate global definition of broadband. Thus it will therefore be desirable to refocus the definition beyond the traditional elements and involve high speed networks, services, applications and users alongside

policies regarding the promotion of investment, affordability, demand, availability and access (Budde, Burgess, Ponder, & Lozanova, 2011: 18). In the context of South Africa, the key issue from the perspective of economic and social use of broadband services would be the user experience in terms of the rapid download and upload speed when accessing large documents or multimedia content, for example accessing Web 2.0 interactive services such as Google maps. In order to take full advantage of broadband services such as e-Health and e-Education, bandwidth will play a critical role as some of these services become effective with exceptional response times, for example, doctors will require adequate bandwidth and speed to successfully conduct a telemedicine procedure to avoid compromising the life of a patient.

In the delivery of broadband multimedia services to end-users, it is necessary to build a high-speed backbone and access network, to construct a broadband access network, several alternative technologies including xDSL, CATV, and FTTx have been suggested and implemented in telecommunication networks, however, even if a technology is proven to be optimal for the current environment, it can be deteriorated by the elapse of time or the advent of new challenging technologies in the future (Yoon, Yoon & Lee, 2005). The demand for new and improved applications and services is also likely affect the type of broadband technologies needed in the near future.

The following broadband technologies options are the most common and currently in use to provide broadband access and usage, it must be noted however that the preferred usage is often primarily influenced by cost and availability to a greater extend followed by speed, for example in South Africa an ADSL connection is generally preferred over a Satellite connection by households and SMME's mainly due to the high cost associated with satellite connections for internet use regardless of other factors such as speed, etc.

Wireline Technologies:

Digital subscriber line (DSL): Digital subscriber line technologies uses the existing wireline network to transmit information (voice, video and data), over existing copper telephone lines at incredible speeds. It offers speeds ranging from 144 Kbps to 1.5Mbps, up to 25 times faster than a standard 56Kbps dial-up modem (Hudson, 2003). There are numerous different variations of DSL, such as ADSL, SDSL, HDSL, IDSL, and VDSL. The maximum DSL speed is determined by the distance between the customer site and the exchange as well as the thickness of the wire. In some countries most ISP's offer Symmetric DSL (SDSL) data services at speeds that vary from 144 Kbps to 1.54 Mbps, and now even faster up to 6.0 Mbps. At the customer premises, a DSL router or modem connects the DSL line to a local-area network (LAN) or an individual computer; it provides the customer site with continuous connection to the Internet and use of the telephone at the same time.

- **ADSL** (Asymmetric Digital Subscriber Line) is the most popular form of xDSL and supports up to 8 Mbps bandwidth for downloading and up to 1 Mbps for uploading. The asymmetrical nature of ADSL technology makes it ideal for Internet/Intranet surfing, video-on-demand, and remote local area network (LAN) access. Users of ADSL typically download more information than they send.
- **SDSL** (Symmetrical Digital Subscriber Line) delivers high-speed data networking over a single-pair of copper phone lines, at the same speed in both the upstream and downstream directions. Speed ranges from 160 Kbps up to 1.544 Mbps at a maximum range of 4.5km. SDSL is ideal for business applications that require identical downstream and upstream speeds such as video conferencing or collaborative computing as well as similar applications appropriate for ADSL technology.
- **HDSL** (High bit-rate Digital Subscriber Line) delivers high-speed data networking up to 1.544 Mbps over two copper pairs and up to 2.048 Mbps over three pairs at a maximum

range of about 6 km from a central office. It is similar to SDSL and has symmetrical transmission capabilities.

- **IDSL** (ISDN Digital Subscriber Line) provides symmetric download and upload speeds from 64 to 144 Kbps on a single pair of copper wires. The maximum range of IDSL from a central office is about 11 km, but this can be doubled with a mid-span "U" loop repeater.
- **VDSL** (Very high bit-rate Digital Subscriber Line) is the fastest xDSL technology, delivering downloads up to 13-52 Mbps and uploads at 1.5 to 2.3 Mbps over a single pair of copper wires. However, VDSL is limited to a maximum range 1.6-7.2km from the central office, depending upon the speed.

In South Africa, ADSL has been a compelling and attractive technology for internet access for both SMME's and households, which can provide multiple accesses to the internet for under R200 per month and when coupled with other services such as MWeb's bundled packages which allow for cheap voice and fax calls while connected to the same ADSL line, however, the mobile 3G technology is increasingly becoming the broadband connectivity of choice and it is likely to continue in that direction at least for the foreseeable future as mobile smart phone penetration increases.

Cable Modem:

A broadband technology that uses access lines for cable television (CATV). Although traditional CATV networks need to be upgraded with a separate voice line to provide interactive communication services like telephony and Internet access, new networks use the same coaxial cable to provide simultaneous transmission of data, television and voice. Connection speeds range from 1 to 10 Mbps (Distaso, Lupi & Manenti, 2006:90).

Fiber to the home (FTTH):

A fiber optic technology similar to standard cable that allows for transmission speeds of up to 10 Gbps. Fiber optic cables are rolled out up to home of the consumer and can carry video, data, voice and interactive video-telephone services (Distaso, Lupi & Manenti, 2006:90).

Fixed Wireless Access (FWA):

A technology, initially deployed as an alternative to the local copper loop, which uses radio links between a base station and a receiving antenna located in the customer's premises. It allows for simultaneous transmission of voice and data and can reach speeds of over 2 Mbps (Distaso, Lupi & Manenti, 2006:90).

WIRELESS

Satellite:

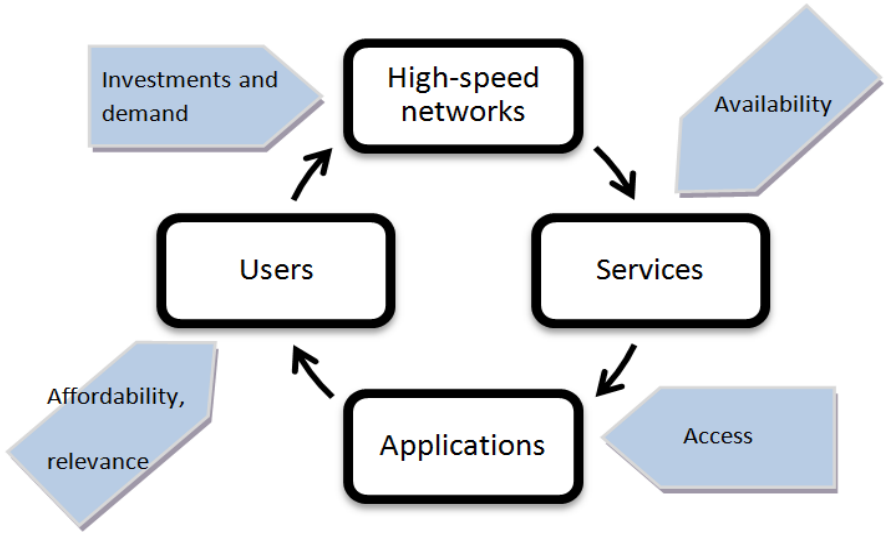
Satellite is a broadband technology that uses satellite TV equipment to carry data. At the moment the majority of services based on satellite technology are one-way (i.e., they only allow for downstream transmission) and need a dial-up connection for the return channel. The downstream speed ranges between 300 Kbps and 2 Mbps. This technology is considered to be particularly effective for servicing rural areas where other technologies are too expensive to be put in place (Distaso, Lupi & Manenti, 2006:90).

3G wireless:

Third-generation wireless refers to current and future telecommunications innovation that mobilizes broadband access, with the ability to support several different cellular standards and provide multimedia services. The largest potential of this type of wireless technology is that it is not computer-centric, and that it presents the convergence of several 2nd generation (2G) wireless telecommunications systems. The major advantage lies in the possibility for high-speed Internet access through mobile devices. 3G wireless promises speeds at above 2Mbps, however, it remains to be seen how fast this technology will be fully developed and deployed in the market (Papacharissi & Zaks, 2006:66).

Kim, Kelly and Raja (2010), proposes that broadband be defined beyond the traditional notion of a specific type of network connectivity or minimum transmission speed and rather, broadband be viewed as an ecosystem that includes its networks, the services that the networks carry, the applications they deliver, and users. Each of these components has been transformed by technological, business, and market developments, as depicted in the figure below which depicts the broadband ecosystem.

Figure 1: The broadband ecosystem



Source: Kim, Kelly & Raja, 2010

Thus, the World Bank's proposal for the redefinition of the broadband is in line with the ITU's broadband commission which argues that regardless of which option for defining broadband is selected, a global and updated definition would need to be reviewed regularly in order to keep up with the pace of technological change and the demand for new type of services (Budde, et al, 2010).

1.3 THE STATE OF BROADBAND IN SOUTH AFRICA

Even though there is a widely held view about South Africa being a symbol of hope regarding development in the continent, South Africa continues to face growing challenges of unemployment, lack of skills, education, corruption and poverty (Gillwald, 2001). Following a national colloquium of stakeholders and interested parties in February 2001, the South African Cabinet approved a number of policy proposals in relation to the telecommunications policy in the country which reflected the intention of government to prioritize issues that would attract substantial focus in the new telecommunications policy with particular focus in black economic empowerment, domestic and foreign direct investment, stable predictable regulation, universal service and access, human resource development the reduction of the digital divide. Alongside these highlights will be a general commitment to development and economic growth by the South African government (Gillwald, 2001). A year later, Telkom introduced its ADSL services, by the year 2005 Telkom was experiencing a pent-up demand from subscribers, and already claiming 66% of the market (i-week, 2005). Meanwhile, wireless broadband also took off from 2004 (Goldstuck, 2005).

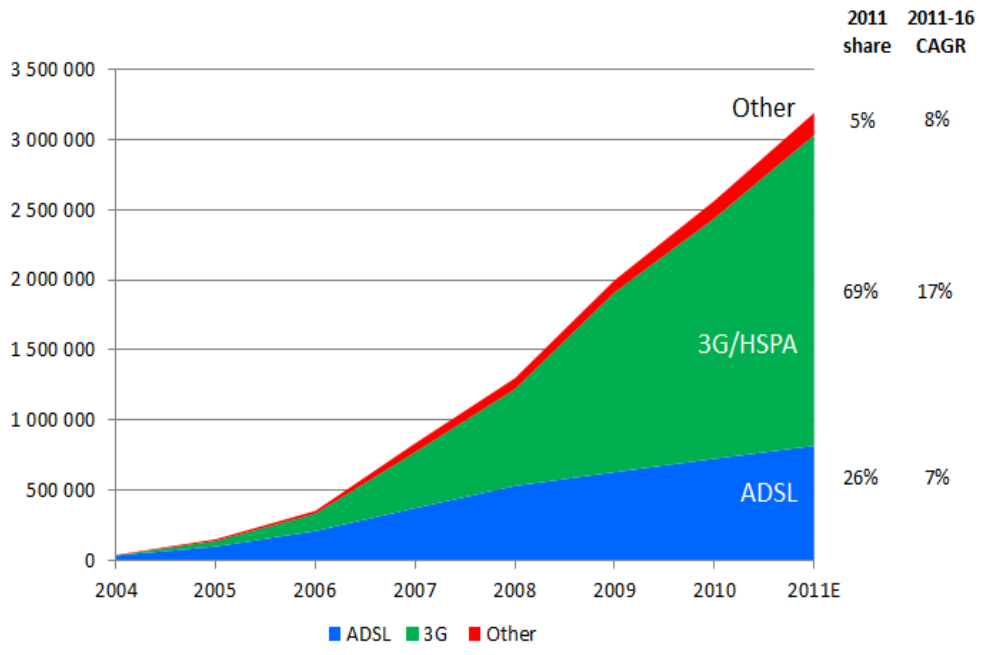
Since the mid-2000, South Africa continued to experience low usage of broadband technologies and services, mainly due to high prices in the sector. The international peer benchmarking study conducted by BMI Techknowledge (2009) for the Department of Communications, revealed that of the six peer countries compared in 2007, on internet access at home, except India, South Africa had the least households with internet access

(7%), compared to Brazil (17%), Malaysia (20%), Chile (31%) and Korea with a whopping 80% households with internet access. The low usage of broadband technologies and services can also be attributed to poor fixed access to broadband, for instance, the World Bank (2010) found that the primary means of providing customers with broadband connectivity has been through the fixed telephone lines. From around 2010, broadband access is increasing mainly through mobile broadband access.

During the period of 2001 to 2007, Telkom's view was that voice was the revenue generation basis for the future. This led to a widely held perception that Telkom viewed broadband as a technology meant primarily for corporate enterprises and not for households, thus pricing its ADSL at a premium, rather than for residential consumers and small and medium enterprises (SME's) (Esselaar & Gillwald, 2007). Similarly, the mobile operators also focused their service offerings on voice rather than on broadband data services. However, Telkom's 2006 results indicate that while there was take-up of its broadband services, there was a waiting list of over 50 000 residential subscribers for its ADSL service, illustrating the pent-up demand. Wireless competitors leveraged supply-side delays which consumers were experiencing with Telkom by rolling out mobile HSDPA services (Esselaar & Gillwald, 2007). Finally, from 2008 ADSL growth expanded to compete with the rapid uptake of mobile broadband services. Despite the increase in fixed and mobile broadband, the levels of household and SME broadband penetration in 2010 were still low (Goldstuck, 2010). In this period, no policy interventions emerged on the subject of broadband, while regulatory interventions were also limited, where Broadband (ADSL) and mobile broadband (3G) technology lagged behind the introduction of Internet-based services such as online banking, travel and accommodation bookings, research and educational content in the early part of the decade, the irreversible shift from low-bandwidth dial-up to broadband becoming a feature in the communications landscape only in 2008, opening up the market for electronic services (Abrahams & Goldstuck, 2010).

This lack of focus on policy and regulation for broadband could also be attributed to the bottleneck in undersea cable access for much of the decade before the landing of new cables in 2009. Furthermore, broadband provisioning is a highly concentrated market, fixed broadband is offered by Telkom and Neotel, fixed wireless broadband by Telkom, iBurst and Sentech and mobile broadband by Telkom, Vodacom, MTN and Cell C. Most ISP's are offering fixed broadband services; however this is usually re-selling Telkom's ADSL services as local loop unbundling has not yet been regulated. Municipal broadband infrastructure has been built or in a process of being built by four metropolitan municipalities including Johannesburg, Ekurhuleni, Tshwane and Cape Town, but service provision to firms and households has yet to be launched (Abrahams & Goldstuck, 2010:111). Thus the period from 2001 to 2010 could be seen as a "dormancy period" with respect to broadband policy development and implementation. It was only in 2010 that the South African National Broadband Policy was approved and gazetted.

Figure 2: PC Broadband Connection 2004-2011



Source: Department of Communications, 2011

Figure 2 above represent data about PC based broadband connection from 2004 to 2011 from the Department of Communications (DoC) who reported that as at March 2012, there were around 3.5 million broadband connections is South Africa with around 850,000 of these being ADSL (26%), over 2.5 million being 3G/HSPA mobile wireless broadband (69%) and the balance using other access technologies (5%). The report from the DoC further indicates that market research data from national studies conducted in 2011 showed that 93% of the households had mobile phones, while only 15% had fixed lines. 26% of the households had a computer, while 10% had broadband and internet access at home. The fixed broadband penetration was 2%, the mobile PC broadband penetration was 4% while the mobile phone broadband penetration was 10%.

In the 2012 South African Colloquium on ICT policy, delegates heard that in terms of the overall network readiness, South Africa ranked 72nd globally, a sharp decline from a decade ago as South Africa was ranked in the mid-30s in the 2000s. The decline was associated with the lack of policy outlining how technology should be deployed and aligned with the country's developmental goals. It was further reported that this lack of co-ordination in policy has also harmed the industry and it would be difficult to reclaim the economic lost ground even if the shortcomings can be addressed (Tullet, 2012).

Table 2: Global Fixed Broadband Penetration 2011

Fixed Broadband Penetration, Worldwide, 2011

RANK	ECONOMY	FIXED (WIRED)-BROADBAND SUBSCRIPTIONS PER 100 INHABITANTS 2011
1	Liechtenstein	71.6
2	Monaco	44.2
3	Switzerland	39.2
4	Netherlands	38.7
5	Denmark	38.2
6	Korea (Rep.)	36.9
7	Norway	36.5
8	France	36.1
9	Iceland	33.9
10	Belgium	33.0
100	Egypt	2.2
101	Philippines	1.9
102	Oman	1.8
103	Morocco	1.8
104	South Africa	1.8
105	Nicaragua	1.8

Source: ITU, 2012

Table 3: Internet usage

Percentage of Individuals using the Internet

RANK	ECONOMY	PERCENTAGE OF INDIVIDUALS USING THE INTERNET 2011
1	Iceland	95.0
2	Norway	94.0
3	Netherlands	92.3
4	Sweden	91.0
5	Luxembourg	90.9
6	Denmark	90.0
7	Finland	89.4
8	Qatar	86.2
9	New Zealand	86.0
10	Switzerland	85.2
109	South Africa	21.0
110	Bhutan	21.0
111	Iran (I.R.)	21.0
112	S. Tomé & Principe	20.2
113	Mongolia	20.0

Source: ITU, 2012

Similarly, the National Planning Commission concedes that today, the labour force in the country makes up a significant share of the population, and the proportion of children and the elderly comprises smaller shares. Internationally, this demographic makeup is often associated with rising incomes, faster productivity growth, higher savings and raising livings standards, nonetheless, the opposite can lead to a frustrating and destabilizing environment where the young people cannot work, contributing to violence, crime, alcohol abuse and other social ills. Furthermore, a study by UNISEF revealed that there is a pronounced digital divide in South Africa with regard to ICT ownership, access, and use, divided by race, socioeconomics, and geography. Thus these undesirable outcomes which are likely to continue threatening development in the country should the Ministry of Communication not act in a timely manner to ensure that the broadband policy is implemented in a co-ordinated fashion, monitored and reported on given the transformative nature and economic value of broadband access and use.

It is not certain that the promise of the Ministry to completely review and overhaul the country's policy framework will yield the much desired outcomes. It would appear that South African policy and policy making in the telecommunications sector is focused more on politics than on economic value and social development as evidenced by delays in policy development since the 2003 Convergence Colloquium, while there has been a continuous change in the political leadership of the Ministry including the short tenure of Minister Nyanda who approved the National Broadband Policy in 2010.

Compared with the best international standards, South Africa's ICT infrastructure is abysmal in that an efficient information infrastructure that promotes economic growth and greater inclusion requires stronger broadband and telecommunication networks and lower prices; therefore the economic and employment benefits outweigh the costs (National Planning Commission, 2010). Similarly, if South Africa is to move from a decade of dormancy to a

decade of development, post the National broadband policy then the Ministry of Communications should consider investing in an effective monitoring and evaluation processes which tracks the impact of this policy on a regular basis. Only a few countries have specific broadband policy assessment and evaluation activities which would allow them to carry out existing broadband plans in a more effective and accountable manner because internationally, comparable broadband metrics are needed to meet this goal (OECD, 2008).

The National Development Plan (2011) acknowledges that the market cannot resolve all of the country's challenges; many require interventions by an effective government that delivers public goods of high quality. Therefore effective broadband policy implementation must 29analyzing the economic value of broadband and institute governance and policy leadership coupled with effective regulation to drive such initiatives for the benefit of the citizenry who should be allowed to voluntarily and actively participate in the policy development process for social and economic benefit. Similarly, and in recognition of the consequences of lack of broadband strategies in the country, the ruling party, the African National Congress acknowledges that as globalization intensifies, driven by ICT's, it has also sharpened inequalities between and within communities and that it has produced winners and losers, thus South Africa is by no means an exception to the rising tide of inequality between the haves and the have-nots (ANC, 2012).

1.4 THE ECONOMIC VALUE OF BROADBAND

Broadband plays a critical role in the workings of the economy and society. It connects consumers, businesses, and governments and facilitates social interaction (OECD, 2008). For example, Msimang (2010:4) reported that in terms of the World Bank's report, in the last decade Kenyan economy has grown at an average of 3.7 percent, at the same time the Kenyan ICT sector has grown at rate of 20 percent per annum and has outperformed all other segments of the economy, thus the estimations from the World Bank was that without

ICT, the economic growth would have only been 2.3 percent and income per capita would have stagnated. Telecommunications technologies and services are increasingly seen as the central nervous system of the evolving world economy of the twenty-first century, not merely as a concomitant of future growth and welfare but as a precondition for both (Snow, 1988:153). This is mostly because ICT's does not only have a direct contribution to the economy as a sector but also as enabler of growth and development across all sectors of the economy as evidence by the banking, retail and travel & tourism sectors for example.

The last decade has seen information and communication technologies (ICT) dramatically transforming the world, enabling innovation and productivity increases, connecting people and communities, and improving standards of living and opportunities across the globe. While changing the way individuals live, interact, and work, ICT has also proven to be a key precondition for enhanced competitiveness and economic and societal modernization, as well as an important instrument for bridging economic and social divides and reducing poverty (Greenhill, 2011). While on the other hand, the African National Congress's policy discussion paper on communications also acknowledges the economic value of ICT's by stating that ICT's contributes to the economy both as a stand-alone sector and as a facilitator of growth and development across all other sectors of the economy such as Tourism and the transport sector for example which depends on the ICT sector for their online booking systems, however as ICT driven globalization intensifies, it has also sharpened inequalities between and within communities, produced winner and losers, and as such, South Africa is by no means an exception to the rising tide of inequality between the haves and the have-nots. Thus government policy need to respond timely to the challenges of the digital-divide or the broadband-divide, where the haves can afford access to broadband enabled services while the have-nots are unable to access information and knowledge for their economic wellbeing.

Developing other elements of the broadband ecosystem also provides economic benefits, for example, the growth of Internet-related services and applications has created jobs and led to the creation of new businesses, while for example, in November 2009 Google had a market capitalization of $168 billion and employed 19,000 people in 20 countries while China's leading Internet search engine, Baidu.com, has a market capitalization of more than $14 billion and over 6,000 employees, and in 2008 had revenues of $460 million (Budde, et al, 2010:3). For 15 years, the ICT sector in South Africa has been a co-creator of firm level capacity to generate innovations in the banking, online retail, tourism and hospitality and other services as innovation in the economy is a necessary condition for development, thus also for e-development where ICT can enable innovation in the services and other economic sectors (Abrahams & Goldstuck, 2012).

A report by the ITU Broadband Commission (2012), states that in India, farmers are among the major beneficiaries of the mobile revolution, Bharti Airtel reaches out to more than one million farmers, contributing significantly to their productivity and income through its joint venture with IFFCO, the world's largest fertilizer cooperative, farmers are provided with vital information on weather, commodity prices, agronomy, horticulture, government schemes, etc., helping them make timely, informed decisions. With more than two-thirds of India's population dependent on agriculture for their livelihoods, the scope is significant. While mobile money, another revolution which has steadily emerged as a potent driver of inclusive growth in India and Africa, driven by their large populations and vast geographies needing coverage. The report further states that according to the Boston Consulting Group, US$ 350 billion is expected to be channeled through this medium by 2015 in India alone. Airtel Money, present in eight African countries and India, enables unbanked citizens to join the financial mainstream – for example, by facilitating money transfers, which would otherwise be impossible or prohibitively expensive.

Abrahams & Goldstuck (2012), reported that the communications sector in South Africa contributed 5% to GDP and that between 2000 and 2008, investment grew by 14% per annum including backbone networks, mobile, broadband and pay TV, while revenue for the communications sector moves beyond voice traffic and becomes increasingly data driven, further investment is essential. A recent study by Analysis Mason (2010), found that Wireless broadband can bring significant benefits for the South African economy by fuelling growth and job creation, that is, Wireless broadband and related industries could generate 1.8% of GDP (ZAR 72 bn) by 2015 and about 28,000 jobs – plus further jobs outside the industry. Therefore, a long period of policy development and implementation is unlikely to take advantage of the economic value which broadband presents and that will not serve the public interest.

1.5 POLICY GOVERNANCE AND LEADERSHIP

Understanding the causes and consequences of policy decisions improves our knowledge of society and also to ensure that the nation adopts the “right” policies to achieve the “right” goals (Dye, 2008). Thus, getting good governance calls for improvements that touch virtually all aspects of the public sector, from institutions that set the rules of the game for economic and political interaction, to decision-making structures that determine priorities among public problems and allocate resources to respond to them, to organizations that manages administrative systems and deliver goods and services to citizens, to human resources that staff government bureaucracies, to the interface of officials and citizens in political and bureaucratic arenas (Grindle, 2004).

Despite the value of governance and leadership in possibly ensuring that correct actions are put in place, on time, with adequate resources to encourage broad participation of stakeholders in policy development, the concept had remained relatively poorly analyzed from a broadband policy perspective. The aim of this analysis therefore seeks to fill a void in

the study of policy governance and leadership as one of the important factors responsible for effective policy development and implementation. Given varying political and economic circumstances for each country, it would be impossible to device a universal solution to broadband policy development and implementation, therefore each country may require unique approaches and strategies that are localized for their unique environment.

There is a need therefore for a new paradigm in modern policy development as the distinction between historical desperate technologies has become blurred in the era of convergence, thus the policy making process requires extensive and deep consultation along the four pillars identified as: inter-governmental, demand side, supply side and international community. Critical to this new policy paradigm in the enablement of ICT policy by all stakeholders, especially those that are outside of the traditional ICT sectors, such as financial services, health, educations and local authorities (Ngcaba, 2012). This paradigm shift calls for good governance and leadership on the part of Government in order to develop and implement effective broadband policy that would stimulate the use of broadband services in the country for economic benefit of its citizens.

South Africa's telecommunications reform and electronic communications development has seen three successive periods of legislative reform, the 'exclusivity' period from 1996 to 2001 based on the Telecommunications Act 1996, the 'managed liberalization' period from 2001 to 2006 based on the Telecommunications Amendment Act 2001 and the information society' period from 2006 onwards based on the Electronic Communications Act, 2005 [12: pp. 10–11]., while these reforms have widely failed to meet the growing demand for affordable voice communications and fast Internet-based data communications and have therefore been paralleled by other state and private initiatives that have sought to remedy the failures. These proposed remedies include establishment of a state-owned enterprise, Broadband-Infraco, to provide alternative international bandwidth for affordable broadband

services and municipal broadband provisioning by the mainly metropolitan municipalities, these approaches too, have thus far borne little fruit (Abrahams, 2010).

The discussions presented in this article may shed new light on the policy debate, in particular, over the definition of the most appropriate, country-specific policy design to be adopted for broadband promotion and, in perspective, for the rollout of next-generation networks. The current South African broadband policy is not integrated into national economic growth and development strategies, unlike the US broadband policy which underpins the recovery, economic stimulation and job creation, nor recognition of the linkages between broadband penetration and increases in GDP (Comninos, Esselaar, Gillwald, Moyo & Naidoo, 2010). This observation is also echoed by the ANC's 2012 policy discussion paper on communications, which identifies the following as reasons for the current state of the ICT sector in the country: (a) The lack of comprehensive nation ICT policy, leading to overlaps and competition within government; (b) Institutional misalignment and limited accountability; (c) Limited e-skills within the state and society as a whole;(d) High turnover and corporate governance challenges in the key institutions and relevant departments; (e) Inadequate funding of projects aimed at promoting universal service and access; (f) Failure by the policy and regulatory institutions to enforce compliance with the law; (g) Limited and misaligned research and development; (h) Policies are not based on evidence, hence they keep on changing even before the result can be realized; (i) Failure to implement some of the decisions of the previous ANC conferences and the National General Council, Thus calling for a long terms approach and stability to addressing these challenges and take the country into the next trajectory.

It would therefore be important to understand as to what extend has these challenges contributed to the decade of broadband policy dormancy which have seen South Africa descend down the world's ICT rankings, and whether the relevant institutions and

departments have the requisite quality of policy governance and leadership which will be up to the task for turning this undesirable situation around for the benefit of the citizens?

Policy governance and leadership remains an important pre-condition for a successful broadband ecosystem because it promotes good decision making and accountability.

Policy leadership provides the structure to identify constraints, opportunity gaps and actions around the supply and demand of broadband deployment and adoption, where the components of network infrastructure, user skills, government use and promotion, applications and content creation all play roles in a mutually reinforcing system (ITU, 2012).

1.6 PROACTIVE REGULATION

The next decade and beyond will be driven by the extent to which broadband supported services and applications are not only made available to, but are also relevant and affordable for consumers, and equally so, the provision of access to networks and services remains a critical issue, but the pervasiveness of ICTs, particularly the internet in multiple sectors of the economy requires that regulation be considered in a broader context, such that issues such as the environment, data privacy, and security, copyright protection, healthcare and education are all integrated within the broadband ecosystem (Hernandez, Leza & Ballot-Lena, 2010).

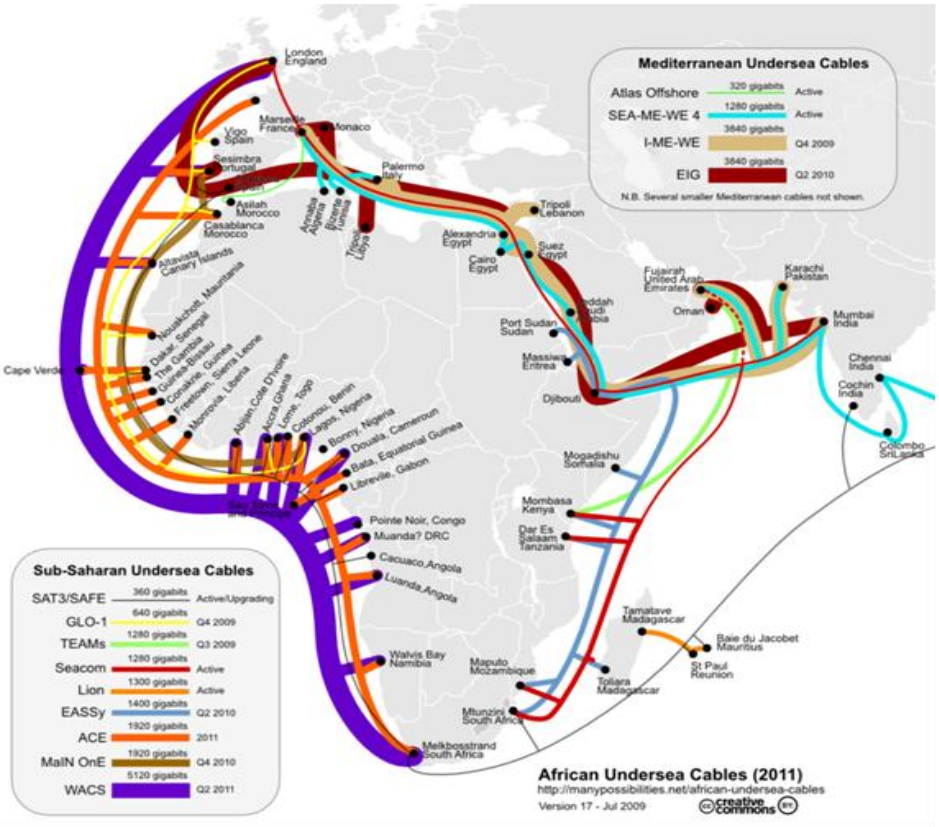
Most of the African nations have performed poorly on the ITU's broadband access lists in terms of the fixed broadband access list – which has a total of 172 countries listed – 34 of the bottom 50 ranked nations are from Africa due to high pricing and a lack of competition which are stumbling blocks to more Africans gaining access to broadband, especially through fixed wired services, for example, Telkom which used to be a former fixed line monopoly in the country, still dominates this sector, regardless of having a competitor in the form of Neotel and as a result Telkom has been charging high broadband prices as compared to its global counterparts, making it difficult for South Africans to gain access to

the internet, this is also the case in many African countries, but that governments in these nations are looking to drive down fixed line broadband prices by asking telecommunication companies to lower their costs. Thus, developing countries are among the lowest in the world rankings when it comes to access to broadband, meanwhile broadband continues to be unaffordable in many parts of the developing world (Mzekandaba & van Zyl, 2012). Significant gaps remains in South Africa that have constrained the ICT sector's ability to respond to the needs of the people especially the rural and urban poor such as limited consumer choices due to limited competition in the sector for example, Telkom infrastructure is limited to 8 percent of the country's metropolitan councils and it largely covers work usage by government ant large companies while mobile operators such as MTN, Vodacom, Cell C and 8.ta provides high speed 3G broadband/internet services, however the speed of internet reduces to 2G or lower is some rural and remote areas thus making accessing the internet untenable (ANC, 2012). This observation can also be experienced in some pockets of the urban metropolitan areas of the country.

The uses of technology has connected people across distances and have also created new markets catering for needs that were at the outer edges of the human imagination just decades ago, such as the internet. Many parts of Africa that have not seen fixed-line telephony are widely served today by efficient cellular phone networks that provide wide range of services and consequently, today children can get access to the best mathematics teachers without walking for hours, however the National Planning Commission is concerned about high domestic cost of broadband internet connectivity as all in our society should be able to acquire and use knowledge effectively. Thus everyone should continue to benefit from the important breakthroughs in science and technology (National Planning Commission, 2012).

Current Minister of Communications Pule, during her opening speech of the ICT Indaba in Cape Town acknowledged the high prices of broadband in South Africa based on the purchasing power parity in comparison with some OECD countries such as Mexico, Chile and Hungary, pointing to weak regulation for broadband while the Regulator, ICASA, on the other hand finds itself in a predicament with its powers trimmed after the ICASA amendment Act which came into effect in 2010/11. The contributing factors to the slow period of broadband policy development remains unclear, and so are the 2010 broadband policy outcomes as broadband prices remains excessively high. There has been a considerable increase in the number of undersea cables linking Africa and South Africa to world since 2002 which, through the process of competition would normally translate into cheaper communication costs, yet the cost to communicate in South Africa remain excessively high, even when compared to some of the countries in the sab-Saharan region, such as Namibia for example.

Figure 3: Africa's undersea cables



Source: Song, 2011

This state of affairs, presents genuine challenges in the broadband policy and regulatory environment which are not just calling for immediate attention but also a need for a reassessment of government's initiatives and its responsiveness to immediate challenges in order to halt South Africa from falling further behind.

1.7 ACTIVE CITIZENRY

In many respects, South Africa has an active and vocal citizenry, but an unintended outcome of government actions has been to reduce the incentive for citizens to be direct participants in their own development. To prevent this practice from being entrenched, the state must actively support and incentivize citizen engagement and citizens should in turn, actively seek opportunities for advancement, learning, experience, work together with others in the community to advance development, resolve problems and raise the concerns of the voiceless and marginalized, Thus active citizenry is characterized by holding government, business and all leaders in society accountable for their actions (National Planning Commission, 2012). The National Development Plan further states that active citizenry and social activism is necessary for democracy and development to flourish and that the state cannot merely act on behalf of the people – it has to act with the people, working together with other institutions to provide opportunities for the advancement of all communities.

Abrahams & Goldstuck (2012) use the concept of e-development to signify a time in which societies advance due to the socio-economic effect of every rapid information flows, and development is enhanced through the integration of digital information and communications technologies in the economy and everyday life. Similarly the (World Bank, 2010; Analysis Mason, 2010; ITU, 2012) agrees that there is a positive relationship between the penetration of broadband and a country growth in GDP. Therefore, a growing economy for a country like South Africa which is generally experiencing relatively high un-employment rates and

poverty, presents a number of opportunities for the unemployed and the marginalized in terms of the likelihood of a growing economy to create jobs thereby reducing poverty. Job creation and poverty alleviation are some of the critical issues facing the majority of the South Africa Citizens and therefore it would be important to citizens to take interest in matters affecting their economic wellbeing. It is for such reasons that government need to create awareness amongst its citizens about the implementation and use of broadband and similar initiatives to encourage widespread public participation as it would be a dubious assumption that knowledge about broadband and it socio-economic benefits is sufficiently widespread to the point where active citizens would want to engage the state about the decade of dormancy regarding broadband policy development and implementation.

There is growing distance between citizens and the government, outbreaks of violence in some community protests reflects frustration not only over the pace of service delivery, but also concerns that communities are not being listened to sincerely. Thus, better communication, more honesty and a greater degree of humility by those in power would go a long way towards building a society that can solve problems collectively and peacefully. Therefore citizens have a responsibility to dissuade leaders from taking narrow, short-sighted and populist positions. Robust public discourse and a culture of peaceful protest will contribute to a deeper understanding of the challenges facing communities and reinforce accountability among elected officials (National Planning Commission, 2012).

The South African citizens cannot afford to stand-by and watch while their rights of access to such vital technologies and services are turned into a political “ball” passed from one Minister to the next in the Department. Therefore, citizens need to ensure that government takes the issue of broadband seriously and shows their intent to grant its citizens access to and use of broadband technologies and services. Citizens need to stand up and be active about matters concerning their economic wellbeing to which the use of broadband promises.

The concept of active citizenry can be better explained by way of an example of how the Treatment Action Campaign forced the South African government using different approaches including litigation to offer HIV treatment to HIV infected patients in the past decade. The recent campaigns and demonstrations against the e-tolling system in Gauteng is another typical example of the concept of active citizenry. Responding to this perpetual dormancy in the broadband policy and implementation space, South African citizens should be on the streets peacefully demonstrating their dissatisfaction with Government's pace of making broadband access a reality for all.

In light of this, this study seeks to examine the effects of policy governance and leadership, proactive regulation, active citizenry and the economic value of broadband in the South African broadband policy and regulatory landscape in attempting to explain what could have led to the decade of dormancy or the adoption of "the-wait-and-see" approach to broadband policy development and implementation. Therefore, the concepts of economic value of broadband, policy governance and leadership, proactive regulation and the active citizenry will be used to construct the conceptual framework which will be use answer the research questions presented in the subsequent chapters.

1.8 PROBLEM STATEMENT

Challenges relating to the broadband policy development and implementation continues to affect South Africa negatively which could also be responsible for South Africa's decline down the international broadband and other ICT rankings, because even with a relatively high mobile penetration, broadband usage in South Africa remains low due to expensive mobile prices, as evidenced by the 2009 international peer benchmarking study conducted by BMI Techknowledge for the Department of Communications (DoC). This confirms the earlier study by Brown, Collins, Malika, Morrison & Muganda (2007) who point out that between 1996 and 2002, where dial-up connectivity including a telephone line subscription,

ISP subscription and call charges, the average annual increase in local telephone charges in South Africa was about 27 per cent, far greater than inflation for the same period. At that time, almost 90 per cent of internet subscribers' costs for 30 hour peak use per month were made up of Telkom charges, thus the total cost to an internet subscriber for 30 hours of surfing during peak hours was estimated to represent about 33 per cent of the average monthly income in South Africa. Given the high disparities of income between a minority rich and majority poor, the number of internet users per capita was not going to increase substantially until costs were drastically reduced. However, following a period of rapid growth up to 2010, high telecommunications costs have undoubtedly been a leading cause of South Africa's slowdown in internet growth in the recent past.

Similarly, the Business Leadership Group on 15 well performing economies worldwide found that ADSL costs in South Africa were 139 per cent higher than the average rate in the nations surveyed. Furthermore on 3 June 2008, South Africa's Minister of Communications, in delivering the budget vote speech, told Parliament that with regards to uptake as well as access and the cost to communicate "…we face great challenges…our goal in making these services universally affordable is yet to be achieved…the costs still remains high" (Mutula, 2010). Without affordable broadband access and services, the sector policy and regulation is likely to be continuously viewed as being lacking, ineffective and deficient. The development of the national broadband policy in 2010 has resulted in relatively low impact to date, with no effective policy evaluation. Instead, it would appear as though the Department of Communications has been embroiled in controversies as reported by the media (IPOC, 2010; Corruption Watch, 2012). Such conditions are most likely to exist due to poor leadership and governance. When coupled with lack of active citizenry in this domain, the potential outcome would most likely indicate a slow or minimal progress on broadband development as witnessed by the decade of dormancy with respect to broadband policy development and implementation since 2001.

South Africa has been experiencing high internet prices despite the laying of additional undersea cables and the presence of a sector regulator. With the absence of proactive regulation, prices for broadband are likely to remain high and this does not serve the public interest. This state of affairs may also point to the following problems within the policy and regulatory domain in South Africa (1) lack of policy governance and leadership which is required to ensure timely development and implementation of critical public policies or economic development, (2) lack of proactive regulation to ensure broadband prices are kept reasonably low to foster uptake (3) thus the first two problems maybe be as a result of the lack of understanding of the economic value of broadband, (4) as well as the absence of the active citizenry voice that could hold policy makers accountable and be responsive to the plight of the poor and the underserved by addressing the slow pace, industry-leaning approach, or 'do as little as possible' approach on broadband policy-making processes.

1.9 PURPOSE STATEMENT

The purpose of this study is to investigate the evolution of broadband policy and regulation in South Africa from the period 2001 to 2011 in order understand the challenges related to policy and regulatory aspects of broadband, which could possibly explain the slow pace and a decade of dormancy which may be responsible for the low penetration of broadband in South Africa. The study will focus on the relationship between broadband policy governance and leadership, proactive regulation, and also exploring the understanding of the economic value of broadband services and lastly analyzing the impact of active citizenry in influencing the broadband policy and regulatory landscape with the intention to highlight future-oriented policy and proactive regulation for broadband and suggest recommendations for effective country specific stimulus strategies while encouraging on-going debate.

1.10 RESEARCH QUESTIONS

The central research question is:

How has broadband policy evolved in South Africa, including policy formulation and content, regulation, implementation and penetration?

The sub-questions are:

1. What was the role of policy governance and leadership during the decade 2001 – 2011?
2. To what extent is the economic value of broadband access and services well understood in South Africa's policy and regulatory environment?
3. How has public participation and active citizenry influenced broadband policy and regulation in South Africa?
4. How can proactive regulation stimulate the demand for broadband access and services in South Africa?

The central question relates to the level and quality of decision making, accountability and the necessary institutional arrangements within the Ministry of Communications that could have resulted in the policy vacuum over the decade, referred in here as the decade of dormancy.

The sub-questions focuses on the actual role of policy governance and leadership; while the next sub-question seek to understand how well it the economic value of broadband understood by both the policy maker, the regulator and active citizens; the following sub-question seeks to understand whether there has been any proactive regulation that would stimulate broadband infrastructure rollout, regulatory efforts to make broadband affordable by all and foster uptake; and the final sub-question focus on understanding whether there

was any active citizenry, and if so, what would have been its role during the decade of dormancy.

1.11 SIGNIFICANCE OF THE STUDY

Notwithstanding the critical role of broadband technologies and services, the growing interest in broadband penetration studies in South Africa does not focus on the debate about policy and regulatory aspects of the evolution of broadband, while broadband research studies around the world focuses mostly on the mainstream factors or factors commonly identified by bodies such as the ITU and OECD as critical factors which are responsible for broadband penetration, such as Demographics, competition, costs, literacy, etc. However, due to country specific cases such as South Africa, which can be considered as a relatively new democracy which immerged from the racial inequalities of Apartheid not so long ago, therefore the inter-play between broadband policy governance and leadership, proactive regulation, the economic value of broadband and the role of the active citizenry concept would be an import concept to investigate in order to explain the level and quality of governance that have resulted in the decade of dormancy, Hence further research needs to be conducted to fill this gap and to better understand the evolution of broadband in South Africa in terms of the relationship between these concepts in the promotion of broadband diffusion through policy and proactive regulation. Thus this research has relevance for public policy formulation and regulation of the ICT sector.

CHAPTER 2: OVERVIEW OF LITERATURE - EVOLUTION OF BROADBAND IN SOUTH AFRICA

The lack of broadband access and use in many parts of South Africa may be seen as being responsible for the country's lagging behind many global telecommunications indexes, including the broadband rankings. This could be because the country has been without a national broadband policy for almost a decade since the government's policy reform in 2001. Although there could have been many underlying factors responsible for the decade of dormancy or the extended period of lack broadband policy development and implementation in South Africa, however, it remains to be seen whether this decade of dormancy could have been due to poor policy governance and leadership or the lack of understanding of the economic value of broadband services, and whether the missing role of proactive regulation could have also contributed to the currently low broadband penetrations rates. The missing role of active citizenry to influence policy development and implementation may well be another contributing factor to the current South African broadband state of affairs.

In the broadband studies, broadband policy and strategies emerged as a key driver of broadband diffusion in most countries. Fundamental to this development is the factors or policy choices made by different countries to promote broadband penetration. These factors mainly range from demographics, price, infrastructure and competition (Distaso, Lupi & Manenti, 2006; Polykalas & Vlachos, 2006; Srivastava, 2003; Biggs & Kelly, 2006). Thus such factors appears to support what Cava-Ferreruela & Alabau-Mun˜oz (2006:446) reported by quoting (Crandall & Jackson, 2001; Bauer, Gai, & Kim, 2002; Bennett, 2002) that in recent years, it was generally accepted that the development of broadband as a means of promoting new interactive and advanced applications is supposed to be the basis of what was referred to as knowledge based economies and societies.

Even though there appears to be consensus in literature about the transformative nature of broadband services in terms of the expected socio-economic benefits derived from its use, which shows the “economic value” or the usefulness of broadband services (World Bank, 2010; Analysis Mason, 2010; DoC, 2012; Abrahams & Goldstuck, 2012), It appeared as though South Africa was unable to respond in a timely manner and take advantage of the socio-economic benefits offered by access to, and use of broadband services through the development and implementation of a broadband policy, a national broadband strategy and proactive regulation for broadband to foster near-universal penetration levels. This extended period of lack of broadband policy responsiveness or a decade of dormancy prompted an enquiry of the literature to better understand what could have been the underlying courses of this decade of dormancy.

Not many studies analyzed the level of understanding of the economic value broadband services, the impact of policy governance and leadership, proactive regulation and the role of active citizenry to stimulate wider broadband penetration in South Africa. Thus the literature review will focus the discussions around the concepts of the understanding of the economic value of broadband, the impact of policy governance and leadership, proactive regulation and the role of active citizenry in the development of broadband policy and regulation in South Africa. In explaining the evolution of broadband in South Africa, and the associated period of dormancy in terms of broadband policy development which could have assisted South Africa to address challenges of high broadband prices and low penetration levels, thus the literature will be explored focusing on the concepts of policy governance and leadership, understanding of the economic value of broadband, proactive regulation and the role of active citizenry which could have been part of the contributing factors to slow uptake of broadband services for many years.

To better understand the evolution of broadband in South Africa, the literature review will be explored under the following themes:

(a) Economic value of broadband access

(b) Policy governance and leadership

(c) Proactive regulation

(d) Active citizenry

2.1 ECONOMIC VALUE OF BROADBAND ACCESS AND SERVICES

2.1.1. *The transformative nature of broadband*

The overused word “revolution” is not an inappropriate characterization of what has happened in telecommunications technology during the past two decades with three phenomena appearing to have been the principal economic manifestations of the process, and these phenomena are (1) Cheaper ways of producing existing goods and services due to change in the cost function, (2) The emergence of wholly new goods and services, the production costs of which have declined rapidly, and (3) The vital synergism afforded by the on-going convergence of telecommunications and computer services (Snow, 1988:158). Today, it is therefore almost impossible to imagine firms and organizations in South Africa operating without broadband technologies and services, signifying the importance and usefulness of broadband in corporate South Africa, for example the travel & tourism industry and the banking system. It would appear as though corporates and banks use broadband technologies and services to extend their products and service offerings to consumers who in-turn also would use the broadband platform to access these products and services. Online and cell phone banking has become mainstream in urban communities as an example. Thus the adoption of broadband within firms leads to a multifactor productivity gain, which in turn contributes to growth of GDP, while the deployment of broadband networks creates jobs and

acts over the economy by means of multipliers; the residential adoption drives an increase in household real income as a function of a multiplier, furthermore, residential users receive a benefit in terms of consumer surplus, defined as the difference between what they would be willing to pay for broadband service and its price (ITU,2012).

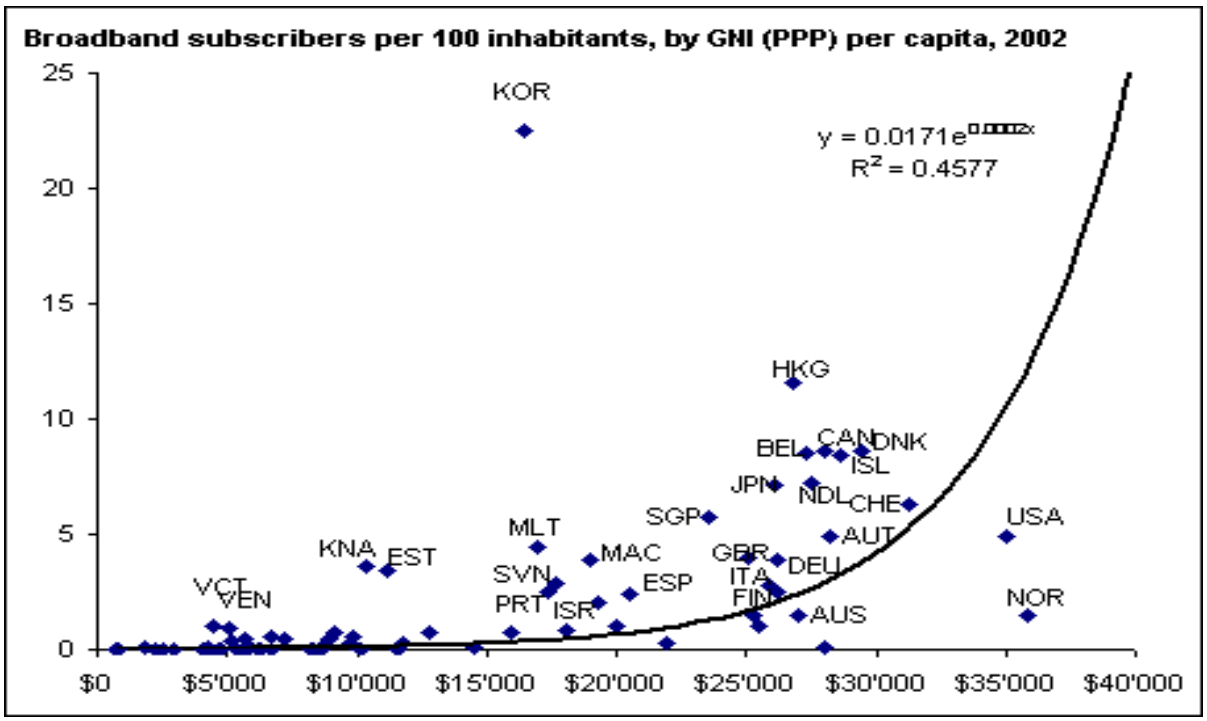
A study to examine the effect of six constructs including economic outcomes using a survey approach on the behavior of consumers when adopting broadband within the UK indicates that five of the six constructs which includes economic outcomes significantly influenced the broadband adoption behavior of consumers (Dwivedi, Lal, Irani & Williams, 2007). It is however not clear, whether eventual consumer ignorance can limit the potential demand as argued by Gomez-Barroso and Perez-Martinez (2005) who believes that it is a dubious assumption that knowledge about information services is sufficiently widespread to support informed choices. Their view is that telecommunication services like broadband as with most information related goods are “experience goods” meaning that those with previous experience about the use will really appreciate its value. Although their observation indicates an understanding of the economic value in broadband usage, it is however not clear as to what extend has these observation influenced governance with respect to broadband policy formulation and implementation that would address any possible consumer adoption behavior challenges. It would therefore be interesting to note whether effective policy governance can offset user ignorance through the development of timely broadband policy and implementation that would see wider uptake of broadband in developing countries like South Africa.

2.1.2. As a contributor to the economy

The birth of broadband report stated that the vast majority of today’s broadband users are in the developed world. But even among member countries of the Organization for

Economic Co-operation and Development (OECD) there are large disparities, not only in service availability but also in terms of quality of access and price per Mbit/s. But in developing countries, as broadband becomes cheaper, and wireless technologies evolve, broadband adoption can help countries to “leapfrog” traditional telephony technologies, as already illustrated in a number of initiatives (ITU, 2003). The report further states that Broadband is increasingly being seen as a catalyst for economic success in the information economy. More and more economies are focused on ensuring that access to broadband is both available and affordable to their populations, while other governments, especially in Asia, have developed national strategies for broadband promotion, and for bringing broadband to regions, or to communities, that would not be among the first to be served through the operation of market forces.

Figure 4: The relationship between broadband penetration and national income



Source: ITU, 2003.

Note: GNI = Gross National Income; PPP = Purchasing Power Parities, Luxembourg omitted from bottom graph but included in trend line calculations.

Crandall & Singer (2010), in their paper which analyzed the economic impact on broadband deployment on consumer welfare, job creation, and economic output in the United States of America found that Broadband deployment has enhanced consumer welfare and spurred jobs and economic output as many of their original predictions of broadband investment and its effects on jobs and national output were conservative because they could not envision the rapid development of new technologies and the myriad applications made possible by rapidly advancing broadband technology. Thus looking forward, they observed that Broadband Service Providers (BSPs) are set to invest significant sums to wire the country with next-generation access technologies and given the amount of investment that continues to be deployed in this sector and the precarious current state of the U.S. economy, thus given the linkage between that investment and jobs/output, they caution policy makers and regulators to avoid taking any steps that might undermine the industry's incentives to invest. However their report maybe painting a scenario most common in developed economies where less state intervention need to be minimal as the industry has matured with effective market competition to the benefit of the industry and citizens.

In contrast to the widely held view that broadband has the potential to provide social and economic benefits, Firth & Mellor (2005) argues that there are a number of complexities to understanding the benefits of broadband, that is industry literature tends to confuse benefits with applications such as Voice over IP and/or with attributes such as greater speed and the activities such as e-Health and e-learning that they enable. The author, quoting (Katz & Rice, 2002) maintains that while broadband-enabled activities may bring benefits they may also have negative outcomes such as increased worker isolation and less mentoring (teleworking) financial problems (e-gambling) and displacement of conventional social

contacts. It remains to be seen however, as to what extend does broadband negatively impacts the social issues. In Africa for example, it is widely recognized that Africa has been able to leapfrog technology through the use of mobile phones and the continent has the fastest growing telecommunications sector globally. This is consistent with the Assessment by Analysis Mason (2010) for the GSM Association which found that Wireless broadband will have a direct revenue impact of ZAR28bn (0.7% of GDP) in 2015 and will have a corresponding industry productivity impact of ZAR31bn (0.8% of GDP) in South Africa.

Although there appears to be clarity in the literature about the how well the value of broadband is understood in terms of its transformative nature and impact on the economy of a country, it seems however that the same cannot be said about South Africa, which took almost a decade to develop a broadband policy which is yet to be implemented and its impact evaluated.

Firstly, South Africa is a member of the ITU (ITU Global Directory, 2012) which has been publishing insightful data about the value of broadband access and usage since the early 2000s (ITU, 2003) and therefore calling for member countries to develop broadband policies and regulation to improve and expand broadband penetration for socio-economic benefit, Secondly, More and more studies has been pointing positively to the economic impact of broadband to a country's economy, then if the economic value of broadband is well understood, then what could have led to the country's lagging behind telecommunications rankings? Thus it is the intention of this study to establish how well the economic value of broadband is understood whether the lack of such could have led to a decade of broadband policy dormancy in South Africa.

2.2 POLICY GOVERNANCE AND LEADERSHIP

Given the socio-economic value to which access to, and use of broadband has demonstrated as indicated above, It would be important to understand the role of policy governance and leadership as the catalyst for broadband policy development and implementation to achieve wider broadband penetration for socio-economic benefit of a country and its citizens.

2.2.1. Governance and Institutions

The economic impact of broadband relates to innovation in the services sector, job creation and employment in the software and manufacturing industries (Abrahams & Goldstuck, 2012). It promotes access to information, thus promoting transparency and good governance (Msimang, 2011). In South Africa, the unintended consequences of a decade of “managed liberalization” has resulted in the country’s steady descent down many international information and communication technology indices due to static fixed-line growth, relatively poor broadband uptake and high prices in the sector (Gillwald, 2007), which can be associated with institutional weaknesses in the area of leadership and governance in the ministry. Furthermore, the institutional arrangements of the sector have impeded the regulator from correcting anti-competitive behavior despite considerable efforts. These has created a conflict of interest within the ministry between its function as policy maker for the sector and that of a majority shareholder in the incumbent, even after privatization to which Gillwald (2007), bears testimony to claims of poor leadership and governance. It is against this background that an enquiry and understanding of what role could governance and leadership play in developing policy and regulation that would see the country’s broadband penetration rates sour to near-universal access and usage levels for economic benefit of the industry and citizens.

Although the broadband policy aims to clarify the roles of the state, state owned entities, authorities and private sector in broadband infrastructure development, and while it has a section on the role of the state, the policy paper makes no reference to the regulatory framework or agency at all, furthermore, the role of the state in broadband policy is to focus on investment where instances of market failure are prevalent. However, with the current market structure and constraints on market entry at the network level, market failure becomes very difficult to assess. Thus critical issues of the co-ordination of rights of way and of complementary spectrum usage, which have plagued the rollout of new entrants, are not raised. There is no discussion of services and infrastructure - other than the broad reference to the "government should not operate directly in retail services provision but leave these markets to the private sector players", also, there is no reference to an open access regime seen increasingly as central to driving the rapid development of the broadband market, creating local champions, enabling rapid deployment in poorer areas (especially through complementary wireless services), and creating opportunities for innovation and small and medium enterprises (Esselaar, Gillwald, Moyo & Naidoo, 2010).

In their research of examining the broadband digital divide by analyzing the impact of public policy and government regulation on broadband diffusion in 148 countries, Gulati & Yates (2012) found that in technologically advanced countries, there is greater diffusion of broadband Internet in countries that make a higher financial investment in information and communication technologies and that practice more effective governance; however they also found that in technologically developing countries, national wealth matters a great deal, but greater competition in the telecommunications sector, higher financial investment in ICTs, and democratic political institutions also significantly increase broadband diffusion, The authors acknowledged that this is the first cross-national study to assess the impact of a variety of policy initiatives and better governance on increasing broadband Internet access

and use in both the developed and developing worlds. They further point out that without considering that there are different models for the developed and developing worlds, the authors would not have been able to see that increasing competition in the telecommunications sector would not increase diffusion further in technologically developed countries. They also would not have been able to observe that investment has a much larger impact in the technologically developing world. And they would not have been able to see that national regulatory authorities for telecommunications are an obstacle rather than a catalyst for diffusion in the developing world. They also clarified the findings for political structure in past research by (Norris, 2001; West, 2005), while they confirmed that political structure was not relevant to broadband diffusion in developed countries, it mattered a great deal in developing countries. The overall regulatory environment and how governance is practiced is an important variable, as there is evidence derived from a limited number of case studies that suggests that regulation in the absence of strong political and legal institutions can be an obstacle to the diffusion of ICTs in developing countries, Gulati & Yates quoting (Levy & Spiller, 1996).

When examining the positions and action strategies of governmental bodies, European Union institutions, and relevant civic interest groups with respect to the development of the Romanian public service information (PSI), ICT and e-governance sectors, Bjola (2002) found that weak institutional, legal and technological infrastructure, dearth of financial and human resources, bureaucratic resistance to change, as well as lack of leadership and strategic thinking constituted the main obstacles against the effective implementation of PSI in the central and eastern Europe (CEE) region. To this end, evidence in the literature suggests commonalities between the case of South Africa and the CEE of the ability or the inability to exercise leadership and sound governance to put in motion mechanisms that would facilitate the development of national information infrastructures such as broadband for socio-economic benefit for all citizens.

2.2.2. Governance and Political Leadership

Castellano & Miralles (2006) in their comparative analysis of countries of the Liberal Market Economies (LME) including [Canada and Ireland], and Coordinated Market Economies (CME) including [Denmark and Austria], found that the influence of political will which is understood as having a coherent broadband strategy, cost of policies, organizational visibility, degree of institutional innovation and complexity of the policies in actor terms which serves as an important condition to assure that broadband policies will have a successful outcome; Countries with different traditions of States and public polices can achieve the same results in broadband diffusion if the government has a high political will to do so, such as the case of Denmark and Canada and by contrast, countries with different traditions in public policies can fail in broadband diffusion if the government is not motivated enough to do it, which is the case of Austria and Ireland.

When using data from the worldwide governance index and other indices, Gulati, Yates, and Williams (2012) found that administrative culture of sound governance is associated with an improved ability to deliver effective online government services, the data further indicates that there is a strong connection between the presence of strong democratic political institutions and processes and the extend of e-government services. This observation can be used to explain the impact of good governance and political leadership required in the promptly development and implementation of broadband policy and why South Africa is progress slowly in this regard.

Pelkonen (2008) also observed while analyzing the modes of governance related to the development of the Information society in Finland. He contextualized governance in terms of the changing relationship between the state and society and how the state interact with its

environment, how it 'governs' or manages the society and economy. He found that emphasis is particularly put on the need to increase the application of ICTs in all societal spheres and thus improved productivity while ignoring uncertainties and risks associated with the growing application of ITCs such as mobile phone health risk, privacy and safety in mobile communications and the growing digital divide, and rather calls for the need to take a perspective of citizens and users seriously by integrating this aspect of governance to the Finish information society model.

In examining the broadband digital divide, by analyzing the impact of administrative culture and political initiatives, Yates, Gulati and Weiss (2011) found that most of the studies have tended to be either largely descriptive, qualitative case studies or quantitative analysis that have ignored governance and had a narrow concept of other factors such as technological development, competition and financial investment. The authors believe that governance and political initiatives matter, and as a result mitigate to some extend the advantages enjoyed by the most technologically advanced countries. The dominant view however, seem to suggest that the combination of strategies, considering a wide range of factors including the ones mentioned here are likely to yield the best outcome possible depending on the uniqueness of each country's level of development, thus a "one size fits all" approach may not necessarily bridge the broadband digital divide as anticipated.

The funding of broadband services in South Africa is both fragmented and uncoordinated because at the national level, all national departments have budgets that are allocated to ICT rollout, however these are not spent appropriately and in a coordinated fashion while provincial and local government competencies are not duty bound to coordinate ICT programmers for national benefit and homogeneity (Nyanda, 2010). In the South African context, governance and leadership in the broadband policy development presents a unique situation whereby there is a number of national departments with ICT mandates, for example

Department of Communications, Department of Public Service and Administration, Department of Science and Technology, and Department of Public Enterprises. Governance and policy leadership in terms of the development and implementation of broadband appears to be uncoordinated because for example, Broadband Infraco, a state's institution under the Department of public enterprises is responsible for the rollout of broadband at a national level, while Sentech, a state institution under the Department of communications may also be seen as being responsible for the rollout of broadband in terms of its mandate and license conditions. Similarly, Broadband Infraco, was established partly to address challenges experienced with the diffusion of broadband in the country on one side, while the department of communications has development and got the national broadband policy approved where the content of the policy makes no clarity of the relationships between Broadband Infraco and Sentech in their roles which could result in the duplication of effort and resources in fostering broadband penetration.

2.3 PROACTIVE REGULATION

2.3.1. Targeted Regulation

Part of the contributing factors to slow up-take of broadband technologies and services in developing countries is lack of local content among others. An ex-ante regulatory response is necessary to promote innovation in local content development to stimulate demand for broadband and to promote competitive markets in broadband access services. This can imply the need for the revision of the universal access scope to include innovation with respect to application and content development. Abrahams & Goldstuck (2012) demonstrate that in the context of South Africa, Innovation in the economy is a necessary condition for development, thus also for e-development where ICT can enable innovation in the services and other economic sectors, They report that for 15 years the IT sector has been a co-

creator of firm level capacity to generate innovations in banking, online retail, tourism and hospitality and other services.

Srivastava (2003) examines the main strategies, policies and regulations for promoting broadband in the country that has the highest internet users per capita. The author analyzed key success factors for broadband development and also identified the main opportunities and challenges for broadband development in Iceland. He found both the state and the industry being aggressive in promoting infrastructure development and service take-up. This was achieved by inter-alia, decreasing residential tariffs, effective regulatory initiatives and the use of broadband within educational institutions and lastly evolving universal service policy guaranteeing an ISDN connection to every home. Thus in the context of South Africa, effective spectrum allocation initiatives may serve as an ex-ante regulatory response for wider broadband access, where certain portion of spectrum can be reserved to cover areas undermined by market failure.

Hernandez, Leza & Ballot-Lena (2010), in their discussion paper on ICT regulation in the digital economy, recognizes that the pervasiveness of ICT's, particularly the internet in multiple sector of the economy requires that regulation be considered in a broader context which encompasses the broadband ecosystem and as such policymakers must also focus on facilitating the supply of, and promoting the demand for broadband applications and services. They argue that understanding the reasons for lack of adoption of broadband services will be essential for designing adequate policies to promoting the development of broadband and ICT services over the next decade, to this end, they have identified lack of access, costs, digital literacy and relevance as the main inhibitors to adoption and use of broadband services and they acknowledge that due to the fast pace of technological advances and increasing recognition of the value of robust competition, policymakers increasingly have implemented ex-post rules to forester innovative markets while imposing

targeted ex-ante regulation to address specific market failures particularly with respect to the physical layer of the broadband ecosystem, thus as markets becomes more competitive then regulation needs to shift to a more targeted approach thereby withdrawing from ex-ante regulation and transitioning towards ex-post rules while developing strong competencies in the economic and legal techniques and methodologies for competitive analysis, accordingly ICT regulators should engage in capacity building initiatives to develop the necessary institutional know-how and make efforts to increase co-operations with competition authorities where possible.

When reviewing a dozen of fiscal stimulus packages in developed countries, Qiang (2010), analyses one common strategy that has found widespread support in these stimulus packages and its relevance for developing countries, his work looked at the various impacts broadband investment is expected to have short-term job creation and aggregate demand effects, and long-term productive activities in other sectors of the economy. He attest that broadband investment is more fiscally sound than other public spending stimulus options, in the sense of coming closer to, or in some cases actually being, self-financing. He found that several factors highlight the potential of broadband infrastructure as an important area of public investment during economic downturn, an option also open to policymakers in developing countries. Spending initiatives on next-generation telecommunications networks at a time when labour market conditions are particularly weak can help preserve jobs and head off a potential burden on social safety nets. Bringing forward longer-term aggregate spill over effects of broadband can improve the productivity of the entire economy and is consistent with enhancing longer-run growth and development. Public support also ‘‘crowds in’’ private investment when access to private financing is decreasing and more expensive.

Jakopin & Klein (2011) conducted a study which aimed to highlight drivers of broadband take-up that would help explain and properly evaluate the diffusion situation of a country by

analyzing the effects of societal country characteristics (Prosperity of a country as well as prosperity growth, employment, service sector activity, and urbanization), General and telecommunication-specific market regulations (General regulatory quality, voice and accountability) and Broadband market environment employing a correlation and regression analysis methodology to investigate worldwide broadband internet access take-up in terms of fixed and mobile broadband penetration and broadband launch lead time using a wide range of variables of which some have not been examined in previous studies and the findings showed that broadband internet take-up significantly benefits from economic prosperity and computer penetration, moreover, general regulatory quality, voice and accountability has a significant influence.

Götz (2009) examined the effect of various regulatory regimes on firms' incentives to provide broadband access to the internet. Taking into account differences in the population density across the regions in an economy, the focus was on the trade-off between broadband penetration and broadband coverage. The author adopted a stylized model which revealed general patterns, which also yielded insights for the evaluation of regulatory options with respect to new technologies such as Next Generation Networks. His analysis emphasized the Schumpeterian argument of market power as a prerequisite for investment. As far as regulation is concerned, the paper showed that even costless and well-informed heavy-handed regulation need not be able to improve much upon the unregulated benchmark in terms of welfare. Light-handed regulation such as uniform pricing constraints might be preferable as a regulatory safeguard in a world where regulators lack knowledge of key parameters. Of particular importance for the evaluation of the different regulatory options is the question how differentiated products are from the viewpoint of consumers. It is an important task for empirical research to find out more about consumer's valuation of product variety in this specific case. However, even robust empirical results indicating a potential positive effect of heavy-handed regulation in the model would only constitute the best-case-

scenario for regulatory intervention. Given the uncertainty surrounding investments in new technologies, in particular with respect to the demand side, regulatory commitment to either no or only light-handed regulation appears to be superior. The model makes a clearer case for policy action when it comes to supply-side subsidies. With this kind of potential state intervention rent-seeking by firms might lead to strategic withholding of investments in otherwise profitable regions by incumbents.

2.3.2. Pricing

In their studies on why broadband technologies have been so successful in reaching such a large number of new users so quickly what characteristics of its pricing have made this possible, Biggs & Kelly (2006) through the examination of different pricing strategies and their impact on broadband markets and prices, found that pricing strategies have major implications for the future development of telecommunications markets as they are dismantling the constructs on which telecommunications services have historically been priced (based on distance, time and location), thus broadband pricing strategies especially the growing trend towards flat-rate pricing promise to transform the revenue streams and expansion of communications services in future.

The cost of broadband access and services has been the subject of discussion in most broadband empirical studies (Biggs & Kelly, 2006; Picot & Wernick, 2007; Cambini & Jiang, 2009; Joe-Wong, Sangtae & Mung, 2011) for example OECD (2004) suggest that the complexity of metered pricing may have contributed to slower growth in the Australian broadband market, compared to more straight forward dial-up pricing as consumers maybe more courteous in committing themselves, thus the fact that users do not select the appropriate pricing tiers and end up paying excess charges suggest that pricing may not be well understood by users; Although Australia ranked 7th in the world at the end of 2004, for

estimated internet users per 100 inhabitants, it stood in 29th place for the same measure for broadband (Biggs & Kelly, 2006).

2.3.3. Effective Spectrum Management

A case study report on Kenya for the Association for Progressive Communications conducted by Mureithi (2010) about the open spectrum for development, found that Spectrum access and management is a high priority issue elaborately defined in the policy framework, enacted in the enabling legislation and further refined in telecommunications regulations and a host of procedures while the Communications Commission of Kenya (CCK) or the independent regulator has done an excellent job to operate transparently in spectrum management, however, some key component of the process such as the consideration of the committee assigning the frequency is not open to public scrutiny; Pricing method is administratively determined with formulas for each application and the challenge however is that with same pricing countrywide, those in the rural areas with less population density and less purchasing power are penalised. Spectrum is inadequate and a number of initiatives are being undertaken by CCK to release spectrum including transition to digital TV migration, periodic spectrum utilisation audits, nudge government to release excess spectrum etc., however a radical approach is needed to address long-term needs for spectrum. A combination of market based and commons approach are necessary to incentivise efficient usage. While for historical reasons, the government occupies very critical parts of the spectrum that private sector crave for to provide broadband wireless access and offers to pay-off the government to migrate to other parts of the spectrum have been proposed and government agencies are yet to make the move; Spectrum is a key infrastructure for growth of telecommunications, it has not attracted public attention and therefore the access and use is an operator /CCK issue outside the public domain. There are no lobby groups/forums addressing spectrum issues in Kenya.

2.4 ACTIVE CITIZENRY

2.4.1. The Role of Active Citizens

The concept of civil society usually denotes an intermediate organizational sphere between the state and the family consisting of organizations that have been formed voluntarily by members of society with the aim of protecting their interests or values, thus civil society tends to be seen as a source of shared meanings and community solidarity and it is also considered to be an important counterbalance against both government and corporate power, Frodin (2011) quoting (Rindefjäll, 2005; Rodes, 2000). Closely linked to this theory, is the concept of active citizenry, where organized civil society would hold governments accountable in delivery or non-delivery of services which impacts positively or negatively on their wellbeing, thus the activism becomes more prominent when they consider the impact to be adverse and would most likely challenge such government's actions, for example, the recent public demonstrations by active citizens of South Africa who voluntarily organized themselves and raised funds to litigate against the e-tolling system of the Gauteng Freeway improvement project where the implementation of the e-tolling system was suspended following a court ruling; other examples includes frequent government service delivery protests by communities protesting for lack of service delivery across the country. To this end participatory governance arrangement are implemented in large number of developing countries for promoting public service delivery improvements, empowering citizens and deepening democracy, moreover, participatory governance is stated to increase local government responsiveness and accountability; thus it is claimed to improve the efficiency and sustainability of public service delivery as well as the match between public service and beneficiaries' preferences (Speer, 2012).

Similarly the broadband policy makers in South Africa need to seriously consider the users of broadband technology and services not only as users but also as citizens in order to positively shape the broadband landscape in South Africa. In support of the concept of active citizenry, The Minister in the Presidency, Trevor Manual firmly believes that active citizenship will produce results in the fight against crime. He said this during the fifth anniversary of Crime Line at Monte Casino in Fourways (Tau, 2012).

2.4.2. Citizen Participation and Policy Development

Theories of policy formulation highlight the importance of citizen participation in policy-making. For example, in the tourism sector, Issues of coordination, collaboration and partnership are now at the forefront of much tourism research on finding new solutions to resource management and destination development problems. However, despite the value of such attention in possibly improving destination management and the development of more sustainable forms of tourism, the concepts have remained relatively poorly analyzed from a public policy perspective (Hall, 2009).

Case (1998) quoting Drake (1997) reported that popularity of the internet raised new issues and broadened agendas of many non-commercial stakeholders in the US. When the Clinton administration began to push for the national information infrastructure (NII), various public interest groups adopted the information superhighway as an umbrella to tie together various concerns, particularly the need to use new technology to empower individual citizens and other non-commercial interests; this resulted in quite a different policy environment than the usual one for determining telecommunications policy, in which the main interests to please were the telephone, broadcasting and cable TV interests.

In their study which examines and identifies the dimensions, activities, purpose, and extent of civil society organizations' participation in ICT policy making and governance in the Philippines, Hecita (2010) found that the increased economic opportunities presented by the growing ICT economy, new prospects for the developing world are projected. However, the growing information society also provides risks that can further widen the socio-economic divides. This allowed Civil Society Organizations (CSO's) especially coming from the marginalized sector to engage government on ICT policy issues. Given the view that ICT governance arrangements have been highly influenced by big telecommunications companies and other for-profit interests, CSOs pinpoint that their participation balances the policy ecosystem by channeling people's voices directly to the formal governance institutions. While the space for CSO participation is open, there are drivers and challenges to sustain its openness. The extent of space and level of participation is shaped by the dynamics between the dimension of CSO participation and the institutional environment. The willingness of government to engage or at least its leadership is a crucial factor in the outcome of the participation process. With the assumption that government agencies will not be open, it is proposed that CSOs should be pro-active in seeking informal channels. CSOs were deemed to be skillful and resourceful enough to find avenues and establish working relationships with government agencies regardless of the scale of activities and the scope of the issues. CSOs sometimes find it disappointing if work invested in certain issues comes into a halt and falls short of being successful because of changes in the composition of the agency.

There is a need to develop a critical mass base as the issue on ICT policy and governance and its implications to development outcomes is not attractive enough compared to other social issues to get public attention. CSOs working in human rights, environmental concerns, labor, agriculture or agrarian reform are considered more viable to media attention. The lack of public attention can be attributed to the weakness of consumerism. The large market

share of telecommunication companies (mobile phone subscribers) can be mobilized to protect consumer interest and democratize the sector. On the other hand, some CSOs think that providing an institutional mechanism may hinder relevant engagements. It may coerce NGOs or governments to a partnership that they would not be able to. The open-endedness of the process allows for greater creativity- mixing efforts at the formal and informal governance arenas. However, some CSOs believe that institutionalizing participatory mechanisms are indeed necessary in improving and democratizing ICT governance and policy making. CSOs believe that the first step to achieving this institutionalization is the passage and promulgation of the Right to Information Law. The lack of information concerning policy decisions of governments hinders CSOs and citizens alike to extract accountability from the government. The lack of public information impedes citizen groups to have knowledge on how governmental processes work.

Henandez, et al (2010) points out that broadband take-up and usage patterns vary widely among countries depending on the level of development and maturity of the market what users demand and how ICT's are positioned to enable such usage experience will most likely depend on the level of public participation and initiatives to facilitate future development of broadband infrastructure and services as numerous countries such as Australia, Brazil, China, Singapore, United Kingdom and the United States are currently engaged similar but highly visible public initiatives for laying out comprehensive national broadband plans; and developing and implementing digital economy initiatives while other countries such as the Republic of Korea, have been involved in such initiatives for well over a decade now.

Therefore, the role of active citizenry could be viewed to be an important influence to the development and implementation of the broadband policy for socio economic benefit of a country and its citizens, thus the crucial ingredients for persuading governments such as the

South African government to move with speed to establish an effective broadband policy and regulatory environment following a decade of dormancy are active citizenry, a vibrant civil society which seeks to keep abreast of sustainable socio-economic development.

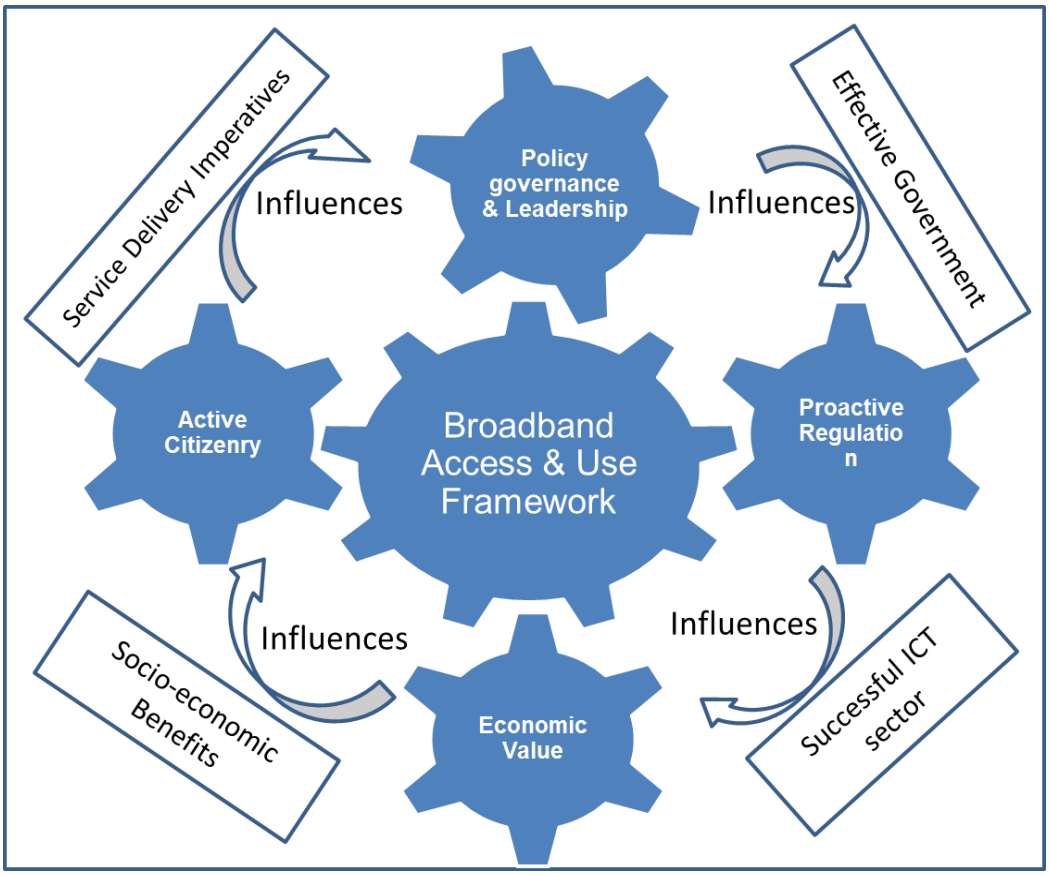
2.5 CONCEPTUAL FRAMEWORK

While there have been a few studies that have estimated the impact of broadband on the economy, targeted regulation to foster broadband diffusion, most of these studies have tended to have ignored or have not fully examines factors such as broadband policy governance and leadership and the role of active citizenry in addition to many known factors suggested to act as catalysts for broadband policy development and implementation for socio-economic benefit, particularly in developing countries such as South Africa.

Depending on a country's specific case, it would be necessary to define the most appropriate set of determinants to foster wider broadband adoption, it is therefore fundamental to understand the reasons behind observed patterns from literature, the suggested main drivers of broadband adoption, and the relative effectiveness of the current broadband policy against the proposed conceptual framework to better understand the evolution of broadband in South Africa, thus the proposed conceptual framework draws from the Systems Thinking approach where all components of a system interact and influence each other for a greater outcome. These proposed interacting determinants or factors in the broadband socio-economy are policy governance and leadership, Proactive Regulation, Economic Value of broadband services and the role of active citizenry where the nature of the interaction continually changes as the process of improvement takes place across the entire systems where the benefits accrues to all in the form of Government becomes an effective enabling institution, and improved performance of firms in the sector, which results in economic growth for the benefit of the citizens and in-turn the citizens actively participate

in policy formulation and hold government accountable, thereby ensuring the wheels continues to turn as illustrated in the diagram below.

Figure 5: Broadband access, usage and governance framework



Given the economic value of broadband services, then what could have led to the slow development and implementation of the broadband policy in South Africa and how could proactive regulation have responded to the high prices experienced in the sector? A decade of policy dormancy accompanied by high broadband prices presents an undesirable situation for South African society which is seemingly losing out on the benefits of broadband services. Can policy governance and leadership on the part of the Ministry of Communication address these challenges or can the role of active citizenship influence the broadband policy governance and leadership for the development and implementation of effective broadband policies that would see South Africa ascend the world rankings in terms

of broadband penetration indexes? Thus these questions will assist in constructing a conceptual framework that identifies the relationship between policy governance and leadership required to ensure effective implementation of the broadband policy and effective regulation that create an environment where access to broadband services move towards universal levels due to the better understanding of the economic value of broadband services where citizens can freely and voluntarily participate in the development and implementation of policy for their own benefit and interest. The conceptual model will therefore focus the discussion in this research around the inter-play between broadband policy governance and leadership, proactive regulation, the economic value of broadband and the active citizenry concepts in order to better understand the evolution of broadband policy and regulation in South Africa.

CHAPTER 3: RESEARCH QUESTIONS AND METHODOLOGY

The evolution of broadband policy and regulation in South Africa over a decade would clearly represent real life activities which occurred during the decade in question. Therefore the exploration of broadband policy and regulatory activities over the decade would require answers to empirical questions to understand the broadband evolution, for example, Babbie & Mouton (2001) points out that to resolve an empirical question, one either has to collect new data about the evolution of broadband or on has to analyse the existing data.

The research questions in the study pertains to policy governance and leadership, proactive regulation, the understanding of economic value of broadband as well as the role of active citizenry in the broadband policy development and implementation for economic growth. Evaluation of the broadband policies and regulation within different government institution is undertaken to analyse the extent to which these policy and regulatory documents responds to the problems areas stated above. Therefore, each question has an evaluative and a comparative element.

The central research question is:

How has broadband policy evolved in South Africa, including policy formulation and content, regulation, implementation and penetration?

The sub-questions are:

1. What was the role of policy governance and leadership during the decade 2001 – 2011?
2. To what extent is the economic value of broadband access and services well understood in South Africa's policy and regulatory environment?

3. How has public participation and active citizenry influenced broadband policy and regulation in South Africa?
4. How can proactive regulation stimulate the demand for broadband access and services in South Africa?

3.1 RESEARCH METHODOLOGY

This study adopts a qualitative research approach in an attempt to investigate the evolution of broadband in South Africa over the last decade while assessing the impact of broadband policy and regulation with respect to factors such as policy governance and leadership, proactive regulation, the economic value of broadband and the role of active citizenry in fostering broadband access and use in South Africa, thus the approach is likely to assist the researcher in understanding the broadband penetration phenomena that occurs in natural settings and also to study those phenomena in all their complexity (Leedy & Ormrod, 2005).

The process of qualitative research would typically involve non-numeric observations through formulating questions and procedures, data typically collected in a participant's setting, data analysis inductively building from particulars to general themes and the researcher making interpretation of the meaning of the data (Creswell, 2002), Thus the evolution of broadband policy and regulation in South Africa does occur in a natural setting of the ICT policy regulatory environment.

So, to better understand the evolution of broadband policy and regulation is South Africa over the past decade, data will be gathered from various sources including a wide range of broadband policies and strategies from all spheres of government. These policies and strategies encompassed the work of the Ministry of Communications at the national level; the Gauteng Province and its metropolitan councils, the provinces of KwaZulu Natal and the

Western Cape, which were involved in the broadband planning and policy development for provincial and local government. It reviewed the work of actors engaged in the broadband policy process and actors engaged in related regulatory processes, such as the ECNS, ECS and spectrum licensing processes. The research therefore focuses on and explores the policy and regulatory factors supporting or inhibiting broadband expansion and access. The research focuses on at least two aspects here, including (i) the broadband policy development and its impact on broadband penetration; (ii) the related regulatory environment and its impact to broadband penetration in South Africa.

There is a world view that broadband can contribute to a country's economy, therefore this research will also explore how well is this view understood by all actors in the policy and regulatory domain. This research further explores the role of active citizenry that should hold policy makers accountable to the timely development of public policies for their economic and social benefits such as the advocacy of public interest groups, Representative of the public interest group will be included in the target population such as the Association of Progressive Communications, SoS (Save our SABC Coalition) and South African Communications Forum (SACF). As a way of gaining a broader understanding of the policy formulation, regulations and the nature of social movements, the level of active citizenship and its role. A brief interaction will be conducted with key actors in the broadband policy development and related regulations, while the role of active citizenry for broadband policy development and implementation may be understood through developments of active citizenship experienced with the e-tolling campaign or section 27, in order to highlight lessons from such active citizenship.

Because of the nature of the research as explained above, the approach to knowledge which is adopted in this research is what Creswell (2002) refers to as a social constructivist worldview. Social constructivists hold assumptions that individuals seek understanding of the

world in which they live and work. Hence, the key informants will have developed “subjective meanings of their experiences …. These meanings are multiple and varied, leading the researcher to look for the complexity of views rather than narrowing meanings into a few categories or ideas” (Creswell, 2002 citing Lincoln & Guba, 2000; Schwandt, 2007; Neuman, 2000; Crotty, 1998). The researcher’s view of the world is constructed from the responses of the key informants, and the researcher can build on these views.

The process of qualitative research is largely inductive with the enquirer generating meaning from the data collected (Creswell, 2002). Hence the qualitative social constructivism approach adopted for this research will be shaped by this view of knowledge generation. Thus the researcher will collect policy documents that related to ICT development in general and broadband policies and strategies in particular from government institutions responsible for the development of such documents, these different sets of policy documents are then analyzed to determine factors of integration, coordination, collaboration, implementation and possible impact. This therefore forms the design and strategies necessary for the collection and analysis of data as well as the interpretation of results of this research.

3.2 POLICY ANALYSIS AND APPROACHES TO REGULATION

As process of multidisciplinary inquiry, policy analysis seeks to create, critically assess, and communicate information that is useful in understanding and improving polices; it is partly descriptive because it relies on the social and behavioural sciences to make and justify claims about the causes and consequences policies (Dunn, 2004), while Dye (2005) defines policy analysis as finding out what government do, why they do it, and what difference, if any, it makes. These definitions suggest that policy analysis has something to say about value judgements or value of policy outcomes, relationships as there is a tendency to neglect interaction in public policy (John, 2005) and ethics, thus policy researchers has to

apply broader frameworks to try and explain the policy processes, for example, John (2005) identifies five policy analysis approaches: (1) The institutional approach who focus is on explaining policy stability than change, through the way in which the "rule of the game" or the "standard operating procedures" constrains choices; (2) Interest group or network approaches, here patterns of interest group interactions explains how issues are processed by political systems; (3) Macro-level socio-economic approaches, these are good at generally explaining both change and stability; (4) Rational choice theory tends to be better at explaining shifts in decision making within a set of constraints and preferences and changes in goals and objectives of policy, and lastly, the ideas-based approaches which are good at explaining policy changes through the process of advocacy and persuasion.

On the other hand, Dunn (2004) makes reference to four forms of policy analysis as: (1) a retrospective and prospective form of analysis involves the production and transformation of information after or before policies have been implemented. This form of policy analysis is suited for this research considering the evolution of broadband in South Africa over the past decade involves production and transformation of information before and after the broadband policy was approved and implemented; (2) The function of descriptive and normative analysis is to explain, understand and predict policies by identifying patters of causality and a set of logically consistent propositions that evaluate or prescribe action, respectively; (3) Problem finding and problem solving analysis refers to methods of finding or discovery of elements that makes up problem definition and techniques of cost benefit analysis, decision analysis and implementations; (4) Segment and integrated analysis.

According to Dunn (2004), the main purpose of policy analysis is to improve policy making, and has two distinct aspects in its role, that is, on one hand, methods of analysis are designed to produce policy relevant information that is potentially useful in all phases of policy making; On the other, the uses of policy analysis in practice are indirect, delayed,

general and ethically controversial. Policy analysis therefore presents a useful tool for the researcher to evaluate the South African broadband policy and regulatory environment which spans a decade. Even though the deliberations in the analysis of broadband policy and regulations might have general comments and possible recommendations from the analysis of the secondary data obtained, the main aim however is not to change policies and strategies, but rather to stimulate public debate about potential alternative uses in fostering broader broadband adoptions in the country.

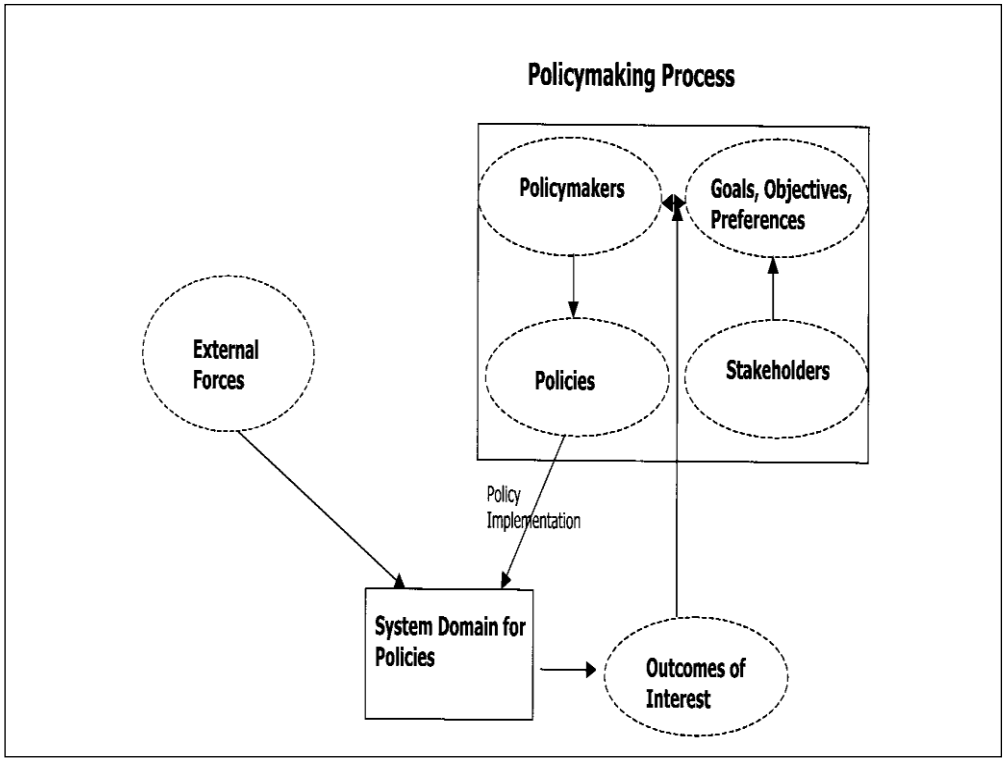
The narrative structure of policy analysis according to Kaplan (1986) holds that the prior development of clear external criteria, or principles is not always a useful avenue to the resolution of policy dilemmas and that external criteria are sometimes as likely to emerge from proposed resolutions to policy issues as they are to govern those resolutions. In the absence of external criteria, stories meeting certain characteristics can integrate necessary considerations, explain the development of current dilemmas and point the way to resolutions. Although not all policy analysis need to be in the narrative form, however some analysis appropriately make tense-less arguments for a particular principles and these principles invariably allow for many possible actions. Thus only a narrative can explain which particular course of action is desirable and why.

Walker (2000) describes policy analysis as a systematic process for examining complex public policy choices that has been developed and refined over the past 50 years. Without policy analysis, important policy choices are based on hunches and guesses with sometimes regrettable results. Policy analysis in the United States and Europe have developed a system-based approach and a set of tools to examining public policy issues that illuminate the uncertainties and their implications for policy making that identify trade-offs among the alternative policies and that support the policy making process.

In defining the context for policy analysis, Walker (2000) point out that public policy analysis is a rational, systematic approach to making policy choices in the public sector. It is a process that generate information on the consequences that would follow the adoption of various policies and that it uses a variety of tools to develop this information and to present it to the parties involved in the policy making process in a manner that help them come to a decision. Thus the purpose of policy analysis is to assist policymakers in choosing a course of action from among complex alternatives under uncertain conditions.

According to Walker (2000) the approach to policy analysis is built around an integral system description of a policy field as illustrated in the figure7 below. At the heart of the system description is a system model that represents the policy domain. The system model clarifies the system by defining its boundaries and defining its structure with the elements and the links, flows and relationships among them.

Figure 6: Integral system description of the policy domain



Source: Walker, 2000

Policies are the set of forces within the control of actors in the policy domain that affects the structure and performance of the system. Loosely speaking, a policy is set of taken by government to control the system, to help solve problems within it or caused by it or to help obtain benefit from it. In speaking about national policies, the problems and benefits generally relates to broad national goals Walker (2000). Therefore the South African broadband policy is viewed in this context in this research, where the actors would be the government institutions involved in the development of broadband policies and strategies that once well-coordinated, would affect the economy and the wellbeing of its society in a positive manner.

Walker (2000) identified the following as steps of policy analysis, the process generally involves performing the same sets of logical steps, these steps are not always performed in the same order and there is usually feedback among the steps; (1) Identify the problem; (2) Identify the objective of the new policy; (3) Decide on criteria; (4) Select the alternative policies to be evaluated; (5) Analyse each alternative; (6) Compare the alternatives in terms of projected costs and effects; (7) Implement the chosen alternative; (8) Monitor and evaluate the results. The first three steps is seen as the most important steps and are referred to as “formulating the problem” while the rest of the steps is referred to as “solving the problem”.

While on the other hand, Patton & Sawicki (1993) views basic policy analysis in six steps culminating from incorporation of ideas from a number of overlapping descriptions of policy analysis and their own experiences as follows; (1) Verify, define, and detail the problem; (2) Establish evaluation criteria; (3) Identify alternative policies; (4) Evaluate alternative policies; (5) Display and distinguish among alternative policies; (6) Monitor the implemented policies. These are the major steps in the process, but each step could be broken into smaller components.

Hajer (2003) point out how policy analysis should respond to the changing context of policy making through the examination of three aspects of policy analysis in the changing context: polity, knowledge and intervention. He argues that policy making now often takes in an "institutional void" where there are no generally accepted rules and norms according to which politics is to be conducted and policy measures are to be agreed upon. More than before, solutions for pressing problems transgress the sovereignty of specific polities. Furthermore the role of knowledge changes as the relationship between science and society has changed and thus scientific expertise is now negotiated rather than simply accepted. With the weakening of the state, it is far less obvious that the government is the sole actor to intervene in policy making, hence a need for reconsiderations of the analysis of policy making in light of this changing context.

Thus the specific approach taken is this research is what John (2005) refer to as the continual quest for better accounts of decision making in policy making and an exploration of why decision making varies between sectors in policy making. Although the analysis would not necessarily focus on the other sectors per se, it would however focus on different state institutions with direct mandate to develop the broadband infrastructure writhing government with a particular focus in Gauteng.

3.3 DATA COLLECTION

The data collection steps include setting the boundaries for the study, which limits the focus of the policy documents to be on (1) The ISAD Plan of 2007; (2) National Broadband Policy of 2010; (3) ICT Policy Colloquium Discussion Document 2012; (4) National Planning Commission 2012; (5) Gauteng ICT Development Strategy 2011; (6) City of Johannesburg Broadband Policy Framework, (7) Ekurhuleni Metro Growth and Development Strategy,

2005; (7) City of Tshwane Growth and Development Strategy 2006; (8) KZN Provincial Growth and Development plan 2012; (9) Western Cape – Ikapa Growth and Development Strategy 2008; (10) ICASA's Regulations for broadband have been identified as sources for secondary data. The documents are reviewed in order to extract data pertaining to the policy governance, understanding of utilitarian value, proactive regulation, public participation and active citizenry, will provide the data necessary to answer the research questions. A brief interview was conducted with responsible actors for policy development and implementation as well as regulations for broadband actors within the independent regulator to ascertain among other things, as to what extend does the economic value of broadband is well understood by the South African society and policy makers alike and if so, why is there an absence of a voice of public interest groups or active citizenry in the sector which has been experiencing slow growth in the adoption and diffusion of broadband technologies and services for economic and social benefits for all?

Therefore opinions and insight was sought through semi-structured interviews with the following respondents and members of government engaged in policy development, to examine the level of understanding of the economic value as well as public participation in policy-making and effective regulation, which can influence broadband diffusion and increase the use of the internet in a variety of ways. Interviews were recorded, transcribed and comments noted.

Table 4: List of Government institutions responsible for Broadband

SPHERE OF GOVERNMENT	INSTITUTION	SUBJECT	DATE OF INTERVIEW
National Government	Ministry of Communications	Policy development and implementation for broadband	Declined interview
	ICASA	Broadband Regulations	28/03/2013
Provincial Government	Gauteng office of the Premier	Economic Development: ICT policy development	26/03/2013
Local Government	City of Johannesburg	Economic Development: ICT policy development	Declined interview
	Ekurhuleni Metro	Economic Development: ICT policy development	25/03/2013
	City of Tshwane	Economic Development: ICT policy development	27/03/2013

3.4 DATA ANALYSIS

The data collected from interviews and secondary data sources is initially analyzed, and should further clarity be necessary, further observations or interviews will be undertaken. Data analysis typically involves making sense out of the data collected. It involves preparing the data for analysis, conducting different analyses, moving deeper and deeper into understanding the data, representing the data, and making an interpretation of the larger meaning of the data (Creswell, 2002).

The following steps will be used in the data analysis:

1. Organize and prepare the data for analysis by transcribing interviews, sorting and arranging data into themes and sub-themes from the four concepts identified above.
2. Obtain a general sense of the information and to reflect on its overall meaning, identify emerging ideas and the overall impression and recording of the general thoughts from the data.

3. A coding process will be adopted to organize the information into categories before bringing meanings into the categories, thus the coding process will enable the detailed analysis of data.
4. Using the coding process, a description of the setting and the categories of themes for analysis will be generated. The analysis will assist in developing detailed description of the data.
5. Use the narrative passage to convey the findings of the analysis.
6. Lastly, an interpretation of the meaning of data will be made capturing the essence the ideas and lesson learned.

The steps above were followed in the analysis of the findings on the evolution of the broadband policy and regulation in South Africa. Certain themes emerged from the analysis f the findings which are presented in the following chapters detailing the results of the study.

CHAPTER 4: DATA ON THE SOUTH AFRICAN BROADBAND POLICY AND REGULATORY ENVIRONMENT

4.1 INTRODUCTION

The South Africa broadband policy environment is characterised by the policy vacuum since the emergence of convergence and broadband technologies since 2001, and the subsequent development of the broadband market, despite the promised telecommunications reforms. The development of the National Broadband Policy was only finalised in 2010, signalling a decade of policy dormancy about broadband. A content analysis of different documents related to the broadband policy as well as development of policies that may discuss broadband and related concepts, such as the digital city strategies is reviewed in this chapter. The research data is obtained from sources consisting of broadband policy document, ICT strategic planning documents, Organizational strategic planning documents, broadband and related regulations. The analysis of the secondary data is then compared and contrasted with the primary data from interviews.

4.2 ISAD PLAN 2007

The national Information Society Development (ISAD) Plan was developed by the South African government following the establishment of the Presidential National Commission on information society and development out of the recommendations from the Presidential International Advisory Council (PIAC) on ISAD in 2002. One of the plan's objective was to support the country's information society vision "*To establish South Africa as an advanced Information Society in which Information and ICT tools are key drivers of economic and social development"* thus the institutional mechanisms of the plan was aimed at harmonizing efforts at all levels of service delivery, from national to provincial and local government, thus the plan present a united front by national government, provincial and local governments in

the charge towards building and inclusive Information Society in South Africa; The plan was also seen as a response to the development challenges facing the country as articulated in numerous reports including the Ten Year Review report on the implementation of the government programs since democracy was attained, furthermore, the plan recognizes that transformation of South Africa from and industrial economy to an Information-based Knowledge Economy will be driven through ten main pillars and five priority focus areas, the pillars are identified as key drivers with greatest potential for impacting positively in the development of an inclusive Information Society and cuts across the social and economic realities facing South Africa (ISAD, 2007).

4.2.1. Policy Governance and Leadership

ISAD recognises that the international experience from countries leading in the application of ICT's to daily life and in the building of an information society, is that the existence of ICT policies and infrastructure by itself does not guarantee a positive outcome, thus in order for there to be good progress, it is essential to have a well-designed institutional mechanism that is aligned to the normal structures of government and its also linked to the highest office; Planning for facilitation of decision making across all government is important because the use by government of these ICT's is an essential catalyst for their uptake and use in the rest of society. The plan further seeks to adopt greater coordination and strategic synchronisation across government to ensure that ISAD policies, programs and initiatives are sequenced and driven in concert towards a shared overarching vision through a series of institutional arrangements that enables planning, alignment and coordination across government. The ISAD plan targets the development of the National Broadband Policy and strategy, implement measures aimed at strengthening the capacity of the regulator, and to ensure coordination and integration between policy makers within the ICT sector and others by 2009. It can therefore be interpreted that the ISAD plan intends to set the tone of the

broadband development in the country to support and enable other equally important initiatives.

4.2.2. Proactive Regulation

The Plan acknowledges that the policy and regulatory environment plays play a pivotal role in catalyzing the success of the information society and thus sets the objectives which ensures a predictable, investor friendly, progressive and enabling policy and regulatory environment and strengthening the capacity of the regulator. To this end ISAD plan recognizes the regulatory challenges relating to access, affordability, digital inclusion, lack of awareness and motivation and seeks to address such challenges in terms of pillar one which focuses on improving policy and regulatory environment which once implement will enable a seamless development and implementation of the broadband policy.

The ISAD plan further recognizes that affordable broadband connectivity was a challenge as early as 2007 and had set strategic targets and action plans, for example to (1) promote competition by supporting new entrants into the market, and (2) increase broadband usage among home users and SMME's by 2008, indicating the intentions to address broadband challenges in the country.

4.2.3. Economic Value of Broadband

The goals of the ISAD Plan was also to address what the plan refers to as the information society challenges of economic competitiveness, unemployment and social inclusion. The plan further recognises the importance of the role of information society and the use of ICT's as a precondition for economic development and to this end the plan proposes that unemployment can be addressed through among others, the digital migration of broadcasting services, establishment of the local content development hubs across the country. The transitions from the historical economy characterised by agriculture,

manufacturing and mining to an information and knowledge based economy where the services sector will assume a prominent role in the creation of employment opportunities in the country.

Even though the ISAD plan does not make reference to the role of active citizenry, this concept can be seen as implied in the aims of the plan in so far as Pillar four which advocates for digital inclusion and awareness that seeks to promote equality of opportunity to citizens in the use of ICT's including broadband; and Pillar five which talks to the human capital and ensures majority of the population are not excluded from the mainstream knowledge economy.

The ISAD's ten pillared strategy identified priority focus areas for ICT applications including broadband infrastructure to support the use of ICT's in Education and Health as well as the application of ICT's in the development of the SMME's which clearly indicates that the economic value of broadband is well understood by the South African authorities.

4.3 NATIONAL BROADBAND POLICY 2010

South Africa has developed a National Broadband policy which was approved by the then Minister of Communications, General Nyanda in 2010. The vision of the policy (section 1.4) is to ensure universal access to broadband by 2019, and also to address several challenges such as the current penetration rates which are considerably low, and the slow progress made thus far with respect to the rollout of broadband infrastructure, the unaffordability of broadband services, the allocation of the radio frequency spectrum by the regulator which makes the vision of the broadband policy to look ambitious and therefore unachievable within the time frame allocated.

The broadband policy was developed to support among other things the intentions of the ISAD plan following its approval in 2007.

The policy was approved in 2010, when the mobile penetration data was indicating favourable statistics and presented a fertile ground for broadband policy to achieve universal access. However to policy proposes that government would focus in rolling out infrastructure through municipalities cover under services area.

4.3.1 Broadband Policy Objectives

To facilitate the provisioning of affordable, accessible, universal access to broadband infrastructure to citizens, business, communities and the three spheres of government and to stimulate the usage of broadband services in order to promote economic development and growth and act as an enabler for further social benefits.

In support the ISAD Plan, the broadband policy also focuses on building an information society mainly through ensuring the development on broadband infrastructure for universal access.

4.3.2 Governance and Policy Leadership

The National Broadband Policy acknowledges (under 1.1.6) the current weak coordination mechanism with respect to broadband deployments in the country, indicating that it is fragmented and uncoordinated, for example, budget are allocated for ICT at National Departments, however such budget are not spent appropriately and that provincial and local government are not duty bound to coordinate ICT programs. In an attempt to address such weaknesses, the National Broadband Policy intends to establish new coordinating approach in the attainment of the broadband targets.

Implementation of the broadband policy (under 5.2) refers to the establishment of the broadband inter-governmental committee that incorporates all spheres of government, with the responsibility to develop an implementation plan that supports the National Broadband Policy, overall coordination of broadband implementation, facilitating the monitoring and measuring of broadband penetration in the country, identifying mechanism to realize the potential benefits of broadband while preventing duplication in investments in broadband infrastructure.

The articulation and clarification of roles between the three spheres of government indicate leadership and governance on the part of the Ministry of Communications which appears to reduce the duplication of efforts across the three spheres of government in the development and implementation of broadband infrastructure and services.

4.3.3 Increasing Affordability through Regulation

The policy seeks to increase affordability (section 2.2) through the expansion of networks in the marginalised areas. This will also be achieved through the creation of an enabling environment for broadband growth by increasing competition in the market. Therefore Infrastructure based competition, service based competition and Infrastructure sharing will form the basic to which the policy is to achieve its goal of increased affordability. The allocations of spectrum for broadband is an important policy matter (section 4.1.4), and delays in the allocation of spectrum is likely the affect the objectives of the broadband policy to achieve universal access by 2019. The policy indicates that government will be responsible for promoting uptake and usage of broadband (section 4.3) in the sector by placing the agenda of awareness, content development, and digital literacy in the hands of government institutions. The policy also outlines role of the private sector (section 5.1.5) to

be that of partnering with the State to facilitate implementation of specific developmental initiatives, the private sector will also be utilised to achieve government's developmental agenda and to bridge the digital device through their licensing obligations, while providing both wholesale and retail ECNS and ECS within the regulatory frameworks as provided by ICASA. One of the key policy priority areas includes ensuring access to broadband services through the provision of infrastructure to achieve universal access.

4.3.4 Increasing Uptake and Usage

One of the broadband policy objectives is to increase uptake and usage (section 2.3) through the development of content in areas of education, health and e-government. In additions, ICT has to be incorporated as a developmental tool that uses broadband infrastructure in order to effectively increase uptake and usage, especially at household level. Furthermore, government needs to develop its own local content across all South African languages to ensure that government services are available to citizens' electronically thereby increasing uptake and use of ICT's including broadband services. The policy also views digital literacy as critical for the increase of uptake and use of broadband services. Commitment to improve security of broadband users as well a public awareness by the three spheres of government is viewed by the policy to have a potential to promote uptake and usage.

4.3.5 Economic Value of Broadband

To achieve a knowledge based economy, the broadband policy advocates for households and businesses to continuously be exposed to the use and benefits of ICT's and particularly broadband services. The policy acknowledges that broadband creates an environment that stimulates economic activity and can contribute to economic development and growth.

Universal access to broadband services can lower the cost of telecommunications and attract businesses to provinces and municipalities thereby stimulating their economic environments and increasing economic growth. Therefore broadband has an indirect impact on economic growth through improved ease of communications and the distribution of products and services to a wider market by (1) Stimulating growth of SMME's and cooperatives; (2) Increasing employment; (3) Reducing the cost of communications; (4) Improving marketability and encouraging investment.

Over and above the economic value of broadband, the policy also view broadband to have the potential to offer social benefits such as (1) Improved quality of education; (2) Improved quality of health services; (3) Improved quality of government services; (4) Reduced carbon emissions.

Although the national broadband policy does not specifically make mention of the role of active citizenship in the development and implementation of broadband, this is implied in so far as the policy outlining and articulating roles broadband players which include the three spheres of government, the state-owned enterprises responsible for broadband as well as the private sector. In as much as the monitoring and evaluation will be conducted by the broadband intergovernmental committee, it will be the end-users as members of society and citizens who feeds back to the process of monitoring and evaluation thereby indirectly implying the role of citizenry.

4.4 ICT POLICY COLLOQUIUM DISCUSSION DOCUMENT 2012

The discussion document outlines its purpose as to demonstrate the need to review Government's existing ICT policies in South Africa through a comprehensive full policy review processes undertaken by the Ministry of Communications (MoC) which will culminate in an integrated National ICT policy for South Africa. The MoC further articulates the vision of

the document not to be an internally focused, but rather building a national integrated vision which needs to find expression in a pragmatic policy to advance the ICT industry and profile in South Africa which is tightly geared with the country's economic engine.

It is remarkable to note that the document, in its ICT landscape chapter, outlines the ICT policy and regulatory environment in South Africa which is characterized by a decade of broadband policy dormancy since the early 2000's, therefore the intention of the discussion document to usher in a new wave of integrated ICT policy is welcomed. Of particular importance is that the discussion document concedes to this assertion by pointing out that at a local level, the disconnect from the national ICT policy objectives post-apartheid started to become apparent and continues to have a direct impact on the growth of the ICT industry including job creation, accelerated access an uptake of secure ICT services and skills development.

It must be commendable in this instance that going forward, the MoC's position view the role of Government in accelerating broadband growth is that policy makers should not only play the typical domain of licensing, market liberalization and facilitating access to spectrum but rather take a leadership role in defining and implement the National broadband plan.

In the discussion document, the view of the MoC, is that the ICT policy and regulatory reform in South Africa coupled with an increase in competition and at times, regulatory interventions has resulted in prices of some services dropping, which could have led to higher take up o services and as such intentions to move towards allocating spectrum to the smaller players will result in reduction in the prices of broadband access and services. The discussion document acknowledges the potential duplication of resources in terms of the roles of State owned companies (SOC's) and agencies with respect to the implementation of national broadband system and therefore calls for realignment.

The discussion document is positioning broadband to be the next area of investment, requiring public private partnering, inter-governmental partnering and addressing consolidation of government mandates and assets. An effectively built and operated national broadband network will serve as the central nervous system in the country connecting schools, hospitals and various economic corridors in the country. This appears to be a promising vision after a long period of stagnation in the broadband policy environment.

4.5 THE NATIONAL DEVELOPMENT PLAN – VISION 2030

In terms of the South Africa Nation Development Plan (NDP) – vision 2030, the National Planning Commission (NPC) concede that the NDP will be as credible as its delivery mechanism is viable. Thus a capable state is an essential part of South Africa's development because the market cannot resolve all of the country's challenges; many require interventions by an effective government that delivers public goods of high quality, for example, In many countries, plans fail ether because they are not implemented or because implementation is uneven, there need to be a uniformity of effort and competence across the entire public service. There is a real risk that South Africa's national plan could fail because the state is incapable of implementation. The NPC further attests that, a capable state does not materialise by decree, nor can it be legislated or created from conference resolutions. It has to be painstakingly built, brick by brick, institution by institution, and sustained and rejuvenated over time. It requires leadership, sound policies, skilled managers and workers, clear lines of accountability, appropriate systems and consistence and fair application of rules.

The NPC also noted that several structural weaknesses must be overcome if South African firms are to increase the benefit they can derives from, and the contribution they can make to, growth and development in Africa; Crucially, poor infrastructure networks such as

broadband as well as tariff barriers raise the cost of doing business and hobble both investment and internal trade. Weak legal institutions and in some cases poor governance heighten the risks of investing leading poor job creation and weak economic wellbeing of society and the youth in particular; therefore the cost of not implementing the plans and policies to expand the network infrastructure may lead to a frustrating and destabilising environment where the young people cannot work, contributing to violence, crime, alcohol abuse and other social ills. Therefore the NDP advocates for policy leadership as the possible solution where Public sector investment in economic infrastructure crowds in private investment, because private investment is a function of current and projected growth and profitability. It is also a function of mutual trust and confidence in economic policies.

The Commission is concerned about high domestic cost of broadband internet connectivity. Thus in support of an Information Society agenda, all in our society should be able to acquire and use knowledge effectively. Everyone should continue to benefit from the important breakthroughs in science and technology. Even with the increase in international broadband capacity through the commissioning of additional under-see cables, the cost of broadband remain relatively high.

4.6 BROADBAND REGULATIONS- ICASA

4.6.1 E-Rate Regulation

The Independent Communications Authority of South Africa (ICASA) has published the e-rate regulation under the electronic communications act 36 of 2005, in terms of section 4 read with section 73. The e-rate regulation is viewed as a mechanism to reduce the cost of access and use of broadband enabled services such as the internet in order to promote and foster broadband penetration in South Africa.

The objective of the regulation is to ensure that all licensee must charge the schools, as defined in the south African schools act 1996 and the further education training colleges as defined in the further education and training colleges act 2006, receiving internet services, a total minimum discounted rate of 50% of the total charge levied by the licensees. The discount is applicable of the total charge levied by the licensee who includes but not limited to any connectivity charges for access to the internet, charges for any equipment used for connectivity to the internet and calls made to an internet service provider.

4.6.2 Facilities Leasing Regulation

ICASA has passed a regulation which places an obligation to lease facilities under chapter 8 of the Electronic Communications Act that applies to all licensees providing Electronic Communications Network Services. Facilities leasing create a condition for contested markets which will foster competition and consequently reduce broadband access prices. One form of facilities leasing is local loop unbundling (LLU), this is a process whereby a licensee is obliged to provide access to the local loop at a wholesale price so that other licensees may access end-users, while the “local loop” is a physical circuit connecting the electronic communications network point at the subscriber‘s premises to a connection point at the edge of the provider’s network. South Africa is lagging behind world indices in terms of the fixed-broadband access and LLU, if implemented soon is likely to increase access to existing infrastructure, which would allow for more people to connect to the Internet through fixed-line connections. This initiative has a potential to increase jobs in the installation and maintenance of fixed lines and related infrastructure. It should be noted that regulations for facilities leasing should begin with the physical copper lines of the incumbent operator and move to fibre and ultimately wireless in fostering the competition in the provision of broadband access and services in South Africa.

4.6.3 Spectrum Allocation Regulation

The Independent communications authority of South Africa, ICASA has passed regulations in 2010 on the procedures and criteria for granting radio frequency spectrum licenses for competing applications or instances where there is insufficient spectrum available to accommodate demand, and lately published draft frequency migration regulation and draft frequency migration plan. In the regulation, a principle of “use it or lose it” will apply where ICASA shall review the radio frequency spectrum utilization after two years of granting the license. Failure to meet 50% of the rollout-targets set out as part of the license conditions prior to second anniversary is considered non-utilization and in such event, ICASA shall withdraw the license. This move is likely to foster competition in the next generation mobile broadband space and it is likely to discourage spectrum hoarding by operators wanting to distort completion in the market. Further delays in the allocation of licenses will result in further delay in securing the necessary investments and rollout of infrastructure which by itself takes longer and may affect the allocated window to rollout targets for license conditions. The government and ICASA needs to be commended for making the 800 MHz and 2.6 GHz from digital migration (digital dividends) available for broadband internet access. This is likely to enable LTE and future 4G broadband networks.

4.6.4 Universal Service Obligation and Access Regulation

Following the unsuccessful universal service and access regulation which was one of the regulation which could not live up to its promise as most of the target remains unmet and it had produced little or no impact in addressing the digital divide or market access gap. To that end, ICASA had issued a discussion paper for the review of the universal service and access framework in 2010. The discussion paper acknowledges that the framework needs to support national imperatives, government policies and strategic direction. The discussion

paper further notes that a clear assessment of the market access gap need to be taken into consideration so as to avoid causing market distortion while at the same time being able to effectively target the appropriate underserviced areas or communities. As a way of contribution, The regulator needs to take cognisance of the fact that the technology landscape is dynamic and therefore what used to be an access gap in the past may no longer be necessary a gap today. The fact that today, mobile had leapfrogged fixed telephony with over 100 % penetration rates in South Africa indicating that the traditional market access gap in terms of fixed telephones may no longer be a significant gap requiring regulation for example.

Consequently the universal service and access obligations (USAO) target need to expand its focus from a narrow definition of underserviced areas and communities and include elements of affordability and extension of broadband networks for example because although access to broadband services may be available, it may remain inaccessible due to high prices. This phenomenon is usually referred to as the broadband demand gap. It is commendable however that the discussion paper touches on this issue through disbursements from the fund subsidise economically disadvantage individuals or communities for network access. Subsidies for content development in multiple languages may well be a critical target to stimulate demand for broadband services while creating jobs which will then prove the concept of the alignment of the USAO's to national imperatives. The regulator should consider putting in place mechanism which will prevent the contributors to the universal service fund not to pass the cost of their contribution back to the consumers because that would imply that consumers are actually funding the universal service fund, and there operators are likely to remain comfortable about the status quo. Therefore proactive regulation to prevent or promote certain outcomes will be necessary coupled with increased reliance on completion laws and regulation in the sector.

4.7 GAUTENG ICT DEVELOPMENT STRATEGY

The Gauteng Province is considered by many locals as the economic hub of the country, has drafted its ICT development strategy that seeks to improve productivity in the province, build connectivity in the province as well as develop ICT skills and capacity needed in the province.

With a vision of “A fully fledged knowledge economy in Gauteng wherein the information society harnesses the evolution of ICT and ensures that knowledge creation, sharing as well as information manipulation become the engine for economic growth and development”, which the document interpret in to three broad goals of Productivity, Connectivity Networks and ICT skills capacity building.

One of the plan’s initiatives is the Gauteng broadband initiative, where emphasis is firstly based on partnership and collaboration with industry players in the broadband market to ensure 95 per cent of broadband access in the province. The G-link network which seeks to consolidate the existing municipal networks of City of Johannesburg, City of Tshwane and Ekurhuleni Metro as well as the network of the State owned Enterprises, is envisaged by the Gauteng Provincial Government, to consolidate and combine effort by all the local and provincial entities to deliver a seamless network infrastructure that would offer unlimited access to all provincial and local government as well as the provincial residents. The G-Link broadband Infrastructure, promised by the Gauteng Employment and Growth Development plan (2011-2014) which will ensure 95% connectivity in Gauteng as one of its target.

The stated objectives that should be used to measure the success of this strategy is as follows:

1. To provide universal access to broadband (as defined by the national broadband policy) for citizens, business as well as government institutions.

2. To build the Network Infrastructure and Information Super-highway to encourage the development of advanced workforce with better ICT skills;
3. To enhance economic productivity through ICT infrastructure development in order to lower the cost of doing business and increase connectivity for companies especially SMMEs
4. To Increase the ICT skills capacity within the public and the private sectors to create a pool of ICT practitioners and entrepreneurs
5. To improve service delivery by providing high quality ICT services through e-government
6. To build an economic and industrial sector with a focus on ICT, and in particular, software industry
7. To ensure that innovation becomes part of the economic network in Gauteng Province in relation to ICT
8. To reduce the carbon footprint of the province through Green ICT
9. To create employment in the ICT sector.

At the heart of the ICT strategy, is the creation of a common, secure and flexible infrastructure that is available across the public sector and identifies the following as key drivers, (1) a single holistic telecommunications infrastructure that will delivery converged voice and data communications, (2) Re-optimisation of the current shared services in human resources, Finance and procurement space, (3) Data centre consolidations that would deliver large cross-government economies of scale and lastly cloud computing that delivers network infrastructure, software or platform as a service. The development of the green ICT strategy is also viewed by the Gauteng ICT development strategy as key initiative of this strategy. The G-Link programme is viewed by this document to have the potential to deliver affordable broadband access for everyone in the province, including marginalised and outlying communities, Social Inclusion that provides universal broadband access which will

enable new responses to socio-economic challenges, the creation of knowledge by focusing on the educational learning portal for literacy, numeracy and network support, Improved service delivery through the facilitation of more efficient and effective government and businesses and to ensure economic growth by stimulating growth through job creation and participation of SMME's.

The Gauteng broadband infrastructure will interconnect to existing and new undersea cable infrastructure with the aim of reducing costs by taking advantage of the World Cup legacy projects infrastructure which includes a link between Gauteng and Kwazulu-Natal as a way of linking Gauteng to the other global cities.

In terms of the strategy, the development of broadband infrastructure will give government an important role to play in the economy, not only as an infrastructure provider but also a service provider by partnering with the service providers that are licensed to provide services with the following economic benefits; lowering the cost of doing business, lowering the carbon footprint of the province, realization of efficiencies in business operations, creating a foundation for the creation of a dynamic ICT industry in Gauteng which include the software industry and the telecommunications services sector, Creation of jobs within the ICT industries and other sectors, Creating a platform for innovation and intellectual property development and commercialisation as well as the attraction of foreign direct investments.

To sustain the knowledge economy through ICT, the Gauteng ICT strategy acknowledges that capabilities need to be developed and sees ICT skills development happening at three levels; ICT skills needed for modern life outside the workplace - digital literacy/e-literacy, ICT skills in the work place to respond to changes in business processes and industry structures – e-skills, Technical skills for the ICT specialists needed in ICT and related jobs user industries. Therefore, Government will push wireless broadband to the classrooms;

progressively work to connect all teachers and all 1.8 million and more learners in Gauteng. It will push broadband (fixed or wireless as appropriate) to households, in order to supplement school-based educational development for both teacher and learner use. This approach aims to make good the investment in ICT in schools, by placing computers in classrooms, by giving schools flexibility to use the Internet within budget constraints and by encouraging procurement and use of appropriate software based on institutional requirements. This approach will assist in increasing ICT skills at all the three levels identified.

Going forward, the provincial ICT strategy aims to establish A Gauteng Provincial Government (GPG) Technology Council working under the aegis of the Economic Development and Finance, and involving representatives from other GPG departments should be formed. The council will perform planning, coordinating, advisory, and monitoring and evaluation functions. The council will collaborate with CIOs of the individual departments. Technology programmes of work that cuts across government departments will have to be centrally coordinated. Unique programmes of work will be delivered by affected government department with GPG Technology Council oversight.

Thus the Gauteng ICT development strategy recognises the economic value of broadband and recognises the need to develop the knowledge economy through the implementation of the broadband infrastructure through the G-Link project that seeks to amalgamate the current municipal broadband network while partnering with other private players and SOE's to ensure universal access in the province that once fully implemented will reduce the cost of broadband services in the province.

4.8 CITY OF JOHANNESBURG BROADBAND POLICY FRAMEWORK 2009

The City of Johannesburg has adopted a broadband policy as a means to clarifying its views on the extension of broadband network to all parts of the city. The city regards the network and the affordability of access as a key driver for growth and development, thus the intention of the policy is to facilitate greater levels of ICT and broadband usage. The policy is anchored by ten policy objectives of (1) developing a high speed internet access; (2) ensure affordable broadband connectivity; (3) promote digital communications in all key areas of the economy and society; (4) promote economic participation SME and BBBEE companies in telecommunications provisioning; (5) SME's and BBBEE to participate in the provision of the last mile telecommunications access; (6) encourage the utilization information and communications network as a contributing resource to local economic development; (7) ensure clear directions on usage of rights-of-way; (8) encouraging competitive wholesale pricing; (9) achieve low cost interconnection with the operators; (10) to continuously migrate to the next-generation-networks The ten policy objectives are seen as an important component of *Joburg's "digital city" initiative*, to this end fourteen policy actions will be carried out to support what the policy calls the scenario for *Johannesburg digital city.* Some of the policy actions includes but not limited to the role played by the City as the facilitator of the evolution of broadband and social inclusive internet over the next ten year, with progress reviews held annually and reported to the Mayoral council and the general public.

4.8.1 Governance and Policy Leadership

The City of Johannesburg's Digital City concept is based on the high impact scenario assuming radical change at a metro-scale economic focus in which the actions to build a metropolitan area broadband networks becomes a focus of all stakeholders, with high

visibility for all firms across the revenue spectrum, for all household across the income spectrum, and for government, public institutions and not-for-profit development sector.
Through its digital connectivity, the city administration communicates with its Johannesburg residence through a multiplicity of online technologies such that broadband as one of many infrastructures, contributes to good governance, that is, transparent and responsive local government.

The policy advocates for the development of broadband through the Johannesburg Development Agency which will collaborate with the surrounding metros and district municipalities, and the Gauteng Provincial Government as well as the private sector to ensure seamless development of the broadband network. Even though the broadband policy framework acknowledges that the design of the provincial broadband is still in the early stages and the relationship to already existing municipal infrastructure across the three metropolitan municipalities is not yet clear, the framework document suggest the establishment of the forum at which broadband pervasive problems will be discussed. This Forum will invite participation from a broader spectrum of broadband players to consult on matters address in the policy framework an on matter of general interest in the sector. The City of Johannesburg will also collaborate with the provincial government, and the five metros and district municipalities of Gauteng with respect to the common objectives of the G-Link programme of the provincial government and the city's broadband policy focus. Of importance to note as part of the policy actions is that the city aims to establish a process to rethinking the telecoms landscape including ubiquitous broadband, broadband corridors, wireless and wired spaces, free internet zones, and smart incentives from the City's perspective. Another policy action which is seen to be facilitating is that over the medium to long term, the city will build a GIS record of its telecommunications and ICT assets to inform decision-making on the deployment of telecommunications infrastructure by both the public and the private sector.

4.8.2 Economic Value of Broadband

The policy framework targets building high speed internet access, affordable broadband connectivity and usage for large business and SME's, Digital communications in all key areas of the economy and society, Economic participation of SME's BBBEE companies, Participation of SME's and BBEEE companies in the provision of the "last mile" services, encouraging the use of communications networks as contributing resource to local economic development. Another objective of the City's broadband policy is to collaborate with the SME's to operate the broadband network on behalf of the city in order to reduce costs.

As part of the Digital Futures Process, the City intends utilizing broadband and next generation networks as means to creating the "Digital City", and as such the City will facilitate the extension of the ICT infrastructure, facilities, services and content to education and training institution and to the greater Johannesburg work force in order to promote the "knowledge worker" concept and the effective participation in the emerging "network knowledge economy".

4.8.3 Proactive Regulation

In support of regulations to increase affordability of broadband services, the policy will ensure clear direction on usage of right-of-way, encourage wholesale pricing that is competitive, and ensure low cost interconnection with the city's network infrastructure by telecommunications operators and to ensure continuous migration to next generation networks. The collaboration with the other metros and the private sector in the building of the broadband network will fulfil the objectives of the city that seeks to promote universal access on the one side, while on the other side collaborate with the private sector that seeks to increase its shareholder value through increased profits. Where gaps are identified with the

broadband infrastructure maps with respect to access for marginalised consumers, the city will finance the expansions and replacements of backhaul infrastructure as well as parts of the core network, as such the city will own those parts of the network and will therefore make them available on an open access, carrier neutral model.

The City of Johannesburg's broadband policy digital city strategy indicate a clear understanding of the economic value of broadband through its objective of promoting the knowledge economy and encourage the participation of SMME's as operators of the network while on the other hand the policy seeks to collaborate with other players in the broadband market such as the Johannesburg development agency as well as cooperation with other metros to ensure the success of the digital city and indicates good governance and policy leadership on the part of the City.

4.8.4 Role of Active Citizenry

For the City to ensure well informed decision making in terms of future utilization of the City's broadband because the issues and interactions that will arise are difficult to contemplate in advance, the City will therefore establish the a Digital Futures process which aim to consult and promote conversation among all players with the objective to deduce the most appropriate policy, strategy and administrative approaches to the evolution of a *digital city.*
Some of the policy recommendations which does not imply identifying the role of active citizens but seeks to proactively consult and discuss with stakeholders and communities, the ICT related developments of selected areas of the city as well as the future value to be leveraged from international broadcast centres in sporting venues in and around the city.

4.9 CITY OF TSHWANE GROWTH AND DEVELOPMENT STRATEGY 2006

The City of Tshwane has developed a draft Growth and Development strategy 2006, which is not intended to cover all elements of a comprehensive development plan for the City, but l rather comprised a limited set of high-impact, fast-track interventions that can act as catalysts for accelerated and shared growth. Thus the city has identified and prioritised five key strategic levers to support the growth and development strategy. The strategic levers are (1) Economic Growth Agenda, (2) Economic Empowerment and shared growth, (3) Promotion of social inclusion, (4) Human resource development and Risk mitigation strategies.

Unlike the City of Johannesburg which developed a dedicated broadband policy to achieve it digital city objectives, the Information and Communications Technology component which included the broadband initiatives will be driven within the context of the Tshwane growth and development strategy and will support the Economic growth agenda. Thus ICT's and broadband will be implemented as one of the key strategic interventions which will achieved through two initiatives of moving the city towards full e-governance and establishing broadband infrastructure in the northern part of the city. The implementation milestone for this strategy is set from 2006 to 2020 in terms of the growth and development strategy document.

The 2012 discussion document on Tshwane 2055, a long term strategic vision labelled "four decades of game changing" juxtaposes a new vision and long terms strategy from 2015 to 2055 which also proposes a smart city concept which is underpinned by the principles of Innovation, Research and development, Embrace smart technology, Connectivity, Access to knowledge, Educated communities, Linkages with tertiary educational institutions. According to the document, the city acknowledges limitations in funding resources to roll out an

extensive broadband project that would realize the full benefits of a smart City. Broadband is an enabler technology and therefore without the rollout of the broadband it could be impossible for the city to realize the benefits of becoming a smart city, and will also render the strategic interventions of rolling out broadband in the north and the implementation of full e-government futile.

The City understands the economic value of broadband in that is sees ICT and broadband initiatives to be supporting the City's growth agenda in the context of the GDS.

4.10 EKURHULENI GROWTH AND DEVELOPMENT STRATEGY 2025

In terms of the Ekurhuleni Metropolitan Municipality, growth and development strategy 2025, as well as the Integrated development plan 2012, both the document emphasises the development of an ICT infrastructure and the lobbying for broadband infrastructure provisioning in selected priority high tech hubs such as the OR Tambo international airport and surrounding and work closely with the City of Tshwane and Johannesburg in promoting the smart province concept and attracting ICT development and investment to the region, The Ekurhuleni growth and development strategic documents has a missing aspect of development of broadband and how will the development of the network infrastructure be implemented except that the Integrated development plan indicates under the ICT operational plans that there will be a percentage development of the fibre network for the Aerotropolis.

The Aerotropolis is defined as the airport city that contains the full set of commercial facilities that support airlines and aviation-linked businesses as well as millions of air travelers who pass though the airport annually and offers businesses located on and near the airport with speedy connectivity to their suppliers, customers, and enterprise partners nationally and worldwide modeling a gateway to the international countries. Fundamental to the success of

the Aerotropolis concept is broadband infrastructure that support and enable business interactions thereby promoting economic growth, therefore it can be accepted that ICT's and broadband will be an integral part of the Aerotropolis if it is support the growth and developmental agenda of the Metro. ICT's and broadband infrastructure forms a "nerve centre" that would enable the seamless business operations within the central business district or the airport driving economic growth of the Metro and its surrounding cities.

4.11 KWA-ZULU NATAL PROVINCIAL GROWTH AND DEVELOPMENT PLAN

In 2011, the Kwa-zulu Natal (KZN) Provincial Executive Council tasked the Provincial Planning Commission to review and prepare the 2011 Provincial Growth and Development Strategy (PGDS) to drive and direct growth and development in the province to the year 2030. The PGDS sets a vision of where the province wants to be in 2030. "By 2030 Kwa-Zulu Natal will be prosperous Province with a healthy, secure and skilled population, acting as a gateway to Africa and the world" The PGDS will be fully aligned to the National Development Plan. It identifies seven strategic goals that will drive the province toward this vision as: (1) Job Creation – Unemployment has been identified as the major structural constraint and contributes to high level of poverty and inequality which deteriorate the overall quality of life of the people of the province and therefore the plan seeks to address unemployment through expanded and sustained economic output as the fundamental driver for job creation. Of particular importance to this strategic goal is the objective of the plan to develop the knowledge base to enhance the knowledge economy where provincial economic growth will be enhanced by innovation; (2) Human Resource Development – this is viewed by the plan to be central to many other elements of the PGDS and is also viewed as a solution to many of the challenges, this goal will also be achieved through the development of skills including youth skills that is appropriate to service the economic growth and development needs of the province; (3) Human & Community Development, through this

goal, the province seeks to reduce poverty and inequality; (4) Strategic Infrastructure will provide for the social and economic growth and development needs of KZN, there is therefore a need to invest in operational infrastructure (roads, water, sanitation, etc.) and connectivity (Information Technology, mobility) infrastructure, this is to be monitored through a percentage of local municipalities with established access networks, minimum broadband speed available in the province.

The development of the airports is also viewed by the plan as a co-ordinated public transport system that provides affordable service to the user. Development of the King Shaka airport area and the Dube Trade port will culminate into an Aerotropolis which will eventually include commercial, residential, and production activities, thus the Dube Trade Port will expand the capacity of KZN to import and export goods. The concept of aerotropolis, airport region or airport city essentially recognises the role of airports as driver of economic growth and it is generally accepted that ICT's and broadband infrastructure will become a critical component of a modern infrastructure development of this nature; (5) Environmental Sustainability through the reduction of global greenhouse gas emissions and create social ecological capacity to adapt to climate change; (6) Governance and Policy required to drive the implementation of the PGDS, that is heavily dependent on there being effective and efficient governance system across all sectors but particularly in the government sector, similarly the PGDS views the practical interventions proposed for growth and social transformation to be dependent on the policy environment and policy alignment which facilitate change and better efficiencies.

The plan concedes that there is a need to have much greater levels of participation in the policy formulation, implementation and monitoring process from stakeholders outside government, thus more substantive and compulsory participation processes needs to be entrenched. More specifically, the partnerships with social partners of government, namely

organised business, organised labour, and the organised community sector needs to be given greater emphasis and structure. At local government level, the local government turn-around strategy needs to expanded to include stronger systematic partnerships with state owned enterprises, private sector and civil society, Thus the developmental approach of local government can only be strengthened by improving the institutional partnerships between municipalities and the social partners at local level. There is therefore a need to support partnership building at a local level. In addition this goal will also be supported through the building of government capacity, promoting participative, facilitative and accountable governance; (7) spatial equity by increasing special access to goods and services and to facilitate integrated land management and spatial planning.

The success of the plan rest to a large extend of having an institutional arrangement or framework which promotes an action oriented approach to the objectives of the PGDS, promotes the involvement of all social partners, sets clear parameters and lines of accountability, brings high level on integration in action planning for interventions across the objective areas, leverages existing capacity within the public sector, public sector and civil society in both planning and implementation and discourages duplication of effort in the public and private sectors and promote appropriate sharing of intellectual and capacity resources. The monitoring and evaluation framework provides a methodological, participative and synchronised approach on the implementation and impact of the proposed intervention of the PGDS.

The KZN PGDS reflects a much focused intention for good policy leadership and governance in so far as planning and coordination and institutional arrangement in the delivery of the PGDS. The document also indicate a clear understanding of the Economic value of broadband in the sense that ICT's and broadband are viewed as strategic infrastructure to support economic growth in the province.

4.12 WESTERN CAPE PROVINCIAL GROWTH AND DEVELOPMENT STRATEGY 2008

In terms of the Western Cape Growth and Development Strategy, also referred to as the iKapa Elihlumayo 2014: A Vision of 'A Home for All', The Ikapa GDS is underpinned by the following strategies culminating for line departments of the Western Cape Provincial Government; (1) Provincial Spatial Development Framework (PSDF); (2) Strategic Infrastructure Plan (SIP); (3) Sustainable Human Settlements Strategy (Isidima); (4) Micro-economic Development Strategy (MEDS); (5) Poverty Reduction Strategy (PRS); (6) Human Capital Development Strategy (HCDS); (7) Scarce Skills Strategy (SSS); (8) Social Capital Formation Strategy (SCFS); Burden of Disease and Health Care 2010 (BOD, HC2010); (9) Integrated Law Reform Project (ILRP); (10) Sustainable Development Implementation Plan (SDIP); (11) Climate Change Response Strategy (CCRS). These strategic interventions forms the basis of the Ikapa GDS however, focuses will be limited on the planning and development of ICT's and broadband infrastructure to support economic growth of the province.

4.12.1 Governance and Policy Leadership

The iKapa GDS is premised on the assumption that globalisation places regions such as the WC in a strategic position that hinges on the competitiveness and attractiveness of the major metropolitan core. The reason for this is that shared growth via knowledge-intensive industries and authentic anti-poverty strategies rooted in empowerment and capability enhancement, depend on the existence of well-connected networks of co-located practitioners, facilitators and organisers cooperating across institutional barriers despite their involvement in a vast range of distinct public, private and non-profit organisations. In terms of the infrastructure-led and knowledge-based economic growth, the Western Cape GDS

sought to align the national-government policy, public-sector investment in infrastructure which is seen as a key to the building of overall levels of investment in fixed assets, which is central to the achievement of the 6 per cent growth target.

4.12.2 Economic Value of Broadband

The document concedes that there is a need to invest in infrastructure – including both connectivity infrastructure such as mobility and ICT and broadband. At the same time, the Ikapa GDS identifies the Western Cape as an economic region with a dominant metropolitan centre lacking abundant extractable natural resources, and sees both low and hi-tech knowledge economy interventions economic opportunities. These included both call centres and ICT's. The Western Cape Provincial government has also developed the Broadband Strategy which was approved in 2011 in support of the provincial GDS. The vision of the Western Cape broadband strategy is that every citizen in every town and village has access to affordable high speed broadband infrastructure and services, has the necessary skills to be able to effectively utilise this infrastructure and is actively utilising this in their day to day lives. The Western Cape Broadband Strategy and implementation plan aims at co-ordinating and integrating government action to radically improve the provision of telecommunication infrastructure, skills and usage within the Province with the direct impact on Cost Efficiency, Increased Effectiveness & improved Government Service Delivery and enables Economic and Social Development. The strategy is set to have an economic impact and is expected to contribute about R22.9 billion to the GDP by 2030.

4.13 Conclusion

The prices of broadband services remain prohibitively high, despite multiple initiatives by government which sought to among many things, to reduce the cost of broadband access

while expanding access to broadband services. The increase in the number of undersea cables does not appear to have made any meaningful impact on broadband prices, at least for the average user while the establishment of Broadband Infraco which also sought to expand broadband access and affordability is yet to make meaningful impact on broadband prices payable by the average member of society. In terms of the national broadband policy, broadband penetration as well as ECN connectivity to municipalities will be used as a measure to determine the success of the policy, however Government's intervention in terms of expanding networks into marginalised area is yet to be implemented and operationalized. Delays in the allocation of the much needed spectrum is also not helping as the provincial and local government's broadband network expansion projects appears to be patchy and in some cases stagnating. Although there has been evidence of pockets of e-Government in the country, broadband uptake and usage targets such as content creation and digital literacy, remains a pipe dream. It is not clear whether the broadband inter-governmental committee has been established suggesting that the implementation of the broadband policy which was approved in 2010 is yet to begin. The indications from international benchmarking indices present a bleak future for South Africa under the current broadband policy as rankings began to drop, even lower that some of the African countries with relatively lower GDP than South Africa signalling the potential ineffectiveness of the policy or the lack of its implementation, or even the consequence of its absence over almost a decade.

CHAPTER 5: ANALYSIS OF RESEARCH FINDINGS ON BROADBAND POLICY AND REGULATION EVOLUTION

5.1 INTRODUCTION

This chapter deals with the general analysis of research data presented in the previous chapter on the evolution of broadband policy and regulation in South Africa over the past decade. The research data is analyzed in a chronological order and in themes which emerged from the content of both policies and strategies presented in the previous chapter and are compared and contrasted with the primary data obtained from interviews within the context of the theoretical framework presented in chapter two in order to respond to the research questions outlined in chapter three. The study comprised mainly of the in-depth analysis of the policy, strategy and the regulatory documents that are related to the development and evolution of broadband in the three spheres of government.

In order to address broadband access and usage challenges in many parts of South Africa, effective coordination of broadband policy amongst national, provincial, local government and the private sector is required. In addition, ensuring proactive regulatory capacity in so far as getting access and pricing of broadband services at reasonable levels is also required so as to foster broadband penetration and move the country towards the top of the world rankings on broadband. To achieving this goal requires an understanding of the challenges related to policy and regulatory aspects of broadband, which could possibly be explained through the relationship between broadband policy governance and leadership, proactive regulation, the understanding of the economic value of broadband services including the impact of active citizenry in influencing broadband policy and regulatory landscape with the intention to highlight future-oriented policy and proactive regulation for broadband.

5.2 Evolution of Broadband Policy and Regulation (2001 to 2005)

According to (ISAD,2007), the then President, Mbeki established the Presidential International Advisory Council on ISAD and the Presidential National Commission on ISAD and in 2005 the President addressed the World Summit on the Information Society (WSIS) in Tunis. In the declarations of principles of the World Summit on Information Society, the head of states and Governments envisaged the formation of "*people centred, inclusive, and development oriented information society where everyone can create, access, utilize and share information and knowledge enabling individuals, communities, and people to achieve their full potential in promoting their sustainable development and improving the quality of their lives"*

Following these declarations, South Africa later adopted its information society vision "*To establish South Africa as an Advanced Information Society in which information and Information and Communication Technology tools are key drivers of economic and social development"*

The Presidential International Advisory Council (PIAC) recommended that government develop a national plan to rally the whole country is support of the Information Society vision.

Ekurhuleni Metro

The Ekurhuleni has incorporate municipal broadband initiatives and plans with the broader municipal's growth and development strategies. This is a clear demonstration of good governance and policy leadership on the part of the metro. The Ekurhuleni Metro's GDS emphasizes collaborations with other metros and government entities in their build-up of the

broadband infrastructure to support the Smart province concepts. The intention to collaborate with other stakeholders in the build-up of broadband networks reflect good governance and leadership that seeks to reduce duplication of effort and resources in implementing their broadband polices and strategies. The broadband infrastructure as an integral part of the envisioned Ekurhuleni's Aerotropolis is also expected to promote economic growth in the region. The primary data confirms that ICT and broadband will form a greater part of the Aerotropolis which is regarded as the gateway to international markets.

The current broadband infrastructure is 100% built and plans are underway to sell access capacity because there is a view that South Africa still have big role to play to ensure sufficiently competitive broadband market. There is a view that ICASA needs to address the problem of market failure. In support of the view that broadband has the potential for economic growth, the Ekurhuleni Metro is projecting to commit R5 billion in the next five years in anticipation R200 billion returns some ten years later, through the leasing of spectrum to private players, and operating a data hosting services.

There is however some concerns rose about poor leadership in the policy development arena due to poor broadband performance in the country.

The primary data also indicate that vies the affordability of broadband as the subject of the completion commission rather than the regulator.

The data also indicates that Ekurhuleni does believe in the concept of Active Citizenry and has established a community broadband project named "Siyafunda" which allocates free computers to schools around the Metro, and offer experiential training on ICT to community members as one of its community engagement processes.

5.3 Evolution of Broadband (2006 to 2009)

Cabinet approved the National Information Society and Development (ISAD) Plan as a framework for building an inclusive information society in South Africa.

ISAD

Governance and Policy Leadership:

As the initial attempt to building an information society in the country, the ISAD plan recognizes the importance of governance and policy leadership by advocating well-designed institutional mechanism that is aligned to the normal structure of government and further seeks to adopt greater coordination and strategic synchronization across government. This will ensure that policies, programmes and initiatives are sequenced and driven in concert towards a shared overarching vision through a series of institutional arrangements that enables planning, alignment and coordination across all levels of government. The plan also targets the development of the National Broadband Policy and strategy.

The implementation mechanism and related institutional arrangement suggest that government saw itself as the implementer of the ISAD Plan with little or no responsibilities paced on the private sector as evidence by pillar nine of the plan which outlines the institutional arrangements and points out that lack of coordination between different government initiatives results in wastage of resources, to that end, the Plan seem to have a very clearly articulated roles and responsibilities indicating good governance on one side and not so good leadership because the plan suggests little or no role or responsibilities for other stakeholders including the private sector as the aim of the plan sought to centralize locus of responsibility for the overall coordination of the implementation of the ISAD initiatives;

However, given the current progress in different spheres of government, it is not clear as to whether the aim of the plan in so far as co-ordination, synchronisation of initiatives has been achieved as evidenced by different initiatives which appears to indicate duplication of efforts between national, provincial as well as local government. Thus, it appears as though the ISAD Plan had a clear intention in terms of governance and not so much about leadership in that co-ordination and institutional arrangement across government and its agencies is clearly articulated without other stakeholders such as the private sector which is necessary for the implementation of the networks as government alone may not be able to meet this requirement due to very high investment cost associated with the implementation of the telecommunications networks. The ten pillars represent roles and responsibilities by each stakeholder government department who is expected to deliver on their pillar outcomes, however the implementation of such governance structures remains a challenge as co-ordinating committees and workgroups are yet to be established to co-ordinate the work of each stakeholder department, instead, it appears as though the affected institutions had since moved on and are now implementing their own programs with little or no reference to the ISAD Plan, for example, pillar two's strategic objective was to provide ubiquitous access to ICT infrastructure and services at affordable prices thus enabling meaningful participation in the economy and society, and these objectives are yet to be achieved, as infrastructure and broadband penetration remains low, with accompanying high prices for telecommunications in the South Africa resulting in the country's decline on most of the world's telecommunications indexes.

Economic Value of Broadband:

The understanding of the economic value of broadband can be expressed through the aims of the ISAD plan that seeks to transition the country from the historical economy characterized by agriculture, manufacturing and mining to information and knowledge based

economy where the services sector will assume a prominent role in the creation of employment opportunities.

Proactive Regulation:

The plan can also be viewed to be targeting the strengthening of the capacity of the regulator of policy and regulation is to play a pivotal role in catalyzing the success on the information society. This will be achieved through setting objectives which ensures a predictable, investor friendly, progressive and enabling policy and regulatory environment.

Active Citizenry:

The role of active citizenry is limited to what the plan aims to address by ensuring digital inclusion and awareness to promote equality of opportunity citizens and ensure that majority of the population is not excluded from the mainstream knowledge economy.

The ISAD Plan's objectives fell short of identifying the role active citizenry or active participation by members of society in policy development and only focus on digital inclusion and awareness which sought to put special focus on people with special needs identified in the plan as groups including children, young people, women, people with disabilities and the elderly. The plan lacks details about the role of stakeholders including the ICT industry which has a critical role in developing South Africa as an Information society in term developing the networks infrastructure and related technologies.

City of Tshwane Growth and Development Strategy

Governance and Policy Leadership

Broadband is an enabler technology and therefore without the rollout of the broadband it could be impossible for the city to realize the benefits of becoming a smart city, and will also render the strategic interventions of rolling out broadband in the north and the implementation of full e-government futile. This shortcoming will not only affect the city in terms of the lack of broadband infrastructure but will also affect the economic development agenda of the city because evidence from literature has proven that broadband has a potential for economic growth in both developed and developing countries. To this end, the Gauteng Employment and Growth Development plan (2011-2014), places reliance on the G-link network which seeks to consolidate the existing municipal broadband networks to consolidate and combine effort by all the local and provincial entities to deliver a seamless broadband network infrastructure that would offer unlimited access to all provincial residents, It would therefore appear as though the inability of the City of Tshwane to rollout the requisite broadband infrastructure in terms of its strategic vision could consequently make the G-link initiative or part of it unsuccessful.

It must be noted further, that the success of the National broadband policy as well as the ISAD Plan relies partly on the successes of the provincial and local government initiatives to promote the rollout and implementation of broadband infrastructure for economic and social development.

In the GDS's of both Metros, there is an outright intention to use broadband as key driver of economic growth within their respective localities. This view confirms that at the local government level, economic value of broadband is well understood.

City of Tshwane proposes a smart city concept which is underpinned by the principles of Innovation, embracing of smart technology, connectivity and access to knowledge in support of the economic growth agenda. City of Tshwane's document on the other hand does not mention how they intend to collaborate in their rollout of broadband.

Western Cape Provincial GDS

The Western Cape Province developed its provincial GDS which envision "A home for all" and has also developed the broadband strategy to support the provincial GDS.

The Western Cape's understanding of the economic value of broadband is demonstrated through its GDS which seeks to align the national government policy with public sector investment in infrastructure which is key to the achievement of infrastructure-led and knowledge-based economic growth.

City of Johannesburg Broadband Policy

At the local government level of the broadband policy environment, attempts has been made by the City of Johannesburg to develop broadband policies The City of Johannesburg's policy emphasizes collaborations with other metros and government entities in their build-up of the broadband infrastructure to support the Digital City concepts.

It appears as though some of the objectives of the policy could be well suited to be regulatory objectives, opposed to policy objectives, such as ensuring lower interconnections, participation of the SME and BBEEE, for example. Furthermore, none of the ten objectives of the city creates a link or relationship with initiatives of both the provincial and national government creating a potential absence in alignment of the city's policy and those of the national and provincial governments.

It is therefore unclear how this partnership will work when the motives of each partner are glaringly different and sometimes in conflict with each other, reducing cost of broadband access is not in the interest of the private sector for example. This is evidence by the high cost of communication in the country.

Another objective of the City's broadband policy is to collaborate with the SME's to operate the broadband network on behalf of the city and it is not clear how this collaboration will reduce the cost of access to broadband as the city will require to recover its cost of infrastructure rollout first, while the SME will also incur and recover the cost of operating and maintaining the network from the sale of the service, and also make reasonable profits. The ultimate cost to end users might be higher or similar to current costs. Therefore, the city might need to collaborate with both the National government and the Independent regulator to achieve its objective of reducing the broadband access costs and therefore achieving universal access to broadband.

The policy also indicates that the design of the provincial broadband is still in the early stages and the relationship to already existing municipal infrastructure across the three metropolitan municipalities is not yet clear, suggesting that although the institutions are aware of each other's developments, it appears as though planning happens in a dispersed manner with little or no consultation between the national government, provincial government and the local government contrary to the aims of the national ISAD Plan.

In City's broadband policy there is an outright intention to use broadband as key driver of economic growth, indicating a view which confirms that at the local government level, economic value of broadband is well understood. For example, one of the City of Johannesburg's policy objectives is the promotion of the knowledge economy as well as to encourage participation of the SMME's as operators of the network.

5.4 Evolution of Broadband (2010 to 2012)

Broadband Policy

Governance and Policy Leadership:

In alignment to the aims of the ISAD plan, the National Broadband Policy intends to establish a new coordinating approach in the attainment of broadband target by establishing the broadband intergovernmental committee that incorporates all spheres of government. Thus the articulation and clarification of roles by the broadband policy demonstrate sound governance and policy leadership on the part of the Ministry of Communications.

Although the policy acknowledges (section 1.1.6) the current weak coordination mechanism with respect to broadband deployments in the country, indicating that it is fragmented and uncoordinated, for example, budget are allocated for ICT at National Departments, however such budget are not spent appropriately and that provincial and local government are not duty bound to coordinate ICT programs. However one would have expected to see improvement following the Governance and institutional mechanisms outlined in the overarching national information society plan (ISAD) where all sphere of government had set roles and responsibilities in terms of implementing ICT's and ensuring the information society goal of South Africa is met as the broadband policy also seeks to ensure attainment of an information society by the country.

The National Broadband Policy intends to establish new coordinating approach in the attainment of the broadband targets that would amount to duplication of what the ISAD Plan had already outlines in terms of the implementation structures such as FOSAD and the ministerial committee on ISAD. Furthermore, unlike to ISAD Plan, the broadband policy

(section 1.1.9) is silent on how it will ensure coordination of effort of broadband and ICT initiatives across three spheres of government.

Implementation of the broadband policy (section 5.2) refers to the establishment of the broadband inter-governmental committee that incorporates all spheres of government, however no reference is made as to how this committee will link with the ISAD implementation committee, considering the broadband policy itself also sought to support the goals of building the information society as outlined in the introduction section of the broadband policy. It is therefore unclear whether the implementation committee would duplicate efforts which are inherent within the ISAD Plan because the ISAD Plan is viewed by government as the united front that would co-ordinate and synchronise all ICT initiatives across government in support of the information society agenda.

Empirical research has shown that policy alone is unlikely to ensure universal access to broadband as demonstrated by best practice in both developed and developing countries who have shown a successful broadband sector in their respective countries because they have formulated a national broadband plan which outlines both coverage and service targets over and above the national broadband policy with the purpose of achieving near or complete universal broadband service.

Economic Value of Broadband:

In demonstrating the understanding of the economic value of broadband, the broadband policy sees the achievement of knowledge-based economy through the exposure and use of ICT's and broadband by households and businesses. Therefore broadband have indirect impact on economic growth through improved ease of communication and the distribution of products and services to a wider market.

It appears as though no clear set targets or action plans are articulated on how this important aspect of economic development will be achieved. Even though the ISAD Plan's view of contributions to economic growth will be through the development of the SMME's use of ICT's rather than an inclusive use of ICT's by society including SMME's at affordable rates because the SMME's requires affordable ICT's to sustain their business operation while remaining profitable. To that end, the plan had set target which included among others, to review the regulatory framework of SMME's, ensure affordability and easy access to ICT infrastructure and applications by 2009. However, the achievement of these targets and many others are yet to be reported on by the responsible agents and authorities.

Proactive Regulation:

In promoting proactive regulation, the broadband policy seeks to create an enabling environment through the expansions of broadband networks in the marginalized areas to achieve universal access. The policy also seeks to create a basis for infrastructure based competition, service based competition and infrastructure sharing in an attempt to increase affordability of broadband access and use.

The policy seeks to increase affordability (section 2.2) through the expansion of networks in the marginalised areas, suggesting that the policy fails to recognise an important development that mobile broadband has leapfrogged fixed broadband in South Africa with mobile penetration rates rising to about 98 per cent. This is an indication that South Africans prefer and are already using mobile technology over other fixed technologies even though, the proportion of broadband enabled devices (smart phones, etc.) vs. standard mobile devises in unknown which would require policy and proactive regulatory capacity that would work on significantly lowering the cost of broadband services and broadband enabled devices to ensure universal access to broadband, at least in the short to medium term.

Increase in competition through the increase of international traffic capacity from a number of undersea cables implemented in the last decade should translate in to the reduction of broadband and internet traffic costs and thus policy and regulation must uncover this potential cost savings in the long term.

Policy and proactive regulation can be used and allocation of spectrum may be used as an incentive for wider broadband coverage including underserved areas.

The policy suggest that government sees itself as the only agent responsible for promoting uptake and usage of broadband (section 4.3) in the sector by placing the agenda of awareness, content development, digital literacy in the hands of government institutions, instead of viewing this as a responsibility for all the stakeholders in the sector and therefore encourage collaboration between the state and the private sector where the state would be facilitating these programmes through co-operatives funded by the universal service fund, while the private sector assist with the development of skills and capacity to develop content and awareness that would intern create a “win-win” situation for both the state which will achieve its broadband usage objective and the private sector which likely to increase its revenue from the pent-up awareness and ultimate increased in usage of broadband services. This type of collaboration is likely to improve the ever-battered trust relationship between the state and the private sector in South Africa

It is when the role of the private sector (section 5.1.5) is outlined in the manner that suggest an instruction by government rather than consensual policy statements which the is likely to be received with suspicion by the private sector and therefore lack of interest shown by the private sector.

Role of Active Citizenry:

However, the National Broadband Policy does not make reference to the role of active citizenry in fostering broadband for socio-economic benefits while recognizing that broadband have the potential to offer social benefits such as improved quality of education and health.

Broadband Regulations: ICASA

ICASA has published four regulations which are viewed to be in support and would enable the rollout of broadband infrastructure while ensuring affordability of broadband services through the introduction of the E-rate regulation, Facilities leasing regulations, spectrum allocations regulations as well as the universal service obligation and access regulations.

The e-rate is a regulatory initiative which if properly defined would have gone a long way to meeting the objectives to increase the deployment of broadband infrastructure in schools and increasing the use of broadband enabled services such as online learning, and other collaborative learning services, the challenge however with this regulation, it is open to different interpretations of the actual discount since the base charge or the (true cost charged for internet service) can be anything, in other words, the base charge is open for abuse, where a potential service provider could go to the extent of doubling the “true cost” of internet service and then applying the e-rate only to arrive back at the “true cost” of that internet service for example. Therefore an unsuspecting school could effectively end up paying an undiscounted rate for internet services. The e-rate regulation needed to go further and request the internet service providers to disclose the cost items making up a price for an internet services on a regular basis to inform the schools as well as for the regulator to monitor to avoid any potential abuse of the system.

The South African universal service and access regulation was one of the regulation which could not live up to its promise as most of the target remains unmet and it had produced little or no impact in addressing the digital divide or market access gap. This is evidenced by the number of underserved area in the country and the corresponding low internet access rates for South Africa. To that end, ICASA had issued a discussion paper for the review of the universal service and access framework in 2010. The discussion paper acknowledges that the framework needs to support national imperatives, government policies and strategic direction.

Gauteng ICT Development Strategy

Governance and Policy Leadership:

However, the plan fails to indicate how users, particularly households and SMME are going to be connected, considering that they are currently been serviced by the private sectors. It is unclear whether the plan will introduce a situation where these users would end up with different network technologies to access the both the networks from the private sector and G-link respectively, or whether there would be some common technology available to bridge the two networks in terms of usage, thereby saving the SMME's and households cost of acquiring additional technology to take advantage of the G-Link network infrastructure.

The 95 % connectivity target is not "smart" in that it would be difficult to quantify and measure, and may not be achievable given the limited time frame against progress made by the stakeholders to date.

Governance and policy leadership is demonstrated at the provincial level through what Gauteng developed as the ICT Development Strategy that seeks to improve productivity and build broadband connectivity in the province. Collaboration with other players is also viewed as good indicators for good governance and policy leadership and to that effect, Gauteng

seeks to build its G-link broadband network in collaboration with municipalities in the province. The Gauteng ICT strategy also hopes to establish the provincial government technology council working under the department of Economic Development and Finance to assist with the planning, coordinating and monitoring and evaluation functions.

In the demonstration of how well the economic value of broadband is understood, the Gauteng ICT Development strategy envision the fully fledged knowledge economy in the Gauteng where in the strategy is expected to ensure 95 per cent of broadband coverage in the province. In support of the regulation to reduce costs, the Gauteng broadband infrastructure will interconnect to existing and new undersea cable infrastructure with the aim of reducing costs through the use of the world cup legacy network infrastructure that links Gauteng and KZN. Gauteng also aims to partner with license players to stimulating economic growth while lowering the cost of doing business.

Although the G-link includes the development of new networks, that plan is however silent on the how it will address other parts of the province which have municipalities without broadband infrastructure such as the West Rand region in the west of Gauteng, Sedibeng at the south of Gauteng as well as Kungwini in the eastern part of the province. Even if these new networks were to be completed by 2014, it is unlikely that the objectives of digital inclusion, social inclusion, knowledge creation would be met by 2014 as these objectives by themselves would require a great deal of awareness and digital literacy programs before they could translate in the level of knowledge creation as envisaged by the Gauteng Employment and Growth Development plan.

NDP

Even though the National Development Plan does not cover broadband in detail, it does raise concerns about high cost of broadband and internet connectivity as inhibitors of society to use knowledge effectively in support of the Information society agenda.

There is a real risk that South Africa's national plan could fail because the state is incapable of implementation. The NPC further attest that, a capable state does not materialise by decree, nor it be legislated or created from conference resolutions. It has to be painstakingly built, brick by brick, institution by institution, and sustained and rejuvenated over time. It requires leadership, sound policies, skilled managers and workers, clear lines of accountability, appropriate systems and consistence and fair application of rules. There are often blurred and inconsistent lines of overlap, similarly, these patterns of inconsistencies has been in the broadband policy and regulatory landscape where one side Government has developed the National Information Society Plan, which was hailed as the plan that would synchronise, and co-ordinate policy and planning that supports the development of South Africa as an information society where through the ISAD-FOSAD and ministerial committees co-ordinating structures all spheres of government will work together to present a united front in the development of an information society initiatives. While on the other side, provincial government and local government appears to have developed their broadband implementation plans where some of these plans objectives is to support the development of an information society however it is not clear in these plans how the coordination will occur and how it would align with the comprehensive governance and institutional arrangements established through the ISAD Plan. The Gauteng's growth and development plan for example seeks to establish its own governance and coordinating structures without indicating the relationship with the provincial ISAD committee which is a sub-committee of the ISAD-FOSAD at National level. There would be risks of failure to implement the plans as

pointed out by the NPC if the governance and coordinating structures and institutional arrangement are not adequately defined and aligned.

It is remarkable to note that the document, in its ICT landscape chapter, outlines the ICT policy and Regulatory environment in South Africa which is characterized by a decade of broadband policy dormancy since the early 2000's, therefore the intention of the discussion document to usher in a new wave of integrated ICT policy is welcomed following an extended period without the requisite policies to guide the development of the ICT sector for social and economic development in the country.

Even though the MoC believes that the ICT policy and regulatory reform in South Africa coupled with an increase in competition and at times, regulatory interventions has resulted in prices of some services dropping, which could have led to higher take up o services, this is not necessarily the case at least in terms of the average user experience and the continued decline of the country's status in terms of the world's benchmarking ranking on access and affordability of broadband services, also the move towards allocating spectrum to the smaller players will not necessarily result in reduction in the prices of broadband access and services as the cost structures to offer the same services are likely to be same, and furthermore, the problems of market failure prevalent with the big players is likely to apply on the smaller players, therefore Government needs to ensure that appropriate mechanisms are put in place over and above the allocations of spectrum, such as tax incentives to small players to ensure their sustainability and avoid repeating the failures experienced by the universal service and access licensees (USAL's). Similarly, it appears as though the impact of the increase in the number of broadband capacity providers, supposedly enabled by regulation, are yet to translate in to wider access and affordable broadband services.

The discussion document acknowledges the potential duplication of resources in terms of the roles of State owned companies (SOC's) and agencies with respect to the

implementation of national broadband system and therefore calls for realignment within the new integrated broadband policy development, this initiative if adequately addressed may well resolve the “increase in competition without significant impact to affordability” dilemma of broadband services.

The discussion document is positioning broadband to be the next area of investment, requiring public private partnering, inter-governmental partnering and addressing consolidation of government mandates and assets. An effectively built and operated national broadband network will serve as the central nervous system in the country connecting schools, hospitals and various economic corridors in the country. This appears to be a promising vision after a long period of stagnation in the broadband policy environment. However, for the ICT sector to effectively contribute to economic growth which creates jobs, policymakers needs to consider adopting the next generation approaches in the broadband policy discourse by recognising that ICT’s interacts will all sectors of the economy and as such, policy and regulation needs to be considered in a broader context and not just across government department with broadband mandates if it is to support the broadband ecosystem. Integration with national plans and issues of national importance such as the environment, healthcare, education, banking, etc. to form part of the ecosystem is of critical importance. Convergence in the ICT sector has influence on other sectors of the economy, thus policymakers and regulators are better placed to ensure that benefits of ICT’s and broadband are felt throughout the economy over and above the traditional target of increasing access and lowering prices of broadband services.

Therefore, if this policy initiative is to enable economic growth, support the national developmental objectives and ensure inclusive participation in the digital economy, then policymakers should focus the discussions on the reasons for non-adoption of broadband,

because understanding these reasons is likely to assist policymakers and regulators to develop responsive national broadband policies and plans of the future.

KZN Provincial GDS

Governance and Policy Leadership:

KZN province has developed the Provincial Growth and Development Strategies to drive growth & development in the province connected broadband networks, respectively. As with the KZN PGDS, which concede that much greater need for participation in the policy formulation, implementation and monitoring is required, and that the success of the plan rest in having an institutional arrangement which promotes the involvement of all social partners and sets clear parameters and lines of accountability and brings higher level of integration.

In understanding of the economic value of broadband, KZN's PGDS aims to implement what it refers as the strategic infrastructure of broadband connectivity which will be monitored through municipalities with established broadband networks, while on the other side the PGDS sees the Dube Trade port to culminate into an Aerotropolis with embedded broadband infrastructure to drive economic growth.

ICT Colloquium Discussion Paper

While the broadband colloquium discussion document advocates a comprehensive review of government's ICT policies to culminate into an integrated National ICT policy for South Africa thus positioning broadband to be the next era of investment requiring public private partnering, inter-governmental partnering and addressing consolidation of governments mandates and assets.

Conclusion

There is a need to refocus the Broadband Policy from traditional access and cost issues but rather to focus on wider context, since ICT's interacts with all sectors of the economy and social development agenda where the traditional targets can be invariably achieved while pursuing these broader issues, for example the tax and regulatory incentive schemes to promote wider access while lowering prices.

In line with the resolution of the colloquium discussion paper, which aims to achieve integration and collaboration in the implementation of Broadband infrastructure and services, Thus the strength of Broadband policy for South Africa rest on clear parameters and lines of responsibilities to ensure higher level of integration as far as broadband rollout is concerned. This might even require in the case of South Africa, coordination at the highest level of accountability such as the Department of Monitoring and Evaluation located in the Presidency to ensure effective implementation of broadband access and services over and above the monitoring and evaluation of implementation of the broadband value chain.

CHAPTER 6: CONCLUSION - THE EVOLUTION OF BROADBAND IN SOUTH AFRICA

6.1 INTRODUCTION

This study was undertaken with the objective to assess the evolution of broadband policy and regulation in order to understand causes and reasons for the slow penetration of broadband services, unaffordable broadband access and usage unaffordable and an emerging trend of the country's decline on international broadband rankings. The understanding of these phenomena would assist the researcher to better answer the research questions presented in this study. As already outlined in chapter one, access to and usage of broadband infrastructure, broadband-enabled technologies and the associated e-services is seen to offer potential for economic growth and social development. Broadband development can bring substantial benefit to the productivity, education, e-inclusion and economic development in general, therefore innovative productive practices in business, government, education, health care and daily life are now critically dependent on the ability to communicate information quickly and independently, meaning that the prerequisite for broadband development is an increase in broadband access and use. The world bank also support this view that broadband has an important economic value for both Government and its citizens, where they found that for every 10 percentage-point increase in penetration of broadband services, developing countries may experience an increase in economic growth of 1.34 percentage points. Therefore for an economy like South Africa, which has experienced relatively slow broadband growth over the past decade, attention needs to be placed on identifying factors and reason for supporting the expansion of broadband access and usage.

The focus of data gathering in this study was mainly a desktop study that analyzed current policy documents and strategic plans addressing the development of ICT's in the three spheres of government with particular reference to broadband infrastructure and services. Following the policy analysis framework, these documents are analyzed to identify key areas of strengths and weaknesses which are later presented in a chronological order and research findings of the study.

6.2 GOVERNANCE AND POLICY LEADERSHIP

The development of broadband policies and the growth and development strategies to address the development of broadband infrastructure over the decade generally presents good signs of governance and policy leadership on the part of government in South Africa. This indicates the intentions of the South African Government to take advantage of the benefits of broadband access and use as envisaged by the ISAD Plan and the principles of the World Summit on Information Society.

The is also evidence from the contents the policies and plans analysed of the intention to establish institutional arrangement and co-ordination in the development of broadband policies and plans as well as the implementation of these plans thereby enhancing the principles of good governance and leadership within the relevant sphere of government.

At appears though that as far a planning is concerned there are good indications of strong governance and policy leadership at least in the majority of policies and plans analysed, except for some few instances where for example in the case of both City of Tshwane and the Ekurhuleni Metro's growth and development strategies does not feature the planning and development of broadband infrastructure and services prominently, however feedback from

interviews suggest that although broadband does feature prominently in their growth and development strategies, it does remain an important element of these institutions economic growth agenda.

In so far as implementation of the policies and strategies for broadband, across all three spheres of government is disjointed and incoherent in terms of the National Broadband policy, suggesting challenges of co-ordination and institutional arrangements. This is a clear indication of weakness in policy leadership and governance, It can also be said that to illuminate this weakness of governance and policy leadership, will that the ISAD Plan, the National Broadband Policy and the City of Johannesburg's broadband policy all advocate for their own institutional arrangements in their own localities for the planning, implementation of broadband as well the monitoring and evaluation thereof while evidence from literature about countries leading in broadband have adopted integrated approaches to institutional arrangements and policy co-ordination for their successful implementation of their broadband infrastructures.

The introduction of the National broadband policy in 2010 came after almost of decade of high broadband prices due to lack of completion in the sector could also be viewed to demonstrate lack of governance and policy leadership required to create an enabling environment for proactive regulation that would increase completion and ensure affordability of broadband access and services to achieve universal access to broadband.

6.3 ECONOMIC VALUE OF BROADBAND

There is overwhelming evidence in all national plans, broadband policy and the GDS's about the economic growth potential of broadband access and services. Emphasis of the economic growth due to ICT's can be traced as early back as the conceptualization of the vision of the

ISAD plan, during the period 2002 to 2005. Since then all planning document and policies view broadband to have the potential for socio-economic growth. It is this kind of expression in the planning process that indicates a clear understanding by government and other players of the economic value of broadband access and services.

6.4 PROACTIVE REGULAITON

The Independent Communications Authority of South Africa has published a number of regulations after the introduction of the broadband policy and in some instances some regulations were passed even before the national broadband policy was introduced such as the e-rate regulation, however broadband remain unaffordable to the average citizens and in other cases inaccessible suggesting ineffective regulation for broadband in the sector.

Delays in passing regulation for the local loop unbundling and the allocation of the much needed spectrum may be viewed as contributing to this undesirable situation which has led the country to decline in the international broadband rankings. Evidence from primary data point out that government need to finalise the broadband policy strategy, and the migration of analogue to digital terrestrial television in order for the regulator to finalise the allocations of spectrum ant take advantage of the digital dividend culminating from the migration process.

The regulator needs to consider other forms of proactive regulation used by countries leading in broadband such as implementation of the smart incentives to attract investment in the building of broadband infrastructure as well as the collaboration with other regulators in different sectors to promote the use of broadband for example.

6.5 ROLE OF ACTIVE CITIZENRY

To support and encourage the role of active citizenry, the state must actively support and incentivize citizen engagement and citizens should in turn, actively seek opportunities for advancement, learning, experience, work together with others in the community to advance development, resolve problems and raise the concerns of the voiceless and marginalized, Thus the National development plan defines active citizenry is being characterized by holding government, business and all leaders in society accountable for their actions. The National Development Plan further states that active citizenry and social activism is necessary for democracy and development to flourish and that the state cannot merely act on behalf of the people – it has to act with the people, working together with other institutions to provide opportunities for the advancement of all communities.

Throughout the planning and policy documents analysed, the concept of active citizenry in not covered and instead some of the GDS's attempted to get closer to implying consultation with citizens and in some cases collaboration with members of the communities will be instituted and detailed the City of Johannesburg' broadband policy. However, primary data appears to agree with the concept and believe that the role of active citizens is likely to change thing for the better within the broadband policy and regulation for socio-economic benefit for the citizens of South Africa.

6.6 CONCLUSION

This research report explores the evolution of broadband policy and regulation over the past decade. The themes from the conceptual framework of governance and policy leadership are used, either collectively or individually, as guidelines of what an integrated, efficient

broadband policy should be and what governance and policy leadership is necessary for driving policy initiatives across all spheres of government. The study proposed a conceptual framework that informs the analysis in comparing and contrasting the national broadband policy and plans, as well as provincial and local government's policies and plans. The research analyzed the current state of the country's national broadband policy and plans across the three spheres of government against current broadband challenges in the country and attempt to answer key question of the research. The analysis considers the contextual differences between the cases studied and local data collected in the formal research phase, for the benefit of identifying the strengths and weaknesses of the South African broadband plans. It focuses on the incentive structure needed to extend the development of the broadband ecosystem, in terms infrastructure, services, applications and user involvement in the country.

The evolution of broadband policy and regulation in South Africa can be characterized firstly by the good intentions of policy development and planning with the reasonable policy content to effect changes anticipated by policymakers. The same can said about the content of the growth and development strategies that sought implement broadband for economic growth. The delays in the introduction of the National Broadband Policy has created the period of policy dormancy where no real changes happened as evidence for the high prices of broadband services and lack of access in the majority of the underserved areas. This has also resulted in the lack of proactive regulation during and after the period of policy dormancy where proactive regulation about local loop unbundling and the allocations of the much needed spectrum to address problems of market failure.

Although the data indicated an overwhelming understanding of the value of broadband, this however did not translate into favorable policy outcomes; instead the current state of affairs

at the value of demonstrated an absent role of policy governance and leadership during the decade 2001 to 2011.

Even though the role of active citizenry did not feature in all the planning and policy documents, primary data indicate and confirms the role of active citizenry as an important aspect of policy particularly in instances where there are evidence of weakness in governance and policy leadership.

Recommendations

Considering the economic and social value of broadband services, what would be required, is the effective governance and policy leadership that would make decisive decision and encourage active citizenry to ensure immediate development of the broadband policy and proactive regulations, the development of the Broadband strategic plan that outlines the roles and responsibilities of all key stakeholders and the establishment of a coordinating and the monitoring and evaluation institution outside the policy developing environment, such as the Department of Monitoring and Evaluation in the Presidency to ensure the requisite Political leadership and the governance.

REFERENCES

Abrahams, L. & Goldstuck, A. (2012) A decade of e-development in South Africa: Sufficient for a "services revolution"? National strategies to harness information technology, Innovation, Technology, and Knowledge Management, 107-152.

Analysis Mason (2010). Assessment of economic impact of wireless broadband in South Africa, A report for the GSMA, November 2010.

ANC. (2012). Building an inclusive society through information and communication technology, Communications policy discussion paper for the policy conference.

Babbie, L. & Mouton, J. (2001). The practice of social research, *Oxford university press*.

Beger, G., & Sinha, A. (2012) South African Mobile Generation, UNISEF.

Belloc, F., Nicita, A., & Rossi, M. (2009) Whither Broadband Policy: In Search of Selective Intervention, Paper for the department of economics, University of Siena.

Biggs, P. & Kelly, T. (2006) Broadband pricing Strategies, Info, 8(6), 3-14

Bjola, C. (2002). Moving the sign post: Good governance and development in the context of public access to information, Romanian Journal of European Affairs*, 2(2), 42-60.*

Broadband Commission (2012). The state of broadband 2012: achieving digital inclusion for all, A report by the Broadband Commission, September, 2012

Brown, I., Collins, T., Malika, B., Morrison, D., Muganda, N., and Speight, H. (2007). Global Diffusion of the Internet XI: Internet Diffusion and Its Determinants in South Africa: The First Decade of Democracy (1994 - 2004) and Beyond, *Communications of the Association for Information Systems, 19(9).*

Budde, P., Burgess, J., Ponder, J. & Lozanova, Y. (2011) Broadband: A platform for progress, report by the broadband commission for digital development.

Calandro, E., Gillwald, A. & Stork, C. (2012) Africa Prepaid Mobile Price Index 2012: South Africa, Research ICT Africa policy brief no. 1, March 2012.

Case, D. (1998). Enthusiasts, deregulators, guardians, and skeptics: Viewpoints on the national information infrastructure, *Library & Information Science Research, 20(04), 337-413.*

Castellano, J., & Miralles, F. (2006). Varieties of Capitalism within Telecommunications Policy: The Case of Broadband Diffusion in Denmark, Austria, Canada and Ireland, 34th Research Conference on Communication, Information, and Internet Policy, Arlington, Virginia, USA. September 29, 2006

Cava-Ferreruela, I., Alabau-Mun˜oz, A. (2006) Broadband policy assessment: A cross-national empirical analysis, *Telecommunications Policy 30, 445–463.*

Comninos, A., Esselaar, S., Gillwald, A., Moyo, M. & Naidoo, K. (2010). South African ICT Sector Performance Review, Towards Evidence-based ICT Policy and Regulation Volume Two , Policy Paper 6, Research ICT Africa.net.

CorruptionWatch (2012). Corruption snapshot: 6 - 13 September, accessed on 17 September 2012 from www.corruptionwatch.org.za

Creswell, J. (2002). Research design: Qualitative, quantitative and mixed methods approach (2nd ed.).Thousand Oaks, CA: SAGE Publications.

Department of Communications (2009), International peer benchmarking study on South Africa's ICT Sector. *www.doc.gov.za/index.php?option=com_content&task=view&id=364&Itemid=434*

Department of Communications (2012a), National Broadband Policy review: integrated Broadband Policy presentation. www.doc.gov.za/index.php?option=com_docman&task=doc_details&gid=173&Itemid=104

Departent of Communications (2012b). Address by the Honourable Minister of Communications, Ms Dina Pule, at the SACF, Breakfast Forum, "*Leadership Matters – leading the way to a Digital South Africa,"* The Inanda Club, Sandton, Johannesburg, 15 October 2012 , www.doc.gov.za

Distaso, W., Lupi, P., & Manenti, F. M. (2006). Platform competition and broadband uptake: Theory and empirical evidence from the European Union. *Information Economics and Policy, 18*(1), 87-106.

Dunn, W. (2004) Public Policy Analysis: An introduction, Pearson Prentice Hall.

Dwivedi, Y. Lal, B. Irani, Z., & Williams, M. (2007). A Logistic Regression Analysis to Examine Factors Affecting Broadband Adoption in the UK. *ECIS 2007 Proceedings.* Paper 184.

Dye, T. (2008). Understanding public policy, Upper Saddle River, N.J: Prentice Hall.

Esselaar, S. & Gillwald, A. (2007). South African Telecommunications Sector Performance Review. University of the Witwatersrand, Johannesburg.

Esselaar, S., Gillwald, A., Moyo, M. & Naidoo, K. (2010) South African ICT Sector Performance Review 2009/2010, Towards evidence based policy and regulation, 2,6, 1-46

Firth, L. & Mellor, D. (2005), Broadband: benefits and problems, *Telecommunications Policy*, 29(2–3), 223-236.

Fripp, C. (2012). Africa's Top Ten Countries With Fastest Internet Speeds, IT News Africa, www.itnewsafrica.com, accessed 28 November 2012.

Frodin, O. (2011) Generalised and particularistic thinking in policy analysis and practice: The case of governance reform in South Africa, *Development Policy review, 29 (S1), 179-198*

Gillwald, A. (2001). Regulatory implications for broadband workshop, ITU, Geneva, 2-4 May 2011

Gillwald, A. & Stork, C. (2011). ICT access and usage survey, ResearchICTAfrica.net

Goldstuck, A. (2005). Broadband trends in South Africa: Dreaming of 2010, www.theworks.biz

Goldstuck, A. (2010). Internet access in South Africa, MediaClubSouthAfrica.com, published January 2010 *http://www.mediaclubsouthafrica.com/index.php?option=com_content&view=article&id=1478*

:sa-internet-use-passes-5m-mark&catid=45:economy_news&Itemid=114, last accessed 31 August 2010

Goldstuck , A. (2012).Internet 2% of South African economy, *Internet Research*, *www.worldwideworks.com*

Greenhill, R. (2011). The global Information Technology Report, World Economic Forum, Geneva.

Gulati, G., Yates, D., Williams, C. (2012). Understanding the Impact of Political Structure, Governance and Public Policy on E-Government, System Science (HICSS), 2012 45th

Gulati, G., & Yaes, D. (2012). Different paths to universal access: The impact of policy and regulation on broadband diffusion in the developed and developing worlds, *Telecommunications Policy (36),749–761*

Grindle, M. (2004) Good Enough Governance: Poverty Reduction and Reform in Developing Countries, Journal of Policy, Administration, and Institutions, 17(4), 525-548.

Hawaii International Conference, Bentley Univ., Waltham, MA, USA , 4-7 Jan. 2012.

Götz, G.(2009).Competition, Regulation, and Broadband Access to the Internet, Joint Discussion Paper Series in Economics, Universities of Aachen, 24 of 009, Gießen, Göttingen, Kassel, Marburg, Siegen

Hall, M.(2009). Tourism policy and politics in Southern Africa. (In Saarinen, J., Becker, F.,

Hajer, M. (2003). Policy without polity: policy analysis and the institutional void, Policy Sciences, 36, 175-195

Hecita, I. (2010). Civil Society and ICTs: Creating Participatory Spaces for Democratizing ICT Policy and Governance in the Philippines, Florida State University.

Hernandez, J., Leza, D., Ballot-Lena, K. (2010) ICT Regulation in the digital economy, discussion paper for the 10th Global Symposium for regulators, Dakar, Senegal, 10-12 November 2010,

IPOC (2010). SA: Communication's Director 'released' from contract, www.ipocafrica.org

ITU (2003). International Telecommunication Union Internet reports 2003: Birth of Broadband, *www.itu.int/osg/spu/publications/birthofbroadband/faq.html*

I-Week (2005). Twice as much broadband next year, http://www.iweek.co.za/in-the-know/twice-as-much-broadband-next-year

ITU (2012), The impact of broadband on the economy, Telecommunication Development sector, broadband series.

ITU Global Directory (2012). International Telecommunication Union membership list, http://www.itu.int/online/mm/scripts/mm.list?_search=ITUstates&_languageid=1&_foto=y

Jakopin, N., Klein, A. (2011). Determinants of broadband internet access take-up: country level drivers, *info, Vol. 13(5), 29 - 47*

John, P. (2005). Analyzing Public Policy, Continuum, London

Katz, J., Rice, R. (2002). Social consequences of internet use: access, involvement, and interaction, Cambridge: MIT Press

Kaplan, T. (1986). The Narrative structure of policy analysis, Policy Analysis and Management, 5 (4), 761-778

Kim,Y., Kelly, T. & Raja, S. (2010). Broadband strategies and policies for developing world. *Global Information & Communications Technology (GICT)*, World Bank

Leedy, P., & Ormrod, J. (2005). Practical research planning and design (5th ed.). New Jersey: Pearson Merrill Prentice Hall.

Malefane, M. (2010). SA: Nyanda found guilty, Times Live Sunday, 25 July 2010, www.ipocafrica.org

Melody, WH. (1996). Towards a framework for designing information society policies. *Telecommunications Policy, 20*(4), 243-259.

Manwa, H. & Wilson, D. Sustainable tourism in Southern Africa: local communities and natural resources in transition. Ontario: Channel View Publishers. p. 42-60.)

Manoharan, A., Holzer, M. (2012). Active Citizen Participation in E-Government, *IGI Global publishers.*

Msimang, M. (2011). Broadband in Kenya: Built it and they will come, Washington, D.C.: infoDev, World Bank. www.infodev.org/publication

Mutula, S. & Mostert, J. (2010). Challenges and opportunities of e-government in South Africa, *The Electronic Library, 28(1), 38-53*

Mzekandaba, S., Van Zyl, G. (2012). Africa Scores poorly in broadband access, ITWEB, www.itwebafrica.com/internet/334-africa/230029-africa-scores-poorly-regarding-broadband-access

National Planning Commission (2012), National development Plan: Vision 20130, www.info.gov.za/view/DynamicAction?pageid=623&myID=348761

Ngcaba, A. (2012) Building a digital life for all South Africans, Department of Communication policy colloquium, 19-20 April 2012, Gallagher Estates, Johannesburg.

Nyanda, S. (2010) South African broadband policy, Department of Communication

OECD (2008). Broadband growth and policies in OECD Countries. *OECD Ministerial Meeting on the future of the internet economy, 17-18 June 2008, Seoul, Korea.*

OECD (2008). Broadband growth and the economy. *Ministerial Background Report - Meeting on the future of the internet economy, 17-18 June 2008, Seoul, Korea.*

Ovum (2012). Broadband pricing in emerging markets in 2012, Ovum publishers.

Patton, C., & Sawicki, D. (1993) Basic Methods of Policy Analysis and Planning, Prentice Hall, Second edition, New Jersey

Papacharissi, Z. &. Zaks, A. (2006). Is broadband the future: An analysis of broadband technology potential and diffusion, *Telecommunications Policy 30, 64–75*

Pelkonen, A. (2008). Reconsidering the Finnish model – Information Society Policy And Modes Of Governance, Trames, 12(62/57), 4, 400–420.

Polykalas, S. & Vlachos, K. (2006). Broadband Penetration and broadband competition: evidence and analysis in the EU market. *Info,* Emerald*, 8*(6), 15-30.

Qiang, C. (2010). Broadband infrastructure investment in stimulus packages: relevance for developing countries, Emerald-Info, 12(2), 41-56

Snow, M. (1988). Telecommunications literature: A critical review of the economic technological and public policy issues, *Telecommunications Policy (20), 153-183.*

Song, S. (2011). Undersea cable map 2011, accessed January 2013 from http://manyposibilities.net/africa-undersea-cables

Speer, J. (2012). Participatory governance reform: A good strategy for increasing government responsiveness and improving public service? *World Development, 40(12), 2379-2398.*

Srivastava , L. (2003). Boosting broadband in Iceland. *Telecommunications Policy, 5*(3), 8-6.

Staff Writer (2013). Broadband Challenges in South Arica, mybroadband.co.za, last access January 2013

Tau, S. (2012). Active citizenship, less crime, The Citizen – Wednesday 11 July, 2012, stevent@citizen.co.za

Trkman, P., Blazic,B., Turk, T. (2008). Factors of broadband development and a design of a strategic policy framework. *Telecommunications Policy, 32, 101-105.*

Tullett, J. (2012). Minister Pule's call to arms, *Brainstorm magazine*, June 2012

Walker, W. (2000). Policy Analysis: A systematic approach to supporting policy making in the public sector, Journal of Multi-criteria decision analysis, 9, 11-27

Williams, M. (2010). Broadband for Africa: Policy for the development of Backbone Networks. *InfoDev*, World Bank

Yates, D., Gulati, G., Weiss, J. (2011), Different Paths to Broadband Access: The Impact of Governance and Policy on Broadband Diffusion in the Developed and Developing Worlds, System Science (HICSS), 2011 44th Hawaii International Conference, Bentley University, Waltham, MA, USA , 4-7 Jan. 2011

APPENDIX I -

Interview Questions

Information and consent form

Research on the Evolution of Broadband Policy and Regulation in South Africa

My name is Arthur Kekana, I am currently studying for the Master of Management degree in the field of ICT policy and regulation (MM-ICT-PR) with the University of the Witwatersrand (Wits). As part of the requirement to successfully complete the degree, I am required to conduct interviews with relevant senior officials about the topic.

The purpose of this research project is to evaluate the evolution of broadband and the role of government within the three spheres of government focusing on Gauteng.

This research is conducted entirely in my personal capacity for academic purpose **only**. The interview should take less than an hour to complete. The interview proceedings will be kept strictly confidential and will not in any way disclose details of the participants.

There are no risks that are anticipated with your participation. Most issues to be discussed will revolve around what is already in the public domain in the form of policies, regulations and strategies on broadband. Your participation is voluntary.

I have read the above and give my consent to participate in the study.

_____

Signature

_____

Date

This research has been approved by the university; however, should you have any concerns you can contact the interviewer at:

Arthur Kekana

Tel.: 012 441 6219

Cell: 083 259 3970

Email: arthur.kekana@palama.gov.za or arthurkekana1@gmail.com

Interview Schedule:

1. Explain the purpose of the research
2. Fill in general information of participant
3. Request for permission to record, if applicable and explain that the recording can be deleted, if need be. Explain that anonymity will be used.

General Information of Participant

Sex

Position

Length

in

Position

SECTION 1

1. Introduction

1.2 What is your understanding about broadband?

Please elaborate.

1.3 When was your first interaction with the term broadband?

1.4 Do you think that it is important for government to developing broadband initiatives?

Please elaborate.

2. Economic Value of Broadband

2.1 In your view, how many (%) of the population have access to broadband?

2.2 Do you know whether there is any relationship between broadband and the economy?

2.3 What economic value can be derived from access and usage of broadband? Please elaborate.

3. Policy governance and Leadership

3.1 What effect would governance and leadership have on policy development and implementation?

3.2 How would you describe the role of governance and leadership since the birth of broadband around 2001 and the approval of the national broadband policy in 2010?

3.3 What impact does broadband have on national goals and strategic plans, such as the NDP?

3.4 How can governance and policy leadership address the problem of market failure?

4. Proactive Regulation

4.1 Tell me about the relationship between the regulator and other government entities with interest in broadband?

4.2 What is required from the regulator to make broadband affordable?

4.3 Do you consider the broadband market sufficiently competitive?

4.4 How do you see regulation making an impact on broadband penetration?

5. Active Citizenry

5.1 What do you understand by the concept of active citizenry?

5.2 What role can active citizenry play in policy development and implementation?

5.3 How does an active citizen hold policymakers and government accountable?

5.4 How can policymakers and government empower citizens to actively participate on matter of interest such as broadband?

6. General

6.1 Is there anything else that you would like to add that may assist the researcher with this study?