

Information and Communication Technology Policy For the Republic of Namibia

**Draft Policy Proposals
for the Department of Foreign Affairs, Information
and Broadcasting**

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**On behalf of the study team comprising
Mr Philip Esselaar and Dr Jonathan Miller,
Miller Esselaar & Associates**

Ms Tina James, Tina James Consulting

Prof Tana Pistorius, University of South Africa

**Messrs Theo Schoeman and Anthony White,
Schoeman Office Systems**

Mr Olof Hesselmark

Prof Geoff Kiangi, University of Namibia.

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Executive Summary

Namibia has been developing a modern information and communications technology (ICT) infrastructure over several years. There is now a wide range of fixed and mobile telephone services as well as Internet access throughout the country, although rural communities remain poorly serviced. Several policy processes are underway to help shape the use of ICT by government and in the educational sector in particular. The Namibian Communications Commission has tabled a framework for telecommunications regulation. Most recently, in response to the guidelines of the African Information Society Initiative (AISI), the Department of Foreign Affairs, Information and Broadcasting established a national coordinating body for ICT—the Resource Network Group (RNG)—and charged it with the responsibility of tabling a draft ICT Policy in 2001. The RNG in turn commissioned the present team of consultants to conduct the necessary work. The results are contained in this document.

The team carried out its study in light of many similar studies in other developed and developing countries. Chapter Two describes the study methodology that combined desk research into international and African ICT trends with specific data gathering to understand the state of ICT in Namibia. The team interviewed nearly a hundred major role-players in the public and private sector—both suppliers and users of ICT facilities—and conducted three workshops to consolidate, test and ratify the findings and surface perceptions for future activity and priority actions. In particular well-known research findings as to country transitions from developing to developed status were used to structure the survey instrument used in the interviews. The study also drew on very current assessment methods and chose a particular framework to assess both urban and rural Namibia’s “readiness” to become a Networked Society.

Chapter Three summarises the extraordinary range of programmes, projects and initiatives underway throughout the world to work out how to exploit available and expected technologies for social and economic gain. In particular the current G8-country initiated “DOT Force” initiative involving some twenty developed and developing countries is noted. The activities underway in Africa are of special interest since they squarely address the narrowing of the so-called digital divide. Here the Economic Commission for Africa’s AISI programme is most prominent. Among other things the chapter makes clear that Namibia needs to remain fully up to date with international developments and continue to participate as fully as possible in the ongoing global and African ICT dialogues.

The legal and regulatory frameworks that underpin ICT and electronic commerce in particular are the subject of Chapter Four. There it is noted that Namibia has well formulated proposals for telecommunications regulation and liberalisation and recommends that they be implemented, possibly with modification to reflect the rapid changes in cellular telephony. The chapter goes into much more detail as to the type of legislation needed to foster e-commerce, because the country has paid very little attention to that topic so far. It covers several areas, discussing the international position, Namibia’s legal and statutory position and recommendations for action. Internationally the so-called UNCITRAL Model Law for Electronic Commerce is receiving wide acceptance as a basis for going forward. This report recommends it as a start-

ing point for Namibia as well, noting that a follow on Due Diligence Report is an essential precursor to legislative change.

Chapter Five summarises the rich set of quantitative and qualitative data gathered during the structured interview process and the workshops. The results show those aspects of ICT policy and practice that key role players from government, education, the parastatals and the private sector regard as most important and having the most impact on the country. The analysis allows us to identify “gaps,” the largest of which relate to improving rural access to information, the growing of the ICT professional community, the improvement of public ICT education and appropriate legislation to foster electronic commerce. The second workshop in this study specifically set out to explore the potential of multi-purpose telecentres in Namibia. The specially invited participants offered much useful input to shape future action in this area. It is clear that there are several projects already underway that could deliver educational material, enable e-commerce and provide access to government information to rural communities. An important recommendation of this report is that these and any new programmes be conducted in an open and transparent fashion to avoid wasting resources and ensure maximum synergy.

Current policy making and future ICT activities must be carried out in light of the state of ICT in Namibia. Chapters Six and Seven report on the state of the ICT infrastructure and existing patterns of usage by government and the private sector. The growth of the telecommunications backbone, the provision of Internet services and the stock of computer hardware and software are noted. In the Usage chapter, the rather limited usage of ICT in government and the manufacturing sector is highlighted. By contrast, the banking sector appears to be quite active in its promotion of ICT-based services. The great potential of ICT to support the tourism sector—as yet hardly tapped—emerges clearly.

Chapter Eight deals with the key issue of human resources and human resource development for the ICT sector. Namibia, as most countries, appears to be suffering a brain drain of ICT professionals. This is most pronounced in the public sector, with qualified staff leaving for better pay in the private sector, or leaving from both sectors for other countries. The chapter discusses reward structures and other incentives to retain and recruit staff. It also notes the very important role of industry bodies serving the needs of the ICT professional. The chapter discusses the existing ICT Education Policy, which has yet to be implemented. It also describes the school and university educational environment in both face-to-face and distance learning modes. There are several recommendations designed to bolster ICT education and ensure a growing skilled ICT labour pool.

The final chapter consolidates the findings of the study. It presents several overall findings to supplement the detailed recommendations of the earlier chapters. There are a very limited number of actions that are critical to the successful implementation of an ICT Policy for Namibia. Namibia has to succeed in those areas if it is to reap the rewards in the other areas. Essential are

A strong national body with committed leadership to guide the implementation of ICT Policy

and

A detailed implementation plan that defines indicators against which to measure success, lays out practical growth steps towards achievable targets, names responsible parties and sets realistic timelines.

Success in those critical areas will allow achievement of the detailed policy recommendations contained in the chapters of this report and especially those the team has identified as high priority in relation to the largest perceived gaps:

1 To enhance rural access to information:

- Strongly support and encourage synergy between the existing multi-purpose telecentre and community centre projects.
- Realise the proposed Universal Service Agency and corresponding Universal Service Fund comprising mandatory contributions from all telecommunications licensees

2 To grow and stabilise the ICT professional community:

- Encourage immigration of skilled ICT workers
- Form a single Namibian ICT Association
- Provide incentives to all government employees to obtain ICT qualifications

3 To facilitate excellent ICT public education, especially in schools

- Recognise ICT qualifications as a key factor in the promotion of teachers
- Continue to support schools connectivity through strong initiatives such as SchoolNet
- Revise the 1995 IT in Education Policy and implement it

4 To foster e-commerce, e-business and e-government

- Amend all relevant laws
- Establish appropriate statutory bodies to manage the e-enabled environment
- Carry out a pilot e-procurement project in government

5 To strengthen the existing ICT infrastructure

- Proceed with the programme of liberalisation of the telecommunications environment

6 To grow the ICT industry

- Create an ICT cluster in Windhoek linking the ICT industry, academic institutions and government.

The existing RNG is the appropriate starting point for an effective “Namibian Council for ICT,” but needs a re-defined mandate and review of membership criteria. As regards indicators, there are several in place already and those can be extended and refined along the lines of the “Readiness Guide for the Networked Society.” Suggest-

tions are made as to how to move forward on those factors as well as with all the other recommendations listed above.

In contrast with most countries in Africa, Namibia has a well-developed telecommunications infrastructure upon which to build. Over the last few years the country has also carried out several policy actions designed to exploit ICT for social and economic growth. The study team was struck by the enthusiasm of those interviewed and the visible, widespread commitment to make ICT work for the country. The study team believes that Namibia is now well-positioned to take strong advantage of the opportunities afforded by the new information and communication technologies and the massive potential of globalisation in the Information Age. What remains is effective and aggressive implementation of the actions recommended in this draft policy document.

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¹CHAPTER ONE: INTRODUCTION

With the right policies and objectives in place, Information and Communications Technologies (ICTs) can have far-reaching and positive effects on development. ICTs are not a magic bullet, nor an alternative to other development investments, but if applied in the right way they are potentially a crucial enabling factor for development.²

This document is part of Namibia's ongoing top-level process to apply ICTs most effectively for economic and social development. Earlier events include the tabling of IT Recommendations for Government in 1993 and proposals for an IT in Education Policy in 1995. In 1996 the Ministry for Information and Broadcasting adopted the ECA's framework for National Information and Communication Infrastructure (NICI).³ In May 1998 it convened a workshop on "Development of a National Information and Communication Infrastructure for Namibia and followed up with a second workshop in October 1999. Also in 1999 the Ministry of Information and Broadcasting issued a Telecommunications Policy and Regulatory Framework for Namibia.

The 1999 NICI workshop recommended the formation of a broadly representative task force—subsequently termed the Resource Network Group (RNG)—to draft an ICT Policy by 2001. The RNG issued a tender for preparation of a Draft ICT Policy Document in July 2000 and awarded the contract to the present consortium in November 2000. The report was due by March 31 2001, but the date was subsequently revised to April 30 2001. This document is the outcome.

Drawing on its previous experience with similar processes in other countries, the consortium conducted extensive desk research into previous ICT policy-related materials in Namibia. It carried out fieldwork to assess the state of the ICT sector in Namibia, interviewed nearly a hundred role-players and held three workshops to learn about perceived priorities for ICT development. The following chapters describe the process in more detail, present the results and make certain recommendations.

Chapter Two presents the study methodology. It includes discussion of the survey instrument used for the structured interviews and the basic framework for assessing Namibia's readiness as a networked society. Chapter Three places the current policy process within a global context. From the chapter it will be clear that ICT policy-making is a global phenomenon and one in which the ground-rules keep changing. Chapter Four assesses the current regulatory environment in Namibia especially as it applies to electronic commerce and highlights legislative issues necessary to exploit that opportunity in the public and private sector. Chapter Five presents and interprets the results of the surveys carried out and the perceptions of key role-players emerging from the workshops. The state of play as regards information and communications technologies in Namibia and utilisation of the facilities and services available are described in Chapters Six and Seven. Chapter Eight focuses on the ICT

¹ The main contributor to this chapter is Dr Jon Miller

² Unpublished Draft Report of the G8 DOT Force, April 2001.

³ The NICI framework is a key output from the Economic Commission for Africa's African Information Society Initiative (AISII).

human resource and education and training for ICT workers. Finally, Chapter Nine offers some key recommendations to carry the process forward.

It will be seen that recommendations are made in several chapters of this report. Many of these address specific opportunities in different sectors, such as tertiary education, or e-commerce, or ICT industry development. It is hoped that stakeholders in the relevant sectors will be able to take up the recommendations and act on them. The final chapter offers recommendations that focus more strongly on the enabling environment and probably require concerted effort on the part of government to make things happen.

There are unlimited numbers of “good ideas” for ICT policies and strategies. The real challenge is to focus on what is practical and what can be carried out with available resources. While there are notable exceptions, Namibia’s process to date seems to have suffered somewhat from this problem. Many suggestions have been tabled in the past and not implemented to date. Even some ideas contained in the Terms of Reference for this study appear to be of much less importance than issues raised during the course of the current research. Based on that feedback, the project team has attempted to home in on the factors critical for effective implementation of ICT policies and strategies in Namibia.

CHAPTER 2: STUDY METHODOLOGY⁴

2.1 Structure

The study methodology comprised four overlapping phases:

- **An opinion-seeking phase** where almost seventy stakeholders were interviewed and asked to give their perceptions of the overall environment supporting the use of ICT in Namibia,
- **A data-gathering phase** to collect existing quantitative data on infrastructure, size of industry, human resource parameters, existing policies and other input of relevance. Relevant data from the international arena pertaining to global policy and regulatory developments, technological trends and developing country success stories was gathered.
- **An analysis phase** to integrate developments in the international arena with the information obtained from Namibia. Two frameworks were used for analytical purposes, one based on well-accepted research into the competitiveness of nations and the other a recent and promising method to assess the readiness of a country to become a “Networked Society.”
- **A verification phase** to communicate, discuss and analyse the results and suggested actions with stakeholders in both government and the private sector, and to discuss a way forward once the Draft Policy document was complete.

The project timeline included the following formal planned contacts with stakeholders:

- **20 – 27th November 2000:** Conduct interviews and obtain responses to the questionnaires
- **28th November 2000:** First Stakeholder Workshop
 - Present and discuss preliminary findings from interviews.
 - Derive suggested measures of success from an ICT Policy process.
- **6th February 2001:** Second (MPCC) Stakeholder Workshop
 - Establish current status of operational MPCC’s
 - Devise plan going forward
- **27th March 2001:** Third Stakeholder Workshop
 - Obtain feedback on draft chapters from group
 - Discuss Readiness Assessment results

Before each event the project team did extensive preparatory work to establish base Namibian data for the sessions to follow and to identify the important role-players for that phase of the proceedings. After each event, the need for some further data was

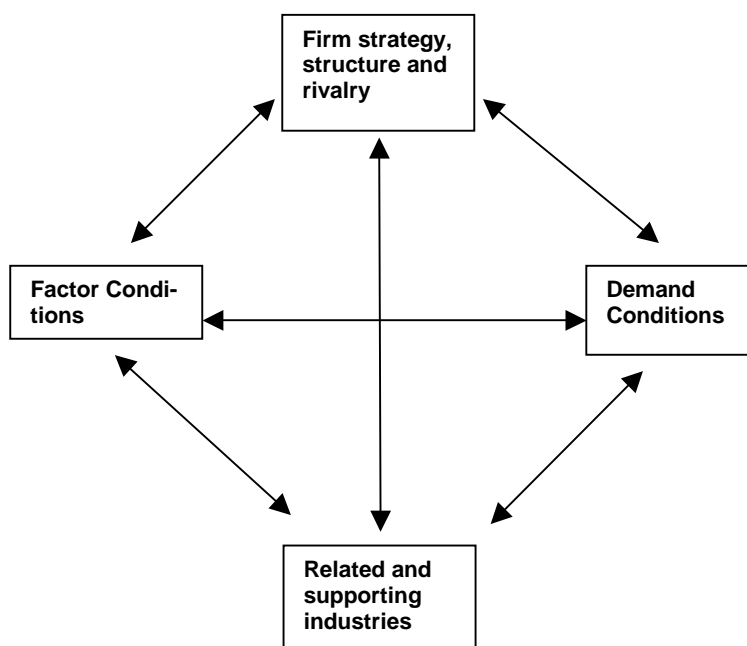
⁴ The main contributor to this chapter is Philip Esselaar

established. Interviews and discussions on an ad hoc basis were held in Namibia for the duration of the project.

2.2 Opinion-Seeking Phase

The project team invited over one hundred stakeholders from a broad cross-section of Namibian society to interviews. Sixty-eight people were actually interviewed in thirty small group sessions of about ninety minutes each. The interview process balanced completion of a structured questionnaire with open discussion.

The questions used in the interviews were based on the 'Competitive Diamond' of four broad attributes that define the national environment in which companies compete, as shown below:^{5 6}



- ❑ **Factor conditions** relate to a nation's position in factors such as skilled labour or infrastructure necessary to compete in a particular industry
- ❑ **Demand Conditions** describe the home-market demand for the industry's products or services
- ❑ **Related and Supporting Industries** refers to the presence or absence in the nation of supplier and related industries that are internationally competitive
- ❑ **Firm Strategy, Structure and Rivalry** refers to the conditions in the country governing how companies are created, organised, and managed, as well as the nature of domestic rivalry.

The full 18-item questionnaire is shown in Appendix XXX. There it can be seen that each interviewee was invited to rate each item with respect to its importance for his/her organisation and then the country as a whole. The items were then also rated for impact, i.e. to what extent the particular item had impact on the organisation and country as a whole. The ratings section was preceded and followed by open-ended

⁵ Michael E. Porter 'The Competitive Advantage Of Nations' 1990

⁶ Michael E. Porter 'On Competition' 1998

questions designed to allow a free flow of ideas around the use of ICT in Namibia. Opportunities were given to express any opinions about conditions that might affect the efficient use of ICT in Namibia, whether political, social, economic or technological. Results of this phase are presented in Chapter Five.

2.3 Data-Gathering Phase

The policy recommendations that flow out of this study needed to be based on as much hard data as possible. Secondary sources were used to establish:

- ❑ The size and performance of the Namibian economy
- ❑ The skills of the ICT Human Resources available
- ❑ Available education facilities
- ❑ The size and scope of the hardware, software and services part of the ICT industry
- ❑ Telecommunications infrastructure from the perspective of fixed lines, cellular subscribers, Internet subscribers and availability of these services
- ❑ International developments of note, including global and regional ICT structures
- ❑ Industry trends derived from developed country experience; in particular anticipated developments in the Telecommunications industry

Where sound data was not available in Namibia, industry insiders were canvassed to obtain the most reliable estimates. The outcomes are presented in Chapters Six and Seven.

2.4 Analysis Phase

As described, the interviews and survey questionnaire were designed to establish the perception of stakeholders as to the importance of particular items as well as the items' current impact, for both their own organisations and for the country as a whole. The differences in perception between importance and impact result in 'gaps;' high 'gaps' associated with poor performance relative to the requirement, and low 'gaps' suggesting comfort with the relevant item. Arguably priority action is needed to reduce the large gaps.

In the first part of this phase, the results of the interviews were summarised and analysed as described above within different sectors namely:

- ❑ Government Sector
- ❑ Parastatals
- ❑ Education
- ❑ Private Sector
- ❑ Other

The second part of this phase involved gathering baseline data from a variety of sources within Namibia, compiling and interpreting it and including it in summarised form in the relevant chapters.

And finally the third part set out to analyse Namibia's readiness to become a "networked society," thereby improving its competitive position in the global economy and using ICT most effectively to achieve national goals such as poverty alleviation. There are several very current assessment tools to tackle this issue.⁷ The project team chose one developed by the Centre for International Development at Harvard University. It specifically targets developing countries and offers a practical basis for ongoing assessment. It considers nineteen categories of information divided into five groups.

- ❑ Network Access
- ❑ Networked Learning
- ❑ Networked Society
- ❑ Networked Economy
- ❑ Network Policy⁸

As it turned out the same instrument was used by an ECA/IDRC team undertaking the Pan African E-Commerce Initiative mentioned in the next chapter. That team included Namibia in its field studies so it was possible to present the results of that assessment in the final workshop of this study.

2.5 Verification Phase

The project team presented the results of each phase of the analysis for verification at the appropriate workshops and during ongoing discussions with stakeholders. In particular, the readiness assessment was presented to the Third Stakeholder Workshop. At that workshop the project team proposed and discussed a number of action items and explored with the participants mechanisms to ensure that the process continued after the completion of the draft policy document. Often the participants contributed additional insights and subsequently some participants contributed key comments that have been built into this report.

⁷ See www.bridges.org for an analysis and critique.

⁸ A full description of the methodology can be found on www.readinessguide.org .

CHAPTER 3: THE GLOBAL CONTEXT AND NAMIBIAN ICT POLICY⁹

3.1 Introduction

The past two decades have seen the emergence of major changes in the global information and telecommunications (ICT) environment, the result of 1) increased liberalisation in the telecommunications sector, and 2) the rapid rate of technological innovation in the sector. Costs of communications have dropped rapidly, particularly in the developed world, as has the cost of technology allowing access to the Internet (cable, satellite, computers, software). Increasingly, there is a trend towards the development of open-source code, which gives users direct access to the software programmes they are using, and allowing them to add to or modify it to their own needs without reference to the original developer. The rising success of the Linux operating system, and particularly its uptake on the African continent, is one such example.

The convergence of technology platforms has resulted in exciting opportunities in the areas of media and entertainment, e-business, and the dissemination of knowledge for a variety of purposes, whether it is the creation of online learning programmes, e-government services, or a national lottery system. Business has led the way in exploiting the convergence, with previously unheard-of mergers occurring between telecommunications operators, publishing houses, and the film and music industry.

The boundaries between IT and Telecommunications are thus becoming increasingly blurred, and the impacts of ICTs on all aspects of life are more dispersed. The much-discussed Digital Divide is however creating additional layers of 'haves' and 'have-nots': between the developed and developing world, urban and rural populations, IT-literates and IT-illiterates, businesses which are e-business ready and those which are not, men and women, and many more.

Against this background, the need to develop information society policies has arisen, policies that address, in an integrated manner, issues of liberalisation, universal service and access, the need for affordable services to its people, and the need to create an environment that will allow business to participate in the Global Information Society by encouraging competition and stimulating investment.

The integration of telecommunications and societal policies is increasingly becoming a necessity, resulting in the need to develop higher levels of cooperation and collaboration within governments, and between national governments and other sectors of society. In addition, regional, continental and global agreements, standards and guidelines are important frameworks to be considered for the development of national ICT and sectoral policies.

⁹ The main contributor to this chapter is Tina James

3.2 International and African Trends in ICTs

It is appropriate to present some information on the trends that are emerging in the ICT environment, both internationally and globally, as a backdrop for the Namibian ICT policy and what needs to be achieved to ensure that Namibian citizens are not left on the wrong side of the Digital Divide.

This section contains international data in general. Specific data about the Namibian situation are found in other sections of this report.

- **Telecommunications Infrastructure**

Fixed line Infrastructure

Comparisons of the data from African countries, North America and selected European countries, shows the disparity in fixed-line teledensity between Northern and Southern countries.

Table 1. Selected Regional Teledensity Figures for 1999.

| Country | Population (M) 2000 | Density (per sq-km) 2000 | US\$ GDP per capita 1999 | Teledensity % 2000 |
|---------------|---------------------|--------------------------|--------------------------|--------------------|
| Angola | 13.13 | 11 | 620 | 0.87 |
| Botswana | 1.62 | 3 | 3 125 | 7.69 |
| Malawi | 11.31 | 120 | 171 | 0.39 |
| Mozambique | 19.68 | 25 | 209 | 0.40 |
| Namibia | 1.76 | 2 | 1 834 | 6.38 |
| Nigeria | 113.86 | 123 | 551 | 0.43 |
| Senegal | 9.48 | 48 | 512 | 2.18 |
| South Africa | 43.69 | 37 | 2 969 | 12.53 |
| Uganda | 23.30 | 97 | 284 | 0.26 |
| Zambia | 10.42 | 14 | 463 | 0.93 |
| Zimbabwe | 12.63 | 32 | 520 | 2.07 |
| Africa | 798.20 | 26 | 808 | 2.52 |
| Canada | 30.75 | 3 | 21 083 | 65.45 |
| United States | 275.13 | 29 | 34 102 | 67.30 |
| Europe | 797.94 | 31 | 12 150 | 38.80 |

Source: Basic Indicators: ITU, 2001

Mobile Communications

Mobile communications in Africa are flourishing with the number of mobile telephone subscribers now having overtaken fixed line subscribers. According to figures from the GSM Association, estimated as of February 2001, the whole continent had 11 million of the world's 473.1 million GSM users. Forecasts by the EMC World Cellular Database for the next five years predict 32 million mobile users in Africa by the end of 2003, with just under half of them - 14 million - in South Africa (International Herald Tribune, July 2000).

The latest figures from the International Telecommunications Union show there were 19,603,500 fixed-line telephones in Africa in 2000¹⁰, or about 2,52 lines for each 100 inhabitants. This number was increasing annually by 10.2 percent, whereas mobile phone numbers rose 87 percent in 1998, albeit from a low base. The introduction of WAP-enabled technology has allowed the use of mobile Internet communications, but its use is not widespread in Africa.

Table 3.2 Growth statistics for some of the largest GSM markets in Africa

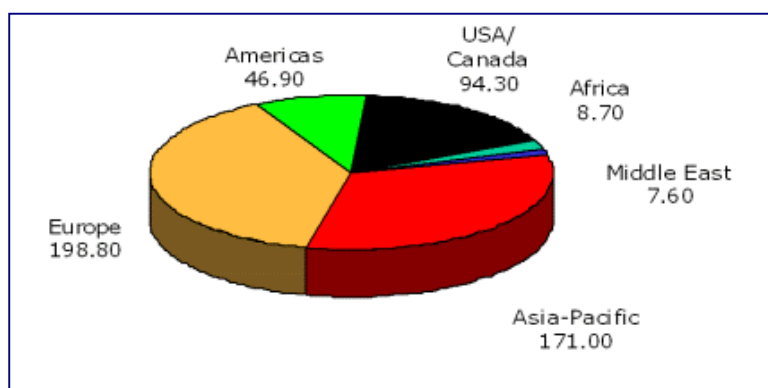
| Country | June 97 | June 98 | June 99 | Sept 2000 |
|--------------|-----------|-----------|-----------|-----------|
| Botswana | - | - | 15 000 | 140 000 |
| Zimbabwe | - | - | 63 494 | 256 000 |
| Egypt | 58 140 | 108 900 | 444 000 | 1 401 000 |
| South Africa | 1 110 980 | 2 050 600 | 3 800 000 | 6 700 000 |

Source: Trendmark (www.trendmark.co.za)

The latest figures available from the International Telecommunications Union show there were 18,6 million fixed-line telephones in Africa in 1999, or, as reflected in Table 3.1, about 2.5 lines for each 100 inhabitants. This number was increasing annually by 10.2 percent, whereas mobile phone numbers rose 87 percent in 1998, albeit from a low base. The introduction of WAP-enabled technology has allowed the use of mobile Internet communications, but its use is not widespread in Africa.

Of significance to Namibia is the forecast that mobile applications are likely to become a competitive necessity in the travel industry (IDC Forecaster, January 2001), particularly because of the on-the-move lifestyle of travel customers. With mobile Internet access, travel customers will be able to contact their travel agent or carrier directly to check availability, make itinerary changes, and obtain information about delays or cancellations from any location. The mobile Internet will also help travel agents and airlines proactively notify customers of delays, cancellations, and other relevant information. IDC expects these mobile travel services to be well received and forecasts the number of mobile travel service users to increase from 1 million in 2000 to more than 22 million by 2004.

Figure 3.1 Distribution of GSM subscribers ('000 000) by world regions



Source: GSM association, October 2000¹¹

¹⁰ Many of the country figures are based on 1998/1999 estimates, as compared to the cellular estimates which are based on more recent figures

¹¹ GSM Association (<http://www.gsmworld.com>)

- **The Internet**

The Internet has grown rapidly on the African continent over the last few years, but still nearly 90% of all users are found in industrialised countries. 57% of these users can be found in Canada and the United States. Africa and Asia account for only 1% of Internet users¹². At the end of 1996 only 11 African countries had Internet access, but by November 2000 all 54 countries and territories had achieved permanent connectivity and the presence of local full service dialup ISPs¹³.

Despite the rapid growth of Internet access in Africa it has been largely confined to the capital cities, although a growing number of countries do have points of presence (POPs) in some of the secondary towns, and in South Africa POPs are established in about 100 cities and towns.

In some countries the national telecommunications operators have made a special policy to provide local call Internet access across the whole country. To do this, the operator establishes a special 'area-code' for Internet access that is charged at local call tariffs, allowing Internet providers to immediately roll out a network with national coverage. With the massively reduced costs for those in remote areas that this provides, it is surprising that so far only 16 of the 53 countries have adopted this strategy - Benin, Burkina Faso, Cap Vert, Ethiopia, Gabon, Malawi, Mali, Mauritius, Mauritania, Morocco, Senegal, South Africa, Chad, Togo, Tunisia, and Zimbabwe.

The total number of computers (as Internet hosts) permanently connected to the Internet in Africa (excluding South Africa) finally broke the 10 000 mark at the beginning of 1999. In January 2000 it stood at about 12 000 and by January 2001 had risen to over 36000¹⁴. Despite the rapid growth, over fifty African countries together still have only as many hosts on the Internet as one small Eastern European country and less than Iceland¹⁵.

- **Universal Service and Access**

To achieve an acceptable level of universal access, many developing countries have established their own definitions according to national need e.g. South Africa has determined that universal access is defined as a phone within 30 minutes walking distance, with Namibia using the definition of a telephone connection within walking distance. Further the Telecommunications Policy and Regulatory Framework (1999: 13) states that there will be access to telecommunications services for 80 – 90% of Namibian citizens, and that in each community with more than 100 people, there should be at least one telephone connection or business centre.

The SADC protocol on Universal Service (Art 10.3)¹⁶, states that

¹² IDC Forecaster, January 2001 (<http://www.idc.com/itforecaster>)

¹³ Jensen, November 2000 (<http://www3.sn.apc.org/africa/afstat/htm>)

¹⁴ As measured by Network Wizards

¹⁵ See Mike Jensen, www3.wn.apc.org/Africa/afstat.htm for more information.

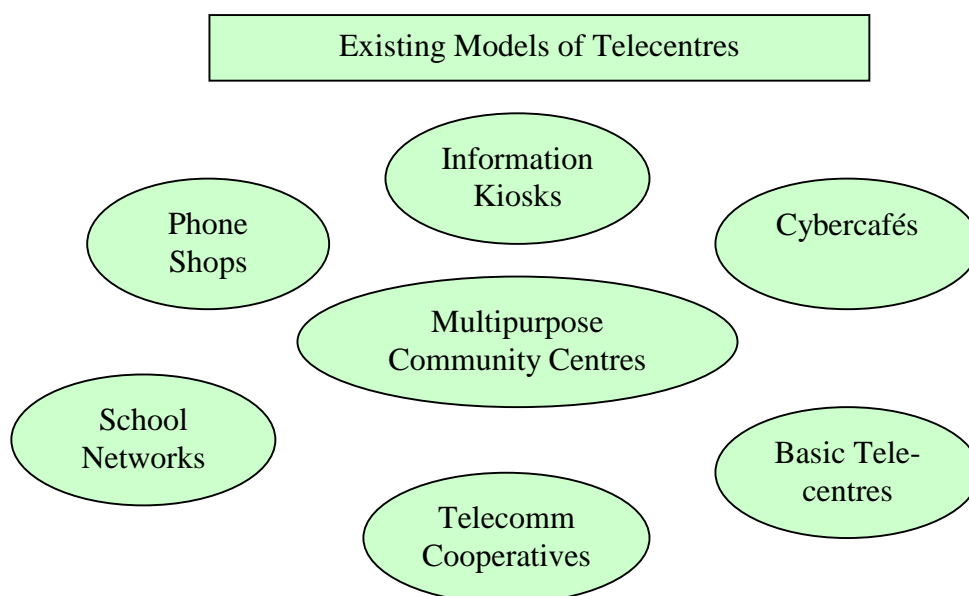
¹⁶ SADC Protocol on Transport, Communications and Meteorology, 1998, Southern African Transport and Communications Commission Technical Unit (SATCC-TU), p 52. The universal service guidelines are currently under revision by TRASA, The Telecommunications Regulatory Authorities of Southern Africa.

“For the purpose of policy development in respect of universal service, Member States agree to develop a common understanding of universal service by determining:

The basic elements which characterize universal service provision, including consideration of whether a service is-

- i) Essential in view of its social and culture importance;
- ii) Reasonably accessible to all people of the region on an equitable and non-discriminatory basis;
- iii) Supplied as efficiently and economically as possible and is therefore as affordable as possible; and
- iv) Supplied at a technical standard which reasonably meets the social and commercial needs of the region”;

Since it is unlikely that the provision of universal service will be a reality in the near future, many developing countries have used the establishment of telecentres to achieve higher levels of access. The term ‘telecentre’ describes a variety of models, covering on-line phone shops such as those rolled out in Senegal, the government-supported Technology Access Centres in Egypt (The Kids Club), school networking initiatives, and the very large multipurpose community centres (MPCCs) established in South Africa, Uganda, Ghana and Benin. The common element in all these models is the presence of telephones and faxes, and some with computers and the Internet. Specialised services are offered by some e.g. business office applications (photocopying, typing, binding, laminating), TV videos, ICT training, library services, government information provision, computer games, selling of stationery and phone cards. A number of Cyber cafés providing only Internet access have sprung up in major African cities, generally driven from a commercial rather than a developmental perspective. Many of the larger MPCCs have been set up as donor-driven demonstration projects, with little prospect of being self-financing in the short- to medium-term.



Several projects have failed for technical, social or economic reasons, while some are flourishing. Research to date shows that the most successful models have been those that are:

- ❑ Situated in areas where some SME activity is present, and where there is a reasonable population density and economic base;
- ❑ Locally owned and driven, and where ownership and control is retained within the community. Donor-funded telecentres tend to have problems with staff retention and revenue generation;
- ❑ Situated in gender-neutral environments such as libraries and schools. Experience has shown, for example, that the customer base in cyber cafés tends to be predominantly male¹⁷ and that the environment is not perceived as socially comfortable for women.

Within the Namibian context, feasibility studies need to be undertaken to determine where telecentres can be usefully and successfully implemented, and to determine the most appropriate model for achieving higher levels of universal access, given existing initiatives such as SchoolNet Namibia and the intention to roll out government-driven MPCCs.

- **The Role of Government in Stimulating Economic and Social Development through ICTs**

One of the major challenges that face governments in the Global Information Society is achieving the necessary balance between social and economic development, and developing a policy and strategic framework that can facilitate not only economic growth but also ensure social benefits for its people by leveraging ICTs. In addition, the development of an ICT policy, which extends beyond the traditional boundaries of the industrial and services sector, requires far broader consultation and participative processes than might have been required in previous policy formulation. Increasingly the role of government has been that of enabler and facilitator, rather than controller.

The importance of establishing the necessary framework has been recognised by the Economic Commission for Africa (ECA), which has set in motion the NICI initiative for the development of National Information and Communication Infrastructures (NICIs). To date, more than 22 African countries have initiated processes to develop a NICI plan¹⁸. The development of the Namibian ICT policy has been the outcome of several workshops held in Namibia since 1995, the most recent being the 'NICI workshop' of 1999, and which provided the basis for the Telecommunications Policy and Regulatory Framework (1999).

The NICI framework stipulates that four major components have to be addressed:

- 1) Institutional Framework
- 2) Human Resources
- 3) Infostructure development (information resources, content and applications)

¹⁷ Initial Lessons Learned about Private Sector Participation in Telecentre Development: A guide for Policy Makers in Developing Appropriate Regulatory Frameworks. National Telephone Cooperative Association, 2000 (<http://www.ntca.org>)

¹⁸ Detailed background information on the ECA and the NICI initiative can be found at <http://www.bellanet.or/partners/aisi>. This includes guidelines for the formulation of NICI policies, plans and strategies, which will not be repeated here.

4) Technological Resources (Infrastructure)

Possible areas of application, as spelt out in the ECA's document on NICIs, are presented in Table 2 below as a guideline for possible areas to be addressed by African countries, and in the Namibian ICT policy.

Table 2. Opportunity Areas of NICI in Africa

| Sector | Possible areas of NICI application |
|------------------------------|---|
| Agriculture | <ul style="list-style-type: none"> • Improving food security through access to timely information for determining optimal harvesting times, locating sources of surplus, distribution channels and storage facilities; • Provision of equitable access to new techniques for improving agricultural production; • Improving communication and information flow for better research and extension service linkages; • Increased co-ordination of donors and information flow among donors working in the food sector. |
| Education | <ul style="list-style-type: none"> • Providing equitable remote access to resources in support of both distance education and the strengthening of local educational capacity; • Connecting schools, universities and research centres to national and international distance education facilities, national and international databases, libraries, research laboratories and computing facilities; • Reducing communications and administrative costs by building communications networks linking all educational establishments; • Promoting and supporting collaboration among teachers and researchers; • Extending the reach of educational facilities in informal learning. Especially to community level |
| Environment | <ul style="list-style-type: none"> • Monitoring areas threatened by environmental degradation and natural disasters using ICT tools and Geo information systems; • Developing databases to improve knowledge on the availability of natural resources; • Improving the management and monitoring of the implementation of environment-related projects; • Using low-cost terrestrial and satellite radio communication systems in emergency situations where there is not access to adequate telecommunications. |
| Public Administration | <ul style="list-style-type: none"> • Improving internal revenue management; • Improving social security administration; • Facilitating electronic tendering systems; • Improving accessibility to national public administration information, especially to citizens who live in rural areas; • Supporting national and regional as well as zonal co-ordination, co-operation and standardisation of regulations and legislation. |
| Tourism | <ul style="list-style-type: none"> • Attracting more tourists and other visitors by offering high quality information and telecommunication services in tourist resorts; • Reducing the costs of international promotions for attracting tourists; |

| Sector | Possible areas of NICI application |
|---|--|
| | <ul style="list-style-type: none"> • Increasing the visibility of the attractions through on –line promotional campaigns; • Building national and regional tourism related databases for destinations and facilities; • Providing a mechanism for virtual travel and information gathering utilising the Internet; • Provision of tourism related information and indicators that encourage and facilitate investment in tourism projects. |
| Health | <ul style="list-style-type: none"> • Enhancement of health administration and management through medical information systems; • Establishment of general information "health profiles"(i.e. for AIDS, for infectious diseases, etc), specific patient "Information profiles" and decision support systems on regional, national, provincial and district levels; • Linking health centres, delivery services and medical transport to enhance patient access to these facilities and provide more efficient services to the patient; • Improving access to skilled diagnosis through tele-medicine; • Improving distribution and reducing costs of medical supplies. |
| Governance and democratic participation | <ul style="list-style-type: none"> • Making government document available to general public in order to facilitate information access on decrees, policy papers and other information; • Setting up of community networking for democratising access to local and international information; • Establishment of link between various media sources (government, private and international) to exchange information; • Initiation of discussions on various issues related to governance and other areas that empower individuals and communities; • Use of ICT to improve efficiency in governments operations and attain transparency (on-line bidding, submitting and analysis of information on various government functions) • Empowering women through computer mediated communication. |

Based on: African Information Society Initiative and Towards the Information Society in Mozambique available from <http://www.bellanet.org/partners/aisi> and <http://www.idrc.ca/acacia>

• The Advent of e-Commerce

The widespread adoption of the Internet has lead to the mushrooming of the various types of business activities currently termed e-commerce and which can be broadly defined as

“The conduct of commerce in goods and services, with the assistance of telecommunications and telecommunications-based tools.”

Already, however, the impact of the Internet on organisational activity is extending well beyond simple interactions between businesses and businesses and consumers. There are interactions between three groups: the individual consumer (C), business organisations (B) and government (G). Important policy discussions follow from

the distinct business transactions between those stakeholders, expressed by the well-known acronyms: B2C, B2B, G2B, G2C, etc¹⁹.

The ways in which businesses, consumers and government relate by electronic means can also be classified as per the following diagram:

| | |
|--|---|
| BUSINESS –TO-BUSINESS Integrating value chains, Suppliers and customer base | BUSINESS –TO-CONSUMER On-line shopping |
| GOVERNMENT TO BUSI- NESS e-procurement | GOVERNMENT TO CON- SUMER Government online Services and programmes |

Source: South African Green Paper on e-Commerce, November 2000

Virtually non-existent in 1995, globally e-business is the fastest growing economic sector. United States turnover amounts to several hundred billion dollars a year and is expected to soar by 2004. The sector is a principal source of new jobs, especially for young people, mostly in smaller and medium size firms. Similar trends are evident in developing countries. In 1999 India exported over \$2 billion worth of e-business services. The almost one million Indians now employed in e-business and related sectors in the US virtually matches the number back home²⁰.

While still too few, there are now a variety of notable e-commerce initiatives in Africa including: radio and television stations broadcasting (and advertising) over the Internet to the African Diaspora; preparation in Africa of abstracts of Canadian Legal decisions; the production of architectural drawings for European clients; and an Internet-based call centre in Togo.

As elsewhere, African SMMEs constitute the most suitable business category capable of exploiting electronic commerce. Initially, exports to businesses and the African Diaspora are likely to be the most attractive opportunities and might comprise such teleservices as accounting, architecture, translation and data entry over the Internet. Call centres that take advantage of advances in technology have the potential to employ hundreds of thousands in well paying jobs. Africa's small-scale producers of existing products will also benefit²¹.

The issues of e-business continue to be debated in many fora, including the OECD, the ITU, UNCITRAL, UNCTAD, WIPO, the World Bank, the WTO and the ILO.

¹⁹ An emerging "marketspace" not encompassed by any of these is C2C, addressing ICT-based communications between individual consumers for instance via 'classified ads' and auctions of personal possessions.

²⁰ The recent "bursting of the bubble" in the United States market for e-commerce-related stocks, however, calls for a measure of caution in predicting the evolution of this market.

²¹ <http://www.un.org/Depts/eca/adf/pforum.htm> offers an extensive discussion of E-commerce in Africa.

- **The Work Force**

The recent published report by the International Labour Office (ILO), “World Employment Report 2001: Life at Work in the Information Economy,”²² confirms that the different rate of diffusion of technologies in poor and rich countries is widening the digital divide. It states that developing countries will need to focus their policies particularly in two areas, firstly in *ensuring access to the technologies* and secondly to ensure that *workers possess the education and skills* to use these technologies. Particular mention is made of the need to give the investment in basic and higher education the highest priority, and that it is this area in which governments can most effectively reap the benefits of ICTs. This is also seen as a necessary prerequisite to closing the gap between men and women in terms of ICT skills. Further policy recommendations include:

- Countries receiving highly skilled workers in the digital economy should not neglect the training of their domestic workforce;
- Countries should develop policies that encourage the retention and repatriation of their highly skilled workers;
- Retraining should be considered for older workers;
- New laws dealing with stress, privacy, intellectual property and right of access to communications media have to be considered;
- The government should encourage the growth of local ICT sectors, but also make imported goods available at the right prices.

3.3 Global and African ICT Policy Initiatives

Section 3.2 provided some background on the global and African trends that have become evident in ICTs. It is now necessary to review the responses that have emerged from global and African institutions to the information revolution.

Since the mid-90’s, several global initiatives have been initiated to stimulate the development of the Global Information Society, and particularly to address the significant challenges faced by developing countries, and the African Continent. The development of this Namibian ICT policy should be seen against the backdrop of such initiatives, which serve to emphasise the need to consider a balance between national, regional and global developments.

The most recent significant developments can be traced back to the mid-nineties, building to a spate of global ICT-related initiatives in 2000 that dominated in terms of their relevance to the African Information Society development:

- **The United Nations Economic Commission for Africa (ECA)** adopted the African Information Society Initiative (AISI) in 1995 to develop a sustainable African Information Society by 2010. The Partnership in Information and Communications Technologies in Africa (PICTA) was created to implement the AISI. Partners include multi-lateral and bi-lateral agencies, governments, research organisations, private foundations and representatives of the private sector.

²² <http://www.ilo.org/public/english/employment/strat/stwer/>

The implementation of the initiative has focused on seven areas:

- ❑ Policy awareness;
- ❑ National Information and Communication Infrastructure (NICI) policies and plans;
- ❑ Connectivity;
- ❑ Training and Capacity Building;
- ❑ Democratising Access to the information society;
- ❑ Sector applications; and
- ❑ Development of information infrastructure (information management and content development).

The ECA addressed ICT-related issues in the *African Development Forum (ADF) of October 1999*, the Challenge to Africa of Globalisation and the Information Age. The recommendations that emerged out of ADF regarding national ICT policies and strategies are:

- ❑ The deployment and use of ICTs within the economy and society;
- ❑ The development of a local ICT industry to facilitate the production, development, delivery and distribution of ICT products and services;
- ❑ The development of the human resource capacity to meet changing demands of the economy;
- ❑ The development of the National Information and Communications infrastructure (NICI);
- ❑ The development of the legal, institutional and regulatory framework and structures, and
- ❑ The development of standards, practices and guidelines to support the deployment and exploitation of ICTs.

Four focal areas were identified for future actions to be taken up at the Post-ADF Summit in September 2001:

- ❑ Youth and education;
 - ❑ Health;
 - ❑ Business and e-commerce; and
 - ❑ Policy and regulatory change to create an enabling ICT policy environment.
- **The Information Society and Development (ISAD) Conference** under the auspices of the G7 countries, held in South Africa in May 1996, raised the need for cooperation between developed and developing countries to foster development of national information infrastructures (NII).
 - **The African Connection Initiative**²³ was launched in 2000 as a promising vehicle for accelerating Sub-Saharan Africa's connectivity, involving as it does virtually all the African Ministers of Telecommunication and focusing on issues such as rural telecommunications and the policy and regulatory framework.

²³ <http://www.africanconnection.org>

- In April 2000, the **United Nations Economic and Social Council (ECOSOC)**²⁴ assembled a group of 16 high-level ICT experts from government, business, academia and NGOs, to make recommendations to the United Nations on the role it should play in integrating developing countries into the global information society. Key recommendations were adopted in July 2000 in a Ministerial Declaration. The key policy recommendations of the panel's "International ICT Action Plan" include:
 - The *creation of an ICT Task Force* whose purpose would be to bring together international agencies, foundations and the private sector to facilitate the expansion of the ICT market in developing countries, with representation from the North and the South;
 - The *creation of a Trust Fund*, which would source funds from *inter alia* the UN Fund for International Partnerships. Funding would also be leveraged from matching grants made from the benefiting country;
 - The *writing off of 1% of each developing country's debts*, if the equivalent is applied to ICT development
 - The UN should link the right of universal access to ICT services with existing principles and conventions on human rights and development.

The need for greater cohesion between individual organisations in the UN system was recommended, including the World Bank, but also the European Union, the Organisation for Economic Cooperation and Development (OECD), and other multilateral and bilateral agencies.

- The **Kyushu-Okinawa Summit of G8 countries**²⁵ in July 2000 adopted the Okinawa charter on the Global Information Society, and a resolution was passed to set up an IT Digital Opportunities Task Force (DOT Force). The Charter identified the following priority areas:
 - Fostering policy, regulatory and network readiness;
 - Improving connectivity, increasing access and lowering cost;
 - Building human capacity; and
 - Encouraging participation in global e-commerce networks.

As part of the charter, the G8 countries stated that they would exercise their leadership

"to foster an appropriate policy and regulatory environment to stimulate competition and innovation, ensure economic and financial stability, advance stakeholder collaboration to optimise global networks, fight abuses that undermine the integrity of the network, bridge the digital divide, invest in people, and promote global access and participation."

The DOT Force consists of 43 members and held its first meeting in November 2000. An interim report in April 2001 stressed the global agenda of DOT Force, recognizing that policy recommendations need to reflect the diversity of the digital situa-

²⁴ <http://www.un.org/esa/coordination/ecosoc/itforum/ict.htm>

²⁵ G8Kyushu-Okinawa.go.jp or <http://www.hikyaku.com/summit/summitg.html>

tions in developing countries. DOT Force is designing a dynamic analytical model on which to base its coming policy recommendations.²⁶

- At the **United Nations Millenium Summit**²⁷ in September 2000, the recommendations of the ECOSOC meeting were accepted, and in addition several ICT-related proposals and initiatives were announced:

- A volunteer corps, called the United Nations Information Technology Service ('UNITeS'), to train groups in developing countries in the uses and opportunities of the Internet and information technology. Identified projects include assistance on e-commerce for SMEs (Small and Medium Enterprises), and the integration of ICT tools into the curricula of secondary schools;
- A Health InterNetwork, to establish 10,000 on-line sites in hospitals and clinics in developing countries to provide access to up-to-date medical information.
- A disaster response initiative, "First on the Ground", which will provide mobile and satellite telephones as well as microwave links for humanitarian relief workers in areas affected by natural disasters and emergencies.

Developing countries in particular were requested to address the issue of "Building Digital Bridges, to review their policies in order to remove regulatory and pricing impediments to Internet access, to make sure people are not denied the opportunities offered by the digital revolution."

- **The Global Digital Divide Initiative** of the **World Economic Forum** was launched in January 2000, during a meeting of top information technology and media, communications and entertainment sector executives. These executives initiated the formation of a Task Force to look at how to transform the digital divide into an opportunity for growth. Over the past year, the Task Force has engaged a uniquely global, multisectoral and diverse community of stakeholders from business, government and civil society. Inputs were also provided into the Millennium summit. Key issues being addressed are education, content and connectivity, strategies and policies, and creating an entrepreneurial environment.

3.4 SADC Initiatives

The Southern African Development Community (SADC) has over the past few years devoted increasing attention to the development of policies and strategies relating to telecommunications. The Southern African Transport and Telecommunication Commission (SATCC) was responsible for drafting the Telecommunications Policies for SADC (SATCC-TU 98) as well as the SADC Model Telecommunications Bill (June 1998).

In March 1998, the SADC Protocol on Transport, Communications and Meteorology was signed by the Governments of 12 SADC member states. The protocol has formed the basis for all the ICT-related policy and regulatory initiatives in Namibia since that date, including the 1999 Telecommunications Policy and Regulatory Framework.

²⁶ DOT Force: Global Bridges Digital Opportunities. Internal document, April 2001.

²⁷ <http://www.un.org/millennium>

Chapter 10 of the protocol deals with the following areas, which in turn will provide part of the framework for this ICT policy:

- ❑ Telecommunications policy
- ❑ Universal Service
- ❑ Broadcasting
- ❑ Network Provision and Maintenance
- ❑ Regional Co-operation
- ❑ Regulatory Framework
- ❑ Responsibilities of National Regulatory Bodies
- ❑ Technical Standards
- ❑ Human Resource Development
- ❑ International Co-operation.

3.5 Recommended actions

Seen overall, there are several points that become apparent and which have to be considered in the development of a national ICT policy framework for Namibia:

- **Ensure that there is *adequate and appropriate participation in global dialogues*.** Many global initiatives have been undertaken, most led by the developed countries with minimal input from developing countries. Namibia must ensure that it participates in these dialogues, and that its representatives are fully conversant with the complexities of global information society issues.
- **Develop an *ICT awareness campaign*** addressed at various levels. Firstly, awareness of the ICT trends and global initiatives has to be maintained at the level of decision makers to ensure representation in regional and global initiatives. Secondly, a national ICT awareness campaign should be developed and launched, which highlights the need for the Namibian people to become ICT-literate;
- **The implementation of *universal access mechanisms*** must be accelerated, if Namibia wishes to participate fully in the Global Information Society;
- **Define *universal service and access***, taking into consideration:
 - ❑ The unprecedented explosion in cellular telephony, which has resulted in unforeseen penetration into peri-urban and rural areas, despite the higher cost of mobile communications e.g. South Africa and Uganda; and
 - ❑ The need for creating accelerated access to the Internet.
- **Conduct feasibility studies to ensure that all such mechanisms are *sustainable*** in terms of financial, technical and human resources and that, if such vehicles are government-driven, that there is the political will to sustain them.
- **Institute *universal service/access obligations for new telecommunications operators*.** In South Africa, for example, this has spurred the development of over 2000 entrepreneur-owned phone shops through the cellular operator Vodacom. Likewise, MTN has developed a system of call phones many of which have been placed in community institutions such as schools.

- **Develop a policy that facilitates *the interconnection between national telecommunications operators and identified sites for the establishment of telecentres***, with penalisation if such connections are not provided within a defined time period. Such telecentres could be located within existing structures such as schools, clinics, government buildings, tourist offices or chambers of commerce.

CHAPTER 4: THE LEGAL AND REGULATORY REGIME²⁸

Introduction

This chapter discusses legal barriers to e-commerce and makes recommendations for Namibian legislative reform based on international best practices.

4.1 International Trends in Legislation and Regulatory Regimes: Telecommunications liberalisation

The need for liberalisation of telecoms is based upon two central issues:

- The convergence of broadcasting and telecommunication technologies
- Accessibility by lowering costs and privatisation of telecommunication.

□ **Convergence**

The Internet's vast range, speed and low cost is forcing industries to converge. Convergence takes place at three levels: technology and network platforms; at the industry level and at the services/markets level. Southern Africa is witnessing and experiencing convergence at both market and industry levels. For instance, it is now possible to deliver telecommunications services through electricity networks. Companies in the relevant sectors are also merging.

The European Green Paper on E-Commerce has identified, inter alia, the following barriers to the development of convergence:

- Regulatory restrictions on use of infrastructure;
- Market entry and licensing;
- Prices for telecommunications services;
- Availability of content;
- Regulatory uncertainty;
- Allocation of radio frequency and other resources;
- Public confidence in new environment; and
- Lack of standards supporting interoperability.

□ **Legislation and Regulatory Regimes: Telecommunication Liberalisation**

Since the 1980's, it has been the policy of most national governments to privatise major utilities or natural monopolies, such as electricity, water industries and telecommunications industries. To prevent the creation of privatised monopoly power once these entities became privatised bodies, regulatory regimes were created. This led to a complex web of law and administrative practices requiring rationalisation of the regulatory framework, a reduction of the discretion of regulators, greater transparency and additional procedural safeguards.

²⁸ This chapter has been contributed by Professor Tana Pistorius, Department of Mercantile Law, University of South Africa.

In the context of telecommunications, governments' policy has been to extend customer choice, to improve efficiency and to enhance innovation in the telecommunications sector by the promotion of competition. Unbundling of the local loop offers many advantages. It will allow new entrants to utilize the existing infrastructure between exchanges and customers premises, without having to necessarily lay new cables and duplicate other infrastructure before being able to offer a competitive service. There is a strong and well-documented correlation between the unbundling of the local loop and the growth in Internet access.

In developing countries dial tone access is considered to be the most important component of access. Once this most basic of services is in place, access can be upgraded in a gradual process until service equality can be achieved countrywide. E-commerce can commence on even the lowest bandwidth, and will grow on par with the advancement in the sophistication of the service.

□ **Governance and Promotion**

North America remains the powerhouse of the Internet economy. This is largely due to the fact that the US government was the first to recognise the enormous potential of the Internet and has taken extensive advantage of it. The US government took several steps to encourage Internet use and growth of the Internet economy. Funds were made available for various initiatives such as increasing computer and Internet use in schools and libraries, combating the digital divide and placing computers in low-income neighbourhoods.

Europe remains a grouping of diverse nations with stark differences in IT infrastructure and development, regulatory practices and Internet penetration. To promote Internet use and e-commerce developments actively, initiatives such as "e-Europe," the Electronic Commerce Directive, aims to create a single legal regime for electronic communications. For example, the UK government, has created two special cabinet posts, coined the "e-Minister" and "e-Envoy" to address IT and Internet development in the UK.

4.1.1 Constraints to ICT Use in Developing Countries

For developing countries, access to participation in electronic commerce raises the following two main issues:

- Offering the proper regulatory, fiscal and economic framework to modify the current cost structure for Internet users. Appropriate policy objectives include:
 - Stimulating awareness among potential users
 - Enhancing competition among ISP's
 - Capacity building of local players
- Enhancement of local trade efficiency:
 - Prioritise procurement, customs operations, and electronic payment
 - Enhance global competitiveness by identification of niches

- Link e-commerce participation to National trade policy objectives²⁹

Constraints on ICT use in Africa as listed by Jensen:³⁰

- ❑ Poor general level of telecommunications facilities
- ❑ Low level of computerisation due to the high price of computing equipment
- ❑ Low level of institutionalisation of networking activity
- ❑ Lack of guidelines in making services publicly available and allocating the appropriate resources
- ❑ Machines made available for wider use are often used by inexperienced users taking an inordinate length of time
- ❑ Limited technical skills for the establishment of network services and lack of knowledge of users for effective use of networks
- ❑ Vandalism of copper network infrastructure due to a high resale value
- ❑ Trend towards taxation of services is an impediment to the effective use of computer networks
- ❑ High price of Internet services and absence of local dial access in rural areas
- ❑ Lack of Internet band with linking ISP's as a result of high cost of international leased lines
- ❑ Limited peering between ISP's of the same country and between countries
- ❑ Saturated public telephone exchanges result in limited accessibility during peak hours
- ❑ Support of wireless option is constrained by the following:
 - Unregulated use of spectrum and lack of radio spectrum monitoring facilities
 - Limited resources for spectrum allocation planning
 - Monopoly over telecommunication services by telecom operators
- ❑ Absence of regional NIC centres to provide Internet Access space and guidance for emerging ISP's inhibits the growth of new local service providers

The World Bank attributes the slow Internet penetration rate in Africa to low incomes and poor telecommunications infrastructure, the latter resulting in turn from under-investment and strong governmental control. It is argued that deregulation and increased investment in telecom will boost phone penetration and the resultant Internet penetration. Poverty, coupled with high connectivity costs, however remains the main barrier to Internet connectivity in Africa. The monthly connection cost for Internet in Africa exceeds the monthly income of a significant portion of the population. Therefore, as the cost of computer equipment and Internet access continues to decline, penetration rates and the incidence of e-commerce ventures will rise.

4.2 Namibian Law

²⁹ Report by UNCTAD secretariat "Policy issues relating to access and participation in electronic commerce" delivered at third session of UN Conference on Trade and Development ((17 Sept 1998) TD/B/COM.3/16) at 12

³⁰ Jensen <http://www.igc.apc.org/gk97.gkd97/entries/4197015864.html>

4.2.1 Introduction

At the date of independence,³¹ South African law remained applicable until revoked, amended or declared unconstitutional. Article 140 of the Constitution provides that all laws which were in force immediately before independence shall remain in force until repealed or amended by an Act of Parliament or until they are declared unconstitutional by a competent court. Article 66 of the Constitution provides that both the customary law and common law of Namibia in force at the date of independence shall remain in force. South African common law and customary law principles continue to apply insofar as they are not in conflict with the Constitution or any other statutory law. It is noted that this positivist approach has the virtue of legal certainty.³²

Article 144 of the Constitution provides that general rules of public international law remain binding upon Namibia and forms part of Namibian law. Existing international agreements binding on Namibia at the date of independence also remain in force.³³ Namibia became a member of the WTO and a signatory to the TRIPS Agreement with effect from 1 January 1995. Namibia is also a member of the Berne Convention³⁴ and the Rome Convention.³⁵

Chapter 11 of the Namibian Constitution provides guidelines for state policy. The overall objective of state policy should be to promote the welfare of the people. It is provided in Article 95 that the state shall actively promote and maintain the welfare of the people by adopting policies aimed at:

- Membership of the ILO and adherence to and action in accordance with the international Conventions and Recommendations of the ILO³⁶
- Ensuring that every citizen has a right to fair and reasonable access to public facilities and services in accordance with the law³⁷

It is thus important that the ICT policy should be formulated in accordance with these guidelines. More specific application of these principles will be illustrated below.

4.2.2 Current Namibia Government Policy and Legislation related to ICT

The regulation of telecommunications service provision in Namibia takes place in terms of the Post and Telecommunications Act, 19 of 1992.³⁸ The Act has two major premises:

- 1) No one may provide a telecommunications service without a licence.³⁹

³¹ see the Constitution of the Republic of Namibia of 1990.

³² Carpenter "The Namibian Constitution – *ex Africa Aliquid Novi* after All?" in *Namibia Constitutional and International Law Issues* (eds Van Wyk, Wiechers & Hill)(1991) 22-64 at 41.

³³ see section 143 of the Constitution; see also Carpenter "The Namibian Constitution – *ex Africa Aliquid Novi* after All?" in *Namibia Constitutional and International Law Issues* (eds Van Wyk, Wiechers & Hill)(1991) at 60. Szasz "Succession to Treaties under the Namibian Constitution in *Namibia Constitutional and International Law Issues* (eds Van Wyk, Wiechers & Hill)(1991) 65-80 at 79.

³⁴ Berne Convention for the Protection of Literary and Artistic Works (1971).

³⁵ International Convention for the Protection of Performers, Producers of Phonograms and Broadcasting Organizations (Rome Convention) 1961.

³⁶ see Article 95(d).

³⁷ see Article 95(e).

³⁸ as amended by the Post and Telecommunications Act 20 of 1995.

2) Telecom Namibia Limited⁴⁰ will have an exclusive right to provide certain public switched telecommunication services for a period of time. Telecom Namibia also has an exclusive right to provide certain telecommunication facilities to certain other service providers, until a date fixed by the Minister in terms of the Act.

Similar provisions apply to broadcasting and the Namibian Broadcasting Corporation.⁴¹ The Namibian Communications Commission was established in 1992. The Commission has the responsibility to issue licenses, to control and supervise broadcasting activities and programme content.⁴²

The monopoly provisions contained in the Telecommunications Act may be viewed as a barrier to the development of electronic commerce because they inhibit the development of infrastructure over which electronic commerce is carried.

It is incumbent upon the Minister and Telecom to prepare the necessary regulatory framework in terms of the Act for the licensing of service providers to compete with Telecom at the end of its monopoly as the privatisation of this state-owned firm lies within the five year horizon.⁴³ Namibia is in the process of issuing tenders for the second cellular licence. The upcoming liberalisation of Namibia's wireless markets should induce price reductions, diversification in value-added service offerings, improved responsiveness to customers and better quality services.⁴⁴

Another factor inhibiting the development of electronic commerce is the uncertainty in the Act regarding the exact ambit of Telecom's monopoly.

Potential service providers lack clarity on issues such as the licensing of value added network services, private telecommunication networks, mobile data network services and global mobile personal communications by satellite services.

4.2.3 Changes to the Existing Regulatory Regime

The Telecommunications Policy and Regulatory Framework for Namibia⁴⁵ proposes the following changes:

- Replacement of existing laws
- Establishment of NICRA
- Creation and implementation of framework for NICRA
- The liberalisation of telecommunications and the introduction of competition
- Affirmative action geared towards disadvantaged groups and women
- The institution of a privatisation scheme in which the private sector, the public and employees may share.⁴⁶

³⁹ see section 2(1) of the Post & Telecommunications Act of 1992.

⁴⁰ see section 2(1)(b) of the Post and Telecommunications Companies Establishment Act 17 of 1992.

⁴¹ see the Namibian Broadcasting Act 9 of 1991

⁴² see the Namibian Communications Commission Act 4 of 1992 as amended in 1995.

⁴³ see ITweb Daily news 13/01/2001 available at: <http://www.itweb.co.za>.

⁴⁴ Pyramid Research "Africa's Wireless Markets: Upcoming Liberalization" *ITU News* 4/1999 at 20-24; see application for GMPACS Provider Licence granted 1 September 2000 (GN 172/2000).

⁴⁵ by the Ministry of Information and Broadcasting (1999).

⁴⁶ see White paper page 8-9.

The main aim is to promote universal access and the development of a Namibian ICS. NICRA should be an independent body carrying out specialised activities relating to the expansion and operation of information and communication technologies.⁴⁷

A narrowly focused regulatory regime is complex, cumbersome to administer, and requires the development of highly detailed regulations. Regulation should not restrict the inherent benefits of the convergence of technology. The basis of modern communication services is digitisation and convergence – several types of networks can distribute similar services and content. The regulatory regime should be able to accommodate telecommunications providers that become Internet providers and broadcasters and vice versa. Furthermore, licences should be awarded on the basis of the service, or the technology, or the industry. For example, a service licence should entitle the licensee to a platform on which the licensee may carry telephony, broadcasting, and/or data.

Restrictions on ownership in broadcasting facilities are common but no longer make as much sense in a converged environment. A great need for co-operation exists between the telecommunications and broadcasting regulator and the competition regulator. Competition, both facilities-based and services-based, within a well-regulated environment should be used to ensure speedy unbundling of the local loop.

Tax breaks, subsidies or incentive schemes are three possible ways to achieve this.

Government policies and the associated standards adoption process should be internationally co-ordinated and compatible and should facilitate interoperability within an international, voluntary and consensus-based environment for standards setting. International standards bodies such as the ITU, IETF, AGB, and others can guide Namibian policies on standards.

Key elements to be addressed by a Namibian Telecommunications Regulatory Body are:

- ❑ Regulatory procedures (white papers, advisory committee, Telecom forum, public hearing etc)⁴⁸
- ❑ Sector scope (single sector or multi-sectoral),
- ❑ Hierarchical relations with the parent ministry⁴⁹
- ❑ Structure of the board (size, staffing and status),
- ❑ Role and function include:
 - Spectrum management
 - Type of certification & approval,
 - Numbering plan,
 - Price regulating
 - Consumer protection

⁴⁷ see White paper pages 16-17.

⁴⁸ Makane Faye “Legal, Regulatory and Policy Issues in NII Development” *National Workshop on Information and Communication Technology Strategy for Rwanda* 30 Nov-3 Dec 1998, Kigali, Rwanda, available at <http://www.un.org/Depts/eca/news/ict/tsld001.html>

⁴⁹ WTO proposal on “Independent Regulatory Body” at <http://www.wto.org>

- Dispute resolution
- The policy on convergence of technologies, especially broadcasting and telecommunication services
- Licensing policy for convergent services
- The unbundling of the local loop and the introduction of competition in the provision of both facilities and services
- The adoption of international standards

It is recommended that a Universal Service Agency/National Directorate for E-commerce be created for Namibia, in order to

- **Stimulate awareness of e-commerce**
- **Provide universal access to e-commerce**
- **Introduce and champion legislation to facilitate e-commerce**
- **Co-ordinate and manage e-commerce & related regulatory bodies**

4.3 Legislative and Regulatory Barriers to E-Commerce

4.3.1 Introduction

The development of electronic commerce has revolutionised international trade. Modern communication techniques have rendered many principles of commercial laws obsolete and in many instances these archaic principles of commercial law pose barriers to electronic commerce. For example:

- (i) Concepts such as “writing,” “document” or “signature” pose difficulties when applied to information that is communicated in digital format.
- (ii) Particular types of transactions are required to be conducted on paper or in person, or that written records thereof be maintained.
- (iii) Statutory, regulatory and licensing requirements may prohibit online transacting.
- (iv) Lack of uniformity in policies, laws, standards and trade practices in different jurisdictions create difficulties.

Governments need a multi-disciplinary approach embracing:

- Technology,
- Laws,
- Infrastructure,
- Business operation
- Public policy

Key issues affecting Internet commerce are the recognition of electronic messages, electronic authentication, electronic payment systems, standards and interoperability, customs and taxation. Intellectual-property law faces the biggest challenge yet by on-line services and multimedia. Furthermore, the heated “dot.com” domain

name disputes and the transmission of digitised information products necessitate a re-examination of current intellectual property laws.

One very important aspect is the fact that technological innovation and the creation of a global Cyber-society has also created vast opportunities to exploit the innocent. The regulation of consumer protection, the protection of privacy, the regulation of content of commercial communications and the creation of legislation to provide for digital and electronic signatures have all become an e-commercial reality and necessity.

4.3.2 An Overview of Initiatives

□ International Position

Worldwide, numerous initiatives and regulatory actions have been launched at national and regional levels.⁵⁰ The EU has begun to formulate several policy lines on electronic commerce by stimulating the development of an internal market for those services whilst safeguarding public interests.^{51 52}

Greater consistency in national and regional approaches is needed and it is against this background that the UNCITRAL Model Law on Electronic Commerce (1996) was drafted. It aims to create a more secure legal environment for what has become known as "electronic commerce" by providing a tool for states to enhance their legislation as regards paperless communication and storage of information. Numerous jurisdictions have moulded their enabling instruments on the Model Law.⁵³

The common message that these initiatives carry is:

- Electronic commerce requires a global, coherent and co-ordinated approach
- Existing legal and regulatory barriers should be eliminated
- The emergence of new barriers to electronic commerce should be avoided.

⁵⁰ See for example Singapore's Electronic Transactions Act 25 of 1998; India's Information Technology Act 21 of 2000; Mexico's Electronic Communication Act 2000 (introduced 28 April 1999); Germany's *Informations- und Kommunikationsdienste-Gesetz – IuKDG* of 1997; British Columbia's Electronic Transactions Act 2000; Bermuda's First Atlantic Commerce Ltd Electronic Commerce Act 1999; and the Irish Electronic Commerce Act of 2000.

⁵¹ cf. Communications on "[A European Initiative in Electronic Commerce](http://www.ispo.cec.be/e-commerce/initiat.html) "; <http://www.ispo.cec.be/e-commerce/initiat.html> "[Harmful and Illegal Content on the Internet](http://www.echo.lu/legal/internet/communic.html) "; <http://www.echo.lu/legal/internet/communic.html> and "[Ensuring Security and Trust in Electronic Communication](http://www.ispo.cec.be/eif/policy/97503toc.html) "; <http://www.ispo.cec.be/eif/policy/97503toc.html>, and the Green Paper on "Protection of Minors and Human Dignity in Audiovisual and Information Services; Communication from the Commission to the European Parliament, The Council, the Economic and Social Committee and the Committee of the Regions the need for strengthened international Coordination (COM (98) 50

⁵² <http://www.ispo.cec.be/g7/g7main.html> Electronic commerce policy formulation has been addressed by the WTO, OECD, WIPO, the EU-U.S. Information Society Dialogue, the Trans-Atlantic Business Dialogue, the Global Business Dialogue on Electronic Commerce,⁵² and the EU-U.S. (Washington, December 1997) and EU-Japan (Tokyo, January 1998) summits. Other initiatives include the APEC forum and the [G7 ministerial conference in Brussels](#) (February 1995), the ITU "Telecom Interactive" event in Geneva (September 1997), and the Bonn Ministerial conference (July 1997), see <http://www.echo.lu/bonn/conference.html>.

⁵³ See for example in the US the draft Uniform Electronic Transactions Act (hereafter referred to as "the UETA" (4 August 1999 draft)) (adopted at its *Annual Conference Meeting in its One-Hundred-And-Eighth Year* in Denver, Colorado (July 23-30 1999)) which is being drafted by the US' UNCCUSL to be considered in conjunction with the UCC. This Act has been closely modelled on the Model Law; see also the Australian Electronic Transactions Act 1999 (available at ecommerce@ag.gov.au), see also the Canadian Uniform Electronic Commerce Act 1999 (available at <http://www.law.ualberta.ca/alri/ulc/acts/eueca.htm>); see also the Illinois Electronic Commerce Security Act and the Utah Digital Signature Act (S 107 52nd Leg 1st Reg Sess (Utah 1998)

Where legislative action is deemed necessary, it should be clear, consistent and it should promote a pro-competitive environment in which electronic commerce can flourish. Legal frameworks should ensure public interest objectives such as the protection of privacy, intellectual property rights, consumer protection and public safety.

□ **Namibian Initiatives**

In Namibia, "...no work has been done on the legal and commercial frameworks, financial issues or Intellectual Property Protection..."⁵⁴

It is recommended Namibia should adopt a policy on the legal and regulatory framework for electronic commerce.

A recent ILO report⁵⁵ stresses the importance of adopting coherent strategies at national level. Article 95(d) of the Namibian Constitution encourages the close scrutiny of the recommendations in the ILO report. It is recommended that:

- **A Namibian policy on the legal and regulatory framework for electronic commerce be formulated**
- **The ILO's World Employment Report 2001: Digital Divide be adopted as the primary point of departure**

4.4 Legal Aspects of e-Commerce:

Contracting, Intellectual Property Rights, Security and Privacy

4.4.1 Contracting

□ **International Developments**

Legislative initiatives are geared towards the elimination of the requirement that contracts be in "writing",⁵⁶ the recognition and attribution of electronic messages⁵⁷ and provisions on time and place of receipt and dispatch of electronic messages⁵⁸ (time and place of contracting). These problems are addressed by providing that informa-

⁵⁴ "ECA/IDRC Pan-African Initiative on e-Commerce."

⁵⁵ ILO's World Employment Report 2001: Digital Divide available at <http://www.ilo.org/public/english/support/publ/wer/index2.html>

⁵⁶ Article 6(1) of the Model law provides that where the law requires information to be in writing, that requirement is met by a data message if the information contained therein is accessible so as to be usable for subsequent reference. This provision is applicable whether the requirement therein is in the form of an obligation or whether the law simply provides consequences for the information not being in writing.

Article 6(3) recognises that the matter of specifying exclusions should be left to enacting States, an approach that would take better account of differences in national circumstances.

⁵⁷ Article 12 of the Model Law provides that a declaration of will or other statement, as between the originator and the addressee of a data message, shall not be denied legal effect, validity or enforceability solely on the grounds that it is in the form of a data message. Certain exceptions are provided for.

⁵⁸ Article 15(1) of the Model Law provides that Unless otherwise agreed between the originator and the addressee, the dispatch of a data message occurs when it enters an information system outside the control of the originator or of the person who sent the data message on behalf of the originator. The time when the data message enters an information system outside the control of the originator may be the information system of an intermediary or an information system of the addressee. 'Information system' has to be interpreted broadly, as referring to any technical means and would, therefore, include the communication link between the sender and, for instance, his service provider.

tion shall not be denied legal effect or enforceability solely by reason that it is in electronic form.

It is also commonly provided that a requirement for information to be in writing is satisfied by information in electronic form if the information is accessible so as to be usable for subsequent reference.⁵⁹ Some legal systems provide that an electronic contract will be formed once the message enters the system designated by the parties, or if no system has been designated, the time it enters any of the receiver's systems. Others provide that the contract will come into being when the message is received and accessible at the offeror's system.

❑ **Namibian Law of Contracts**

Common law principles apply to the validity of contracting on the Internet and the time and place where the contract was concluded. No special rules have yet been developed. Any changes should take emerging international trade practices into account because of the potential international character of Internet commerce.

In respect of Internet contracts the Internet trader will set up its cyber trade site from which transactions will be conducted. In cases where the site constitutes an offer to be accepted by clients, the traditional model requires subjective knowledge of the acceptance by the offeror before the agreement will come into existence unless such knowledge has expressly or impliedly been waived. In most cases of Internet trade it will be difficult to tell whether knowledge of the acceptance ever reached the mind of the offeror or, if it is a company, came to the knowledge of a person authorised to contract on behalf of the company.

Conversely, if the site works with the model that it only invites business and that the order by the client constitutes an offer, the contract will only come into existence once the client receives subjective notice of the acceptance by the cyber trade. The trading site will therefore have to contain the capability to confirm the order to the client. However, there is the danger that the client may never receive notice of the confirmation in which event no contract will have come into existence.

Although these so-called 'click wrap agreements' have yet to be tested in court, there would appear to be no reason why they should not be enforceable. Compared to the ticket cases where the customer is not necessarily aware of the existence of contract terms, the customer is in the case of 'click-wrap' agreements actually aware of the existence of contractual terms before a commitment is made to make use of the site or acquire the goods or services.

The approach of the Namibian common law can be summarised as follows:

- ❑ The information theory is the general rule whether the parties conclude their contract in each other's presence or over a distance.
- ❑ The offeror is allowed to expressly or impliedly deviate from the general

⁵⁹ Article 6 and 11-12 of the Model Law; Article 9 and 14 of the AETA and section 7 and 15 of the UETA and article 5 and 23 of the Canadian UECA) Recognition is also given to "click-on" contracts (see section 20 of the UECA and article 208 of the UCITA; see the Contract Law of the Peoples' Republic of China (1999) where e-commerce problems are specifically addressed.

- rule.
- The mere geographical separation of the parties is not a sufficient indication that the offeror has impliedly dispensed with the general rule. Such an indication may exist where other factors are also present. The courts have found such other factor to be the extraordinary result of the application of the general rule (revocation possible after despatch but before delivery) where goods are ordered. In postal contracts the commercial inconvenience caused by the general rule, the application of a different rule in other legal systems and the generally observed trade usage were regarded as sufficient indication.
 - The courts have extended the application of rules to certain methods of communication to other similar methods of communication by means of analogy.

We may assume that the courts will follow a similar approach to contracts concluded by other means of communication where the parties are at a distance from one another.

Internet relay chat, or Internet voice link is a communication service that is 'full duplex' and in real time. Communication between the client and server on the World Wide Web, are 'instantaneous' and it will place parties in a conversational situation. The information theory should apply to both instances.

It is fairly certain that the Namibian courts will apply the information to contracts concluded with the conversational methods of communication on the Internet. In contrast, it is uncertain whether the Namibian courts will apply the information, expedition or reception theory to contracts concluded by e-mail and the World Wide Web.

The court can even decide that the placing of an order by the customer on a commercial web site is similar to the case where an order is sent to a person at a distance to supply certain goods at a certain price and that the offer in the order is accepted by the despatch of the goods. The problem with this last solution is that customer will not know whether his offer has been accepted. In this regard the solution of the EU Directive has much to commend itself, because it makes certain that both parties know that a contract is concluded. The offeror may expressly indicate in his offer when the contract will come into being and by doing so make certain that a solution acceptable to him will be applied to the contract that is eventually concluded. The admissibility and evidential value of electronic communications are also uncertain.

Certain legislative provisions that expressly provide for contracts to be entered into in writing pose a barrier to e-commerce. In Namibian statutory and non-statutory law, the rules applicable to traditional paper-based commercial transactions cannot be applied to electronic commerce with ease as requirements such as "document", "signature",⁶⁰ "writing",⁶¹ "original", "notice", "record",⁶² and "delivery" in legislation pose a barrier to electronic commerce.⁶³

⁶⁰ See section 20(k) of the Liquor Act of 1998.

Various legislative provisions deal with powers of inspection and prosecution that may not extend to electronic storage mediums or conduct on the Internet.⁶⁴ The Computer Evidence Act 32 of 1985 deals with computer-related evidence. However, this Act has proved to be inadequate as it prescribes stringent requirements for the authentication of computer printouts prior to their admission as evidence.⁶⁵ The Namibian courts would consider the admissibility of computer-generated evidence with a view to how it was generated. The Computer Evidence Act provides only for the admissibility of computer printouts where the data contained therein was created by some human agency or intervention. Accordingly, computer evidence created automatically, without human intervention, would not be governed by the Act. The evidentiary weight of, for example EDI or on-line contracts, has to be addressed. Furthermore, the requirement of the retention of documents will not be met if documents are stored in electronic format.

It is recommended that the following legislative enactment be considered with regard to contracting:

- ❑ **The legal recognition of data messages**
- ❑ **The requirement of “writing” to be met by data messages (the identification of provisions in laws where the requirement of “writing” or “paper-based requirements” pose a barrier to e-commerce)**
- ❑ **The requirement of “original” documents – criteria for functional equivalents by electronic messages**
- ❑ **The admissibility and evidential weight of data messages**

⁶¹ See section 18(1) of the Liquor Act of 1998; see also section 10 and section 53 of the Banking Institutions Act 2 of 1998.

⁶² Section 53 of the Banking Institutions Act 2 of 1998.

⁶³ See the definitions of these terms in the Interpretation of Laws Act 33 of 1957 (as amended).

⁶⁴ See Liquor Act 6 of 1998 – the definition of “licensed premises” refers to a premises in respect of which a licence has been granted. The definition of “premises” in section 1 refers to immovable property and its appurtenances and dining room of a train or a vehicle. This Act was clearly drafted with only physical premises in mind. Information on the availability of liquor on the Internet or the selling of liquor on the Internet will not be permissible under this Act; see section 6 of the Banking Institutions Act 2 of 1998; see also on the admissibility and evidential value of computer-related evidence the Computer Evidence Act 32 of 1985 (as amended in 1987).

⁶⁵ In terms of section 2 of the Act a company official must make a statement under oath:

- (a) That she recognises the print-out and that it is a print-out as described in the Act;
- (b) That she can identify the print-out of the information and acknowledges that it is a true copy of such information;
- (c) In which she describes the type, quantity and sources of the information in general terms, as well as the instructions that were fed into the computer, and the object and results of the processing of such information;
- (d) In which she certifies that the computer was correctly and fully supplied with the instructions and information necessary to properly record the data;
- (e) In which she certifies that the computer was not affected by any malfunctioning, manipulation or other disturbance which could affect the information or its reliability;
- (f) In which she certifies that there is no reason to doubt the veracity or reliability of the information that was recorded in the computer.

The full impact of this burdensome declaration is, however, alleviated by section 2(2), which states that such a declaration need only be made to the best knowledge of the person making the statement.

It is further required that the person making the statement must be someone qualified to give evidence on the above matters based on her:

- (a) Knowledge of and experience in computers and of the specific system used by the organisation; and
- (b) Investigation of all relevant records and facts in regard to the functioning of the computer, the information and the instructions to the computer.

She must furthermore certify that she had access to those records in the normal course of her duties; or that someone who did have access verified it.

- ❑ **The retention of data messages**
- ❑ **The formation and validity of electronic contracts**
- ❑ **Recognition by parties of data messages**
- ❑ **The attribution of data messages**
- ❑ **Acknowledgement of receipt**
- ❑ **Time and place of receipt and dispatch of data messages**
- ❑ **Consumer-protection measures for distance contracts**

4.4.2 Copyright protection

❑ International Position

The “digital agenda” prompted contracting parties to adopt two “Internet treaties”:

- the WIPO Copyright Treaty (WCT) and
- the WIPO Performances and Phonograms Treaty (WPPT)

which address issues of the definition and scope of rights in the electronic environment, and some of the challenges of online enforcement and licensing. Questions such as whether transmitting a work in digital form over the Internet constitutes infringement of copyright, and more specifically, whether it constitutes broadcasting of the work, publishing the work or placing it is a diffusion service have been addressed. A new right of “communication to the public” was created to enable copyright owners to control the dissemination of copyright works on the Internet.

Numerous jurisdictions have addressed legal issues relating to the practice of “deep” hyper-linking, i.e. providing links that by-pass the provider’s home page (which may contain advertising and other commercial information), caching, framing, the hosting of infringing material and the creation of mirror sites. The limitation of liability of Internet Service Providers (ISP’s) has also been legislated. The limitation of civil and criminal liability of ISP’s depend on certain threshold requirements related to the performance of certain functions or acts.⁶⁶ Electronic rights management and the prohibition on dealings related to technical protection measures is also very important for the copyright protection of works in the digital environment.⁶⁷

❑ Namibian Copyright Law

The Copyright and Neighbouring Rights Protection Act of 1994 deals with copyright protection in Namibia. As a Member State of the Berne Convention, Namibia is bound to the interpretation of Article 9 and the exceptions permitted thereunder as expounded in the WIPO Copyright Treaty. The reproduction right of the copyright holder of a literary or artistic work fully apply in the digital environment, in particular to the use of works in digital form. It is understood that the storage of a protected work in digital form in an electronic medium constitutes a reproduction within the meaning of Article 9 of the Berne Convention (it is also a reproduction in terms of section 7 of the 1994 Copyright Act).

⁶⁶ see Boman & Lindblom “Hyper-Linking may be a Criminal Offence” [2000] 1 *European Intellectual Property Law Review* 55 which cites a recent Swedish “MP-3 case” it was held that hyperlinking from a person’s private homepage to illegally copied music amounts to the public performance of a work and criminal liability followed.

⁶⁷ See for example amendments to the Australian Copyright Act, the DMCA and the EU Electronic Commerce Directive; in *Universal Studios Inc v Reimerdes* 111 F Supp 2d 294 (SDNY 2000) it was held that the web site’s posting of and linking to code that decrypts copyright protection technology violate the DMCA.

However, Namibian copyright law must be amended to accommodate the e-commerce implications within the realm of traditional copyright principles. In line with the Namibian common law principles of the law of delict, it may be argued that:

- ❑ Access providers ('mere conduits') are exempt from liability;
- ❑ In the absence of knowledge or 'awareness', hosting ISPs are not liable for damages; and
- ❑ Injunctive relief is available against ISPs.

However, the Namibian government has to establish the principle that once hosting ISP's acquire the necessary knowledge or 'awareness,' they are not liable for damages if they immediately disable access to the infringing content.

Although an analysis of the general principles of Namibian law of contract indicates that a shrink-wrap agreement complies with the basic requirements of an enforceable contract, the enforceability of such agreement has not been tested by a Namibian court of law. The superior bargaining power of the software developer places the consumer in a "take it or go without it" position, and several of the user's statutory entrenched rights may be curtailed by this agreement forced upon her.

Namibian software developers who wish to market their products internationally, as well as domestic users of software products should take note of the international developments as the law of a foreign nation may be regarded as the proper law of such contract. The recent developments in the US, in particular, should be heeded. It is clear that standard shrink-wrap licences accepted by a user in Namibia may be subject to interpretation according to the law of a foreign jurisdiction.

It is recommended that the Copyright and Neighbouring Rights Act be amended to provide for:

- ❑ **A new right of communication to the public in respect of the distribution of copyright works on the Internet**
- ❑ **A new right of remuneration for broadcasting and communication to the public**
- ❑ **Provisions dealing with OSP limitations of liability for:**
 - **Hosting infringing material**
 - **Linking limitations**
 - **Caching limitations**
 - **Creation of mirror sites**
- ❑ **Provisions relating to take-down notices in the event of infringement**
- ❑ **Special limitations of liability for Higher Educational institutions (including distance education provisions)**
- ❑ **Provisions dealing with the fair use provisions in the digital environment**
- ❑ **Electronic rights management**
- ❑ **The circumvention of technological protection measures.**

4.4.3 Domain Naming & Trade Mark Disputes

- ❑ **International Position**

Domain names are also known as “web addresses”, “.com’s”, “dot com’s”, “url addresses”, or “net names”.⁶⁸ Responsibility for Internet Protocol and domain name allocation referred to as a Domain Name System (DNS) was assumed by the Internet Corporation for Assigned Names and Numbers (ICANN). The total number of registered domain names worldwide currently exceeds 17.7 million, of which 9.4 million are “dot-com” domain names. There are currently seven generic top level domains (gTDLs).⁶⁹ The top level country domain registrations (ccTLD) range from 1938740 for “.uk” to 73655 for both “.za” and “.nz”

ICANN has been a historically US-centric effort, but Internet governance is increasingly becoming an international effort. ICANN’s board of members represent North America, Europe, Asia-Pacific, Africa and Latin America. A regional body to represent Africa in ICANN, called AfriNIC⁷⁰ (a private sector initiative), has been formed. Of greatest concern are:

- cybersquatting,
- trademarks vs. domain names and
- potential security breaches.

DNA Dispute Resolution measures have been developed to deal with ‘cybersquatting.’

A number of governments believe that they have the right to manage the domain for their country, top-level domain (for example .za). The responsibility for the country-level domain is a national asset within the emerging economy. South Africa’s Department of Communications has proposed that an independent Domain Name Authority (DNA) be established.⁷¹ This non-profit making organisation will represent all stakeholders within the ICT private sector, public sector and civil society, in general.

The World Intellectual Property Organisation undertook an extensive study of the issues and recommended:

- Collection and availability of reliable information regarding the contact details of domain name holders is viewed as an essential tool for protection of intellectual property and is therefore seen as a crucial component of the best practices that must emerge among registrars.
- Introduction of non-commercial, use-restricted domains, where public availability of the contact details of those domain name holders would be unnecessary.

□ **Namibian Law and Domain Naming & Trade Mark Disputes**

The Namibian Trade Marks Act 48 of 1973 and the Merchandise Marks Act 17 of 1941 cannot

⁶⁸ see <http://www.domainregister.com/>

⁶⁹ ICANN is considering adding seven new gTDL’s (generic top level domains) to the current seven, some of the new gTDL’s include “.biz”, “.Name”, “.Pro” and “.Coop”.

⁷⁰ see <http://www.AfricalP.com>.

⁷¹ “Discussion Paper on the Establishment of an Independent Domain Name Authority” at <http://www.ecomm-debate.co.za> (April 200); see also <http://www.isoc.org.za/namespace.html>.

- effectively address the unauthorised use of trade marks on the Internet.
- does not make provision for infringement in respect of use on “similar” goods or infringement by dilution.
- Trade-mark rights in respect of services are obscure.
- Well-known unregistered foreign marks are not protected by statute.⁷²

It is recommended that a Namibian Domain Name Authority be established (Government may create a regulatory framework for a government entity or an incorporated company not for gain) **to perform the following functions**⁷³:

- o **Regulate the registration of domain names in Namibia**
- o **Determine the form of registration**
- o **Determine the duration & renewal of registration**
- o **Determine the circumstances under which a registration may be granted, renewed or refused by a registration authority**
- o **Determine other matters relating to registration which may be applicable**
- o **Determine a dispute resolution policy in terms of which a dispute relating to a domain name registration may be conducted**

4.4.4 Database Protection

□ International Position

The ease with which digital property can be located, accessed, copied, modified, and distributed is without precedent. Also, advances in copying and editing capabilities can lead to recompilations and new derivatives of an electronic database. Copyright law seems to be the most apt system for the protection of databases. However, the requirement of ‘originality and a modicum of creativity’ is too stringent for electronic information tools, which process and store information automatically.

The European Union has devised a new “sui generis” right to protect non-original databases. This protects the contents of any non-copyrightable database that is the product of substantial investment in obtaining, verifying, or presenting the database’s contents.⁷⁴ The sui generis right provided by the Database Directive creates an intellectual property right that goes much further than the copyright law of most EU member states, like the United Kingdom and Ireland, where they had to raise the originality level for database protection beyond the ‘sweat of the brow’.⁷⁵ This right is not subject to compulsory licensing arrangements, even where the database com-

⁷² compare section 35 of the South African Trade Marks Act of 1993.

⁷³ see for example the Domain Name Authorities established in terms of the Regulation on Finnish Domain Names on the Internet (Prescribed by the Telecommunications Administration Centre in terms of section 37 of the Telecommunications Market Act of 30 April 1997 (396/1997) and section 8 of the Telecommunications Market Decree of 7 May 1997 (424/1997); Irish Electronic Commerce Act 27 of 2000. See also The Uniform Dispute Resolution Policy of ICANN and the U.S. Anticybersquatting Consumer Protection Act (ACPA), which deal with abusive domain registration.

⁷⁴ Recital 39 and art 7(1) of the Database Directive

⁷⁵ Copyright and Rights in Databases Regulations 1997 SI 3032 (1997)

piller is the sole source of the database contents. The strengthening of database protection in the United States is also receiving Congress' attention.⁷⁶

□ **Namibian Legal Position**

The Copyright and Neighbouring Rights Protection Act of 1994 provides in section 1 that tables and compilations fall within the category of "literary works." The work must be original (independently collected and not copied from another) and must have been reduced to material form. Thus under Namibian copyright law, the originality standard is the "sweat of the brow" standard.

The reciprocity provisions of the Database Directive and other international instruments which are likely to follow, mean that it is essential to make amendments to the Namibian Copyright and Neighbouring Rights Protection Act of 1994.

It is recommended that :

- **The originality standard for the protection of databases under the Copyright and Neighbouring Right Act of 1994 be revisited.**
- **The *sui generis* protection of non-original databases be introduced into Namibian law.**

4.4.5 Indigenous Knowledge

□ **International Position**

The World Intellectual Property Organisation (WIPO) has recognised the importance of protecting indigenous knowledge and there has been exploratory groundwork set up to attempt to collect information and to address this area of law.

Digital technology may be used to promote indigenous knowledge and folklore, provided sufficient protection exists against the unauthorised exploitation. For example, in Malaysia the Sarawak Craft Council is studying a proposal to create a trade mark to identify locally produced handicrafts. Electronic databases containing ethnobotanical data, information on traditional healing methods and other indigenous knowledge may be licenced to Internet users.

□ **Namibian Position**

Namibia has a rich and diverse culture embracing arts and crafts and indigenous knowledge which should be encouraged.

⁷⁶ See "The Collections of Information Antipiracy Bill (HR 354) and HR 281

It is recommended that the Internet be used as a marketing tool for indigenous knowledge and folklore. Government may create craft portals in consultation with local artists and cultural leaders.

4.4.6 Security: Authentication & Signature

□ International Developments

Security concerns are on par with the inherent characteristics of the Internet. The Internet is de-centralised and self-regulatory in nature. The expanding penetration of the Internet in trans-national transactions is alarming. Furthermore, the "virtual closeness" and "personal" contact and interaction on the Internet are belied by the physical realities, such as no guarantee for the performance of basic obligations, for example, the delivery of goods purchased. The most important advantages that electronic commerce brings - the ease and speed with which a transnational communications may be exchanged and transaction concluded - is also the source of some of the security concerns which face the parties to such a contract - namely authentication and integrity. Technology has been deployed to address these security concerns.⁷⁷

Electronic authentication technologies allow the recipient of the electronic communication to:

- Verify the identity of the sender
- Verify the fact that the content of the message has not changed since transmission; and
- Ensure that the sender cannot later repudiate the message.

There are various kinds of electronic authentication technologies, including:

- Digital signatures (which provide a party with a secret or private key which allows that party to electronically "sign" a message)
- Biometrics (which measures a human attribute, such as a person's voice, fingerprint, or geometry) and
- Signature dynamics (which captures and verifies a hand-written signature in an electronic medium).

In addition, various sectors have developed secure methods of authentication using secure channels and techniques such as "PINS." To date, digital signature technology has received the most attention. Legal initiatives include either electronic signature laws,⁷⁸ or digital signatures or other public key-styled ("PKI") technologies. Some states in the United States have introduced legislation that addresses both digital and electronic signatures. These initiatives may be divided into three categories, namely:

⁷⁷ See in general Stewart A Baker "Decoding OECD Guidelines for Cryptography Policy" (1997) 3 (31) *International Lawyer* 729-756; see also Argentina's Presidential Decree No 427/98 - Digital Signatures for the National Public Administration.

⁷⁸ Article 7 of the Model Law provides that where the law requires a signature of a person, that requirement is met in relation to a data message if: (a) a method is used to identify that person and to indicate that person's approval of the information contained in the data message; and (b) that method is as reliable as was appropriate for the purpose for which the data message was generated or communicated, in light of all the circumstances, including any relevant agreement.

- Prescriptive⁷⁹
- Criteria-based⁸⁰ and
- Signature enabling.⁸¹

The US's E-Sign Act (2000)⁸² provides a federal framework for the recognition of electronic signatures as being legally binding. House and car loans, wills and other important documents may now be signed electronically over the Internet.

- **Namibian Legal Position**

At present Namibian law does not make provision for the use of electronic signatures or digital signatures.

It is recommended that the Namibian government introduce technologically neutral legislation recognising electronic signatures as equivalent to traditional signatures by:

- **Establishing a Regulatory scheme;**
- **Establishing a Licensing Authority (Root CA) to develop a policy framework based on best international practices to provide for electronic security.**

The following must be considered:

- **The adoption of digital signatures or electronic signatures or both**
 - **Determination of levels of security**
 - **Modes of authentication and identification**
 - **Technology neutral provisions**
 - **The use of PKI technology**
 - **Consumer protection**
 - **Licensing and auditing of Certification Authorities**
- **Establishing Certification Authorities, considering**
 - **Management**
 - **Obligations**
 - **Reporting**
 - **Liability**
 - **Establishing a Cryptography Registration Regime⁸³ with functions including:**

⁷⁹ See for example legislation in Utah (107 52nd Leg 1st Reg Sess (Utah 1998); Minnesota (S 2068 80th Leg 1st Reg Sess (Min 1997), Washington (Wash Rev Code § 19.34 (1998), and Missouri (S 844 89th G A 2nd Reg Sess (Mo 1998)

⁸⁰ See for example legislation in California (California Government Code § 22000-22005 (April 22 1997); initiatives in Iowa (H F 2474 77th G A 1st Reg Sess (Iowa 1997); Kentucky (H R 708, 1998 Leg 1st Reg Sess (Ky 1998

⁸¹ See for example initiatives in Iowa (H F 2474 77th G A 1st Reg Sess (Iowa 1997); Kentucky (H R 708, 1998 Leg 1st Reg Sess (Ky 1998); and West Virginia (H R 4293 73rd Leg 2nd Sess (W Va 1998)

⁸² see An Act to Facilitate the Use of Electronic Records and Signatures in Interstate or Foreign Commerce (Short Title: Electronic Signatures in Global and National Commerce Act) 106th Congress of the United States of America (2000)

⁸³ see the UK Electronic Communications Act 7 of 2000; a "cryptography support service" is defined in section 6 as any service which is provided to the senders or recipients of electronic communications, or to those storing data, and is designed to facilitate the use of cryptographic techniques for the purpose of – securing that such data or communication can be accessed or securing that the authenticity or integrity of the communication or data is capable of being ascertained.

- **The establishment and maintenance of a register of approved providers of cryptography support services**
- **Arrangements for the grants of approvals**
- **Delegation of approval functions**
- **Restrictions on the disclosure of information**
- **To provide for the purpose of encryption use & criminal sanction if used without due process**
- **The import and export control of cryptography**

4.4.7 Privacy

□ International Position

Information privacy—an individual's control over the manner in which personal information is obtained, disclosed, and used—is critical to the development and use of electronic commerce. Ensuring the effective protection of privacy with regard to the processing of personal data on global information networks enjoys international attention. Due to the international nature of Internet trade, which knows no national boundaries, Namibian Internet traders dealing with, for instance, European consumers need to take cognisance of the consumer protection measures that have been legislated in Europe as it may affect their legal position.

The Directive on the Protection of Consumers in Respect of Distance Contracts⁸⁴, adopted in 1997, is an important step towards the homogeneous consumer protection in the European Union. Article 4 prescribes certain information, which must be provided to the consumer before the conclusion of any distance agreement (such as the main characteristics of the goods and the prices). The information may be provided on any medium appropriate to the means of distance communication used (such as on e-mail or multimedia).

Furthermore, Article 7 of the Electronic Commerce Directive provides that unsolicited commercial communications must be clearly identified as such. The Directive also provides that consumers who do not wish to obtain such communications may register themselves in opt-out registers. Service providers undertaking unsolicited commercial communications must regularly consult the opt-out registers to ensure that they do not send such communications to private persons registered in those registers.

Information on e-consumers — also called 'click data' — is fast becoming a commercial commodity. Article 7 of the Council Directive on the Protection of Individuals with Regard to the Processing of Personal Data and on the Movement of Such Data⁸⁵ requires that the consent of an individual be obtained before the collection and use of personal data. Article 10 of the Privacy Directive also requires that the purpose for which the data is being collected should be disclosed to the individual. Article 25 prohibits the transmittal of personal data to other countries that lack 'adequate laws' for the protection of personal data.

⁸⁴ *Official Journal C288/1*

⁸⁵ Council Directive 95/46 of 24 October 1995, 1995 Official Journal (L 281) 31 ('the Privacy Directive')

Data protection laws have been enacted which ensure that no data collector may request, collect or collate personal data on a data subject that is not reasonably necessary for the purpose for which the data is required. Furthermore, the data collector has the following duties:

- Must disclose in writing to the data subject the specific purpose for which any data is being requested, collected, collated or stored.
 - May not use the personal data for any other purpose than the disclosed purpose without the express written permission of the data subject.
 - Must keep a record of the data and specific purpose for which the data was collected
 - Must keep a record of any third party to whom the data was disclosed
 - Must delete all data which does not fall within the confines of this section or which has become obsolete according to the provisions of this section.
- **Protection of Personal Data and Privacy under Namibian Law**

Namibian law on consumer protection is in its infancy but the fundamental privacy of the individual is protected by Article 13 of the Constitution.

It is recommended that Privacy & Data Protection be ensured by legislation which addresses the following:

- **The protection of personal details of private individuals**
- **Protection of individuals against unsolicited advertising and targeting on the Internet**
- **Obtaining of prior permission from individuals before details are used**

A Data Protection Authority should be established to:

- **Inspect the data records of any data collector from time to time;**
- **Request the correction of incorrect data following a complaint by a data subject;**
- **Take steps to have data under the control of a third party that was transferred illegally to that third party, deleted;**
- **Take steps to have data that has been illegally requested, collected, collated or stored deleted.**

4.5 E-Commerce Implications for Electronic Payment Systems, Customs and Taxation

4.5.1 Electronic Payment Systems

□ International Trends

Methods or instruments effecting payment through electronic means, that is, E-commerce payments, rely on the intermediary role of banks, credit card companies and other financial institutions. Challenges relate particularly to emerging payment mechanisms which can either be network-based or stored-value ("smart") cards

some of which have the potential to exchange value (payment) without direct linking to bank accounts. Even if these mechanisms can be made secure and effective from the consumer's perspective, they may not always be the most efficient ways of transferring funds over the Internet. Other alternatives include "digital cash" (also referred to as "electronic money") and prepaid accounts.

□ **Namibian Law**

The Namibian financial sector is well positioned, especially with regard to large corporate businesses, to support widespread applications of e-commerce. The Bills of Exchange Act 34 of 1964, however, is currently not capable of regulating "digital cheques." Furthermore, specific provision must be made for the issue of electronic money in the Bank of Namibia Act 15 of 1997. The Banking Institutions Act 2 of 1998 may not be applied to electronic banking institutions⁸⁶ and the provisions on economic crime do not relate to "electronic economic crime."

The legitimacy and security of electronic money payment systems may make or break e-commerce growth in Namibia if payment systems are too complex or expose consumers to online fraud and theft. Although the infrastructure and technological means exist in Namibia to effect e-payments, the legislative and regulatory framework must be adapted to provide the necessary secure trading system.

It is recommended that the Government, banks and the private sector take steps to find a common standard for smart cards that will be acceptable both nationally and internationally. Attention should also be given to enacting legislative instruments that can effectively curb the counterfeiting of electronic money.

4.5.2 Customs & Excise: Import/Export Duties

□ **International Trends**

Tariffs are not imposed on most electronic transactions because they are normally applied only to the physical trade of goods. International policy dictates that when goods are ordered electronically and delivered physically, there will be no additional import duties applied in relation to the use of electronic means. In all other cases relating to electronic commerce, the absence of duties on imports should remain.

□ **Namibian Position**

Customs & excise duty is payable on the importation of goods into Namibia, except for goods imported from the SACU region. The Customs & Excise Act 20 of 1998 makes provision for the levying and imposition of payment and collection of customs and excise duties. Section 40 of the Act deals with the clearance of the origin of goods and the liability of payment for goods. E-transactions are not applied to these

⁸⁶ see for example sections 6, 53 and 54; also refer to the Stock Exchange Control Act 1 of 1985, which is not applicable to on-line trading.

sections with ease.⁸⁷ Furthermore, the customs and excise duty payable in respect of an on-line delivery of digitised information products is obscure.

It is recommended that Namibian policy be based on international trends. Regulations should be enacted to provide for no additional import duties when goods are ordered electronically and delivered physically. In all other cases relating to electronic commerce, the absence of duties on imports should remain.

4.5.3 Taxation

□ International Trends

New technologies, such as the Internet, have effectively eliminated national borders on the information highway. As a result, cross-border transactions may run the risk that countries will claim inconsistent taxing jurisdictions, and that taxpayers will be subject to volatile taxation practices. The ascent of innovative communications technologies and electronic transactions will probably mean that the issue of taxation based on residence will loom even larger. In the present communications environment, it has become exceedingly difficult to establish a linkage between income and a particular geographic location. It is thus possible that taxation based on source will dwindle in importance because of the complexity of electronic commerce. By the same token, since individuals are typically citizens of countries and corporations are subject to the laws of particular jurisdictions, residence may increasingly prove a more practical criterion. Current international trends and intentions regarding electronic commerce taxation and tariffs may not be generalised with ease.⁸⁸

Both European and U.S. industry representatives participating in the Trans-Atlantic Business Dialogue (TABD) share the three U.S. principles, particularly the need for a tariff-free Internet environment, tax neutrality and reliance on "existing principles of taxation" for tax treatment of Internet transactions.

A TABD joint statement places particular emphasis on the necessity to apply rules in such a way that multiple taxation is avoided and "concepts such as permanent establishment are applied consistently. "Both sides also underlined that since Internet services are considered value-added services, they "should not be taxed as pure telecommunications services." Rather, current tax regimes apply taxes on the telecommunications component of a service provided on the Internet.

Like most countries, the United States claims jurisdiction for taxation based both on source and residence. On 21 October 1998, the Internet Tax Freedom Act was signed as public law 105-277 in the USA. This Act places a moratorium on any new

⁸⁷ See for example section 40(7) and section 41 which deals with the production of documents; see also the Import and Export Control Act 31 of 1994.

⁸⁸ The Russian government, for example, has decided to apply its value-added tax (VAT) to information services provided by Russian vendors. To the degree that the European Union has articulated its own formula for taxing Internet transactions in, for example, the Bonn Ministerial declaration and the European Commission's "European Initiative in Electronic Commerce," the principle of a "clear and neutral" tax environment has been supported. The latter document observes that "electronic trade in goods and services clearly falls within the scope of VAT...however, thorough analysis is needed to evaluate the possible impact of electronic commerce on present VAT legislation (on issues such as definition, control and enforceability)."

taxes on Internet access and created a commission to study and make recommendations about domestic and foreign policies toward the taxation of e-commerce. This commission completed its work on 3 April 2000 with a number of proposals, including an extension of the moratorium on new taxes on Internet access and support for the extension of the WTO moratorium on tariffs and duties on electronic transmissions. It should be stressed that the Internet Tax Freedom Act is in respect of new taxes and has no bearing on existing tax legislation, for example, the taxing of Internet sales for income tax or sales tax purposes.

In general, the sentiment is expressed that taxes on electronic commerce should be clear, consistent, neutral and non-discriminatory. Current tax treaties promote residence-based taxation. These treaties are flexible and comprehensive enough to be adapted to taxation of electronic commerce.

□ **Namibian Tax Law**

Direct and indirect taxes are levied in Namibia, namely corporation tax, persona income tax, withholding tax, general sales tax, additional sales levy and other taxes.⁸⁹

Tax is levied on the source basis, rather than income basis. Some income is always regarded as being from a Namibian source:

- Income from a contract entered into in Namibia
- Interest income; irrespective of its source
- Income by a Namibian company as owner of a chartered ship or aircraft.

General sales tax is levied on imports by end-users and registered vendors must account to the Receiver of Revenue on a monthly basis. The Sales Tax Act 5 of 1992 makes provision for the registration of vendors. The Sales Tax Act forms a barrier against e-commerce as the provisions are directed towards paper-based trading only.⁹⁰

It is recommended that a decision on the application of the Namibian tax regimes to e-commerce await such time as firm international policy has been formed on the vexed issues of definition, control and enforceability.

4.6 Concluding Remarks

It should be noted that this chapter does not purport to deal with the legal and regulatory issues surrounding e-commerce on an exhaustive basis.⁹¹ The purpose of this chapter is to illustrate that the advent of e-commerce has important legal implications for the Namibian legal system as a whole.

• **Concluding Recommendation**

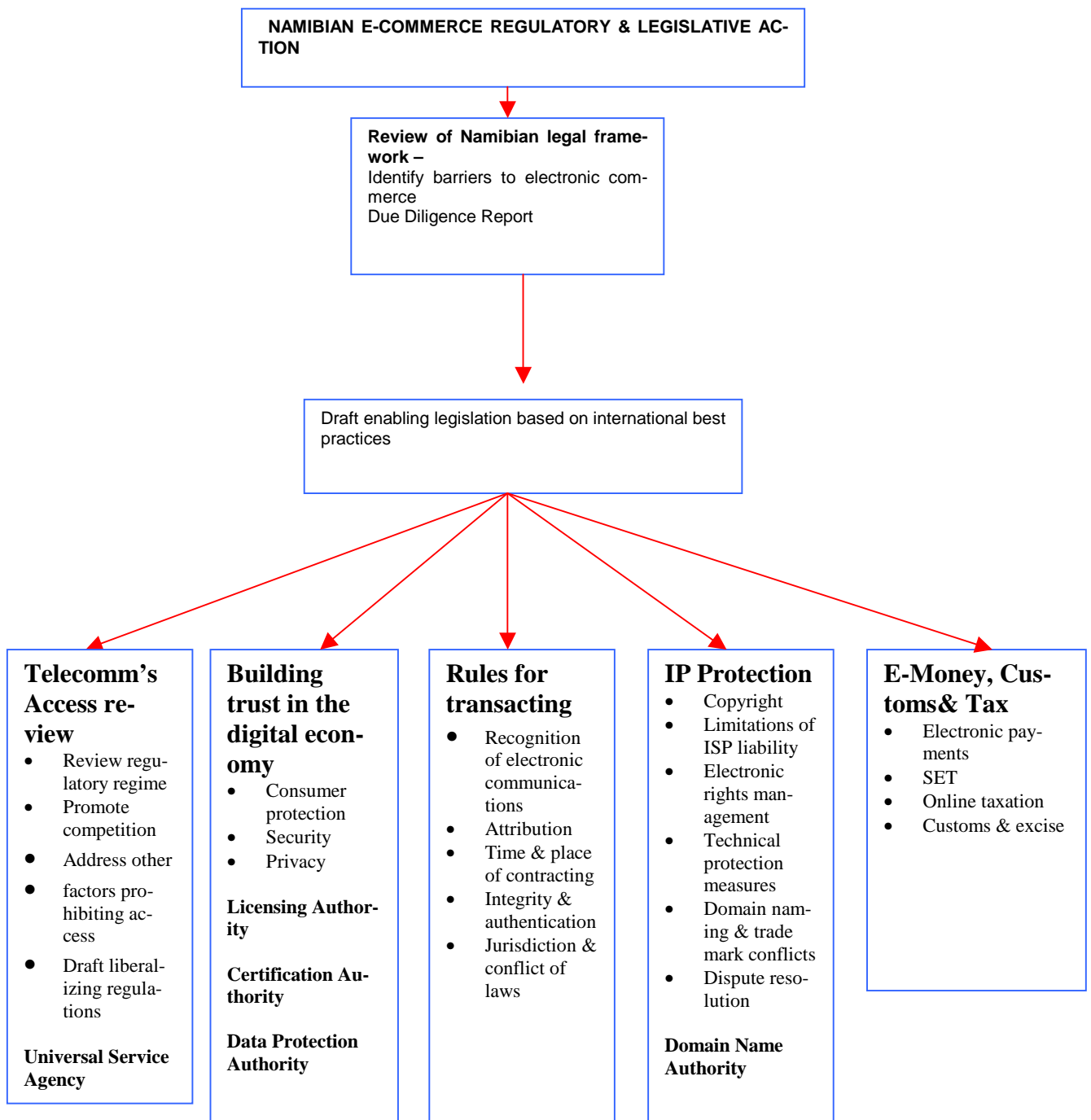
⁸⁹ e.g. transfer tax, stamp duty, customs duty and municipal rates; see Newafrica.com "Namibian Tax Regime" available at <http://www.newafrica.com/investment/guide/namibia/tax.asp>

⁹⁰ see section 15(2)(b) that makes provision for the furnishing of an invoice or other document, customs documentation (see section 15(1)(c); see also section 17 which deals with returns.

⁹¹ for example, issues such as electronic crime, the legal aspects of e-government, jurisdiction, cyber courts, cyber police, inspectors and officers were not referred to at all.

It is therefore recommended that:

- ❑ **An expert on both Namibian law and Cyberlaw prepare a thorough legal analysis and due diligence report. The purpose of the due diligence report will be to identify all laws and legal principles that pose barriers to e-commerce and to suggest amendments thereto.**
- ❑ **Namibian law should ensure technological neutrality in e-commerce legislation as one of the fundamental principles to achieve future compliance, flexibility in legislation and regulation. This will allow Namibia to address the substance rather than the form of issues requiring legislative or regulatory intervention.**



5.1 Introduction

While countries share a great deal of commonality in ICT needs, priorities and potential benefits, each has its own national priorities and state of ICT development that must inform specific ICT policy-making. With that end in mind, Chapter Two described the methodology this project used to gather critical information about Namibia's national priorities, stakeholder perceptions and baseline data on ICT. In particular that chapter showed how the survey document was designed to reveal stakeholder perceptions. This chapter focuses on the results for national priorities and stakeholder emphasis about the role of ICT in the country. Chapters Six and Seven tackle the more tangible baseline data for ICT in Namibia.

Because the perception of Namibian stakeholders is so vital to the acceptance of the ICT Policy itself, considerable effort was made to ensure a wide coverage of opinion. Over the period November 20-27 2000, sixty-eight interviewees participated in thirty separate sessions⁹³. Where possible interviewees were grouped according to their industry or economic sector. Each session lasted approximately ninety minutes and comprised an overview to the project, completion of the structured questionnaire and general discussion time.

A plenary workshop for interviewees was then held on November 28 2000 to report back preliminary results and to move towards consensus on areas for priority action. Thirty-one people attended the workshop. They divided themselves into five small groups according to theme areas emerging from the interview process and, for each theme area, set out to describe "What effective ICT in Namibia will look like" and "how we will know whether we had achieved effective ICT or not."

At previous stages of the Namibian ICT policy process "Multi-purpose community centres (MPCCs)" had already emerged as a priority area for achieving universal access. Accordingly a special workshop was held on February 6, 2001 to take that process forward and integrate it with the larger ICT policy process. The workshop identified benefits and disadvantages of MPCCs, possible mechanisms to establish MPCCs and other aspects.

The final workshop was held on March 27, 2001 to feedback to stakeholders interim results of the study. This was an opportunity to place the results in a more general context and therefore an assessment framework developed by Harvard University's Centre for International Development was used to rate the Namibia's state of 'E-readiness.' This Chapter presents the outcome. In addition, the group defined actions that could be taken to improve the competitive position of Namibia. The results presented in the following sections have been quantified as far as possible and grouped by category. The project team has commented where they perceive that particular results may not be aligned with current best practices, but otherwise the results show solely the responses from the participants.

⁹² The main contributors to this chapter are Philip Esselaar and Dr Jonathan Miller

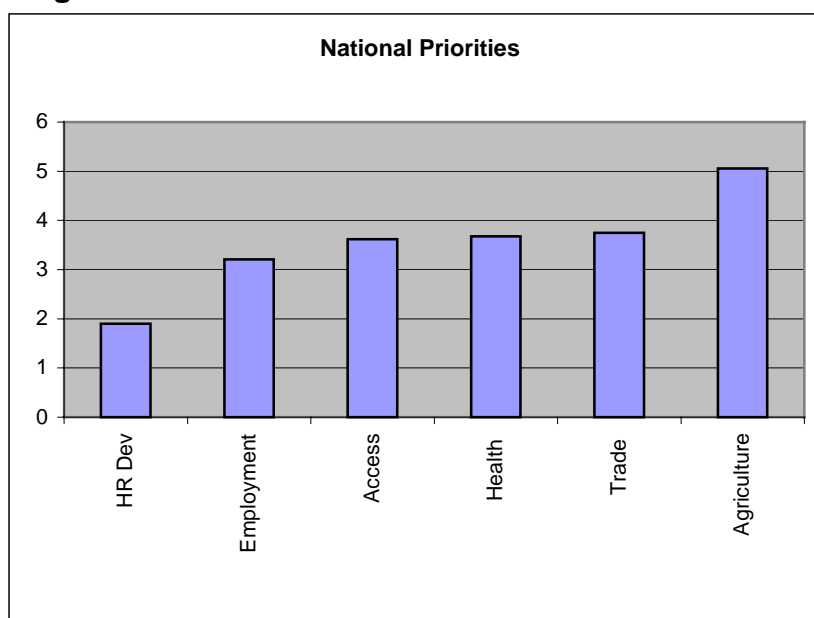
⁹³ See Appendix A2 for participants comments and recommendations during structured interviews

5.2 ICT and National Priorities

The ICT Policy tender document stated six National Priorities for Namibia. Initially respondents were asked to consider whether there were other priorities that they felt should have been included and were then asked to prioritise them all. Most respondents simply rated the six National Priorities described in the document. They are listed below and the average ratings shown in Figure 5.1. (Bar Chart labels on the graph are shown in brackets).

1. Human Resource Development ('HR Dev')
2. Equitable access to health facilities and services ('Health')
3. Access to trade and commerce opportunities ('Trade')
4. Equitable access to information ('Access')
5. Agricultural promotion ('Agriculture')
6. Employment creation ('Employment')

Figure 5.1: Ratings of National Priorities



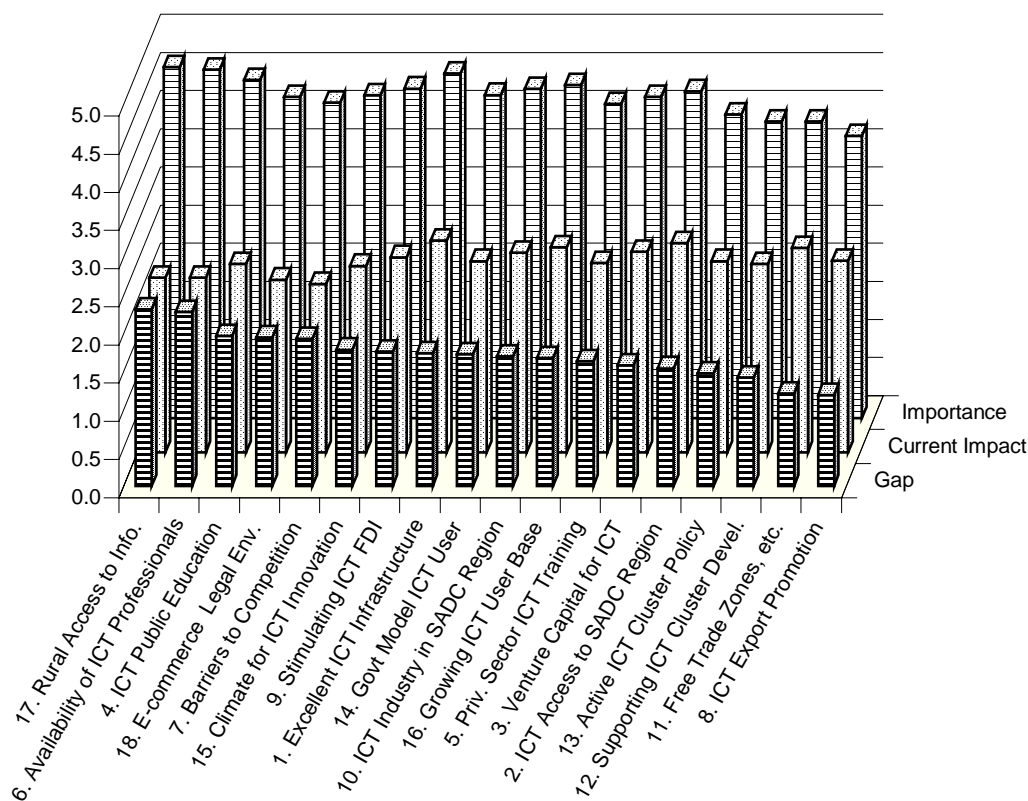
The lower the number the higher the priority, so clearly HR Development is the single most important national priority. The associated priority of Employment Creation comes next, followed by Access to Information and the other items. It is those national issues therefore that should be uppermost in mind as ICT priorities and projects are set⁹⁴.

⁹⁴ A number of other priorities were suggested, including: Poverty Reduction (3 x), Internet Development (3 x), Infrastructure Development (2 x), Equitable Access to Education, HIV/AIDS, Water Logistics and Tourism Promotion.

5.3 Survey Questionnaire

As noted in Chapter Two, the eighteen items in the Survey Questionnaire were designed to focus respondent attention on key areas that international research has shown to be vital in countries making the transition from developing to developed economies and to foster growth in targeted sectors (in this case ICT). Because ICT is all-pervasive, respondents were asked to rate each item in respect of their own organisations and also for Namibia as a whole. In each case they rated the item as to overall importance and current impact, from very negative to very positive. Those scales allow a “gap analysis” to be conducted as well. The results for the whole group of sixty-eight are shown below: Results classified according to different categories of respondent (government, education, private sector, and “other”) are presented in Appendix 5.2.

Overall Results for Namibia



The results are presented in order of decreasing gap between perceived importance and current impact. The items with the largest gaps are arguably those that demand the most urgent action. Key factors of high importance and currently negative impacts are

- Ready communications and access to information in rural communities
- General availability of ICT professionals in Namibia
- Excellent ICT public education at all levels
- Legal environment for electronic commerce (electronic contracts, evidence, security, intellectual property)
- Barriers to competition (monopolies, import restrictions, tax biases, etc.)

Among the most important items in this analysis and currently rated of quite positive impact is

- Availability of excellent IT and Communications infrastructure

Appendix 5.1 lists all the items in the questionnaire with our comments on the ratings and participant comments and suggestions for action. It is noteworthy that most participant comments and suggestions in the table are associated with the above factors, except for the *legal environment for electronic commerce*, which attracted no particular comment.

It is also noticeable that most interviewees regarded certain items in this questionnaire as unimportant, and in some cases appeared to be new ideas (e.g., *cluster development*). Since the items derive from international research into factors that encourage the shift from developing to developed economies, however, it is important to consider even those items and explore targeted action. For instance:

| Questionnaire Item | Implications for Namibia |
|---|---|
| Ready availability of venture capital for ICT businesses Active programmes to attract Foreign Direct Investment to the ICT sector | Clearly valuable in spurring growth in the ICT industry |
| Vigorous export promotion for ICT products/services Development of ICT industry at a regional level (SADC, COMESA, etc.) ICT-enhanced access to your regional markets | Will all extend the boundaries of the industry and open up new markets |
| Free Trade zones, supplier parks or industrial parks Concept of cluster development Active cluster policy from both govt and business | Well-accepted as focusing attention and creating synergies that grow particular sectors ⁹⁵ . |
| Pro-innovation regulatory standards and incentives for ICT | Encourage R&D and innovation in the Sector |

⁹⁵ For instance, there are significant regional and national projects in South Africa to establish and grow ICT clusters in Gauteng and the Western Cape, that are already showing very promising results.

There may well be merit in workshops or other interventions that explore these notions in detail.

5.4 First Stakeholder Workshop

All interviewees were invited to attend this morning workshop at UNAM, November 28, 2000. The objectives of the workshop were to summarise the main outcomes of the interview process and take the results a step further, namely to become more specific as to what effective ICT in Namibia would look like in certain areas and how success could be measured.

Preliminary analysis of all the interviewee responses and comments suggested the following “theme areas:” *Access; ICT Sector; Education; Government; Business.*

Accordingly the thirty-one participants in the workshop were invited to assign themselves to groups; each group to tackle one of those themes. Once in the groups they spent some time brainstorming their topic, structured according to two trigger questions.

What would effective ICT look like in <theme area>?

How will we know whether we have succeeded in achieving effective ICT in <theme area>?

A well-known structured process known as Visual Gathering was applied to facilitate this exercise. The following table presents the results of the exercise, comprising a rich set of specific proposals that will be dealt with in subsequent chapters of this policy document⁹⁶. It is noteworthy that participants have suggested specific indicators that could be used to track the success of ICT interventions. Many of those indicators, however, are not currently determined.

An example of the output is shown below; the full Table is in Appendix A5

| Theme Area | What would effective ICT look like? | How will we know whether we have succeeded in achieving effective ICT? |
|-------------------|---|---|
| Access | Radio: An expanded transmitter network. Widespread use of satellite, windup radio, solar radio, community radio. | Universal access to all services of NBC radio by 2005. Achieving targets as to number of households with a radio set number of language services |
| | Comms and Telephony: Introduction of Ultraphone, V-Sat 2 nd Mobile phone license Broadband access Supporting infrastructure especially in rural areas Liberalised telecomm sector Universal Service Fund for ICT A strong and independent regulator established | 80 – 90% of population have access to affordable telephone services by 2004 A telephone in walking distance (i.e. not more than 1 kilometre) and affordable to the majority of the population all monopolies removed by 2004 all ICT companies contributing to Universal Service Fund Measurable increases in quality and quantity of investment in ICT |

⁹⁶ The input from the workshop attendees has been “tidied up” to make the material consistent across groups, etc., but otherwise it is intended to be a faithful rendition of the ideas and recommendations of the participants.

5.5 Second Stakeholder Workshop

At earlier stages in the ICT policy process MPCCs had already been identified as a promising set of structures to improve access and extend the benefits of ICT to the whole population, especially with regard to education and health. While government had set the goal to launch at least one MPCC in each region by 2004, there have as yet been few specific steps to implement the necessary infrastructure, design and construct them, nor to determine and provide associated services⁹⁷.

The second workshop on February 6, 2001 was thus specifically intended to explore in some detail the question of MPCCs in Namibia to carry this process forward.

A large number of potential stakeholders in any MPCC initiative were invited to attend the workshop and twenty-one eventually participated (see Appendix for names and affiliations). Members of the project team gave a slide presentation to establish the context and covered tangible progress and experience in other developed and developing countries (see Appendix A5). Thereafter the group addressed the following questions:

Universal Access

- What do we mean by universal access? Definition and targets
- Does this include Internet Access?
- Service levels?
- How are we going to achieve universal access?
- How do we know when we have achieved it? (monitoring)

Multipurpose Community Centres (MPCCS)... Or not?

- Are MPCCs going to help us address our national objectives?
- Are they the best mechanisms to achieve this?
- Are there alternative / more appropriate mechanisms?
- What are the Critical Success Factors?

Future Actions

- What should the policy directives be?
- What pilot projects should be undertaken (if any?)

The Visual Gathering process was used to structure the work of the participants. Appendix 5.6 lays out the perceived benefits and disadvantages of MPCCs in Namibia as seen by the workshop participants. Some of the benefits include:

- Improves the communications infrastructure and provides easy access to information
- Provides service networks to rural communities
- Raises levels of computer and language literacy, and narrows the literacy gap e.g. urban vs. rural
- Human resource development with a focus on youth
- Community education

⁹⁷ But as shown in Chapter Eight of this report several other related initiatives are underway.

- ❑ Raising political awareness
- ❑ Widens economic space, by helping fast-track and cut the costs of e-commerce

Possible disadvantages include:

- ❑ Inconvenient access points
- ❑ High costs of technology with low benefit (hidden costs in terms of running costs)
- ❑ Sustainability of Centres (Return on investment is questionable)
- ❑ Misuse of purpose
- ❑ Practical difficulties associated with e-commerce

Three possible existing structures that could accommodate MPCCs in Namibia were mooted: Schools, Petrol Stations and Churches⁹⁸. The workshop participants analysed each option according to

What would they look like?

What services would they offer?

Where would they be established?

Who would run them?

Who would fund them?

Who would own them?

Appendix 5.5 elaborates on each of the alternatives.

The participants agreed that the most important role for government in MPCCs was in content development, and that government should not implement MPCCs. There was, however, an agreement between the participants that the Government should support MPCC establishment through encouragement, and through active development of Web content for government information. This would include Web content to address the needs of:

- ❑ Government to Government
- ❑ Government to Citizen.

They noted areas where easy access to government information and services can be particularly valuable, namely:

- ❑ All departments: existing regulations, laws announcements etc. in a database.
- ❑ Tender Board operations
- ❑ Application and processing of birth certificates, ID documents, passports etc.
- ❑ Schools: Applications and forms
- ❑ Taxation: VAT returns, registrations, applications and forms
- ❑ Labour exchange (job databases, matching of supply and demand, etc)
- ❑ Investment Centre – documentation, application forms, etc.

Major concerns were raised about the duplication of current government efforts and that there was little coordination between government departments. Specific examples were raised, such as the current study on MPCCs being conducted by the IDC consulting group for the Ministry of Education, and existing efforts to bring Youth

⁹⁸ Inevitably ideas such as these are a function of particular participants at one point in time. Other mechanisms that might merit further study include post offices, health clinics and libraries.

Centres online. The need to coordinate rollout with the telecommunications operator was also raised.

Possible projects put forward at the workshop included:

- ❑ Exploit Cash-Paymaster network
- ❑ Establish three pilot projects:
 - One MPCC to be implemented by government
 - One MPCC run by an entrepreneur
 - One MPCC given to a co-operative.
- ❑ Establish one cyber café as a commercial venture in Katatura as well as in Oshakati.

5.6 Third Stakeholder Workshop

The third Workshop set out to ensure that the results obtained to date were consistent with the views held by stakeholders as to the Namibian ICT Industry and the ICT readiness of their society in general. The project team used an assessment tool developed by the Information Technologies Group at the Centre for International Development at Harvard University called 'Readiness for the Networked World—A Guide for Developing Countries' that presents a structured and consistent way of assessing Networked Readiness⁹⁹.

An ECA/IDRC report¹⁰⁰ recently used this framework to present impressions of the Readiness for e-Commerce for three Southern African countries, including Namibia. The project team revisited this assessment for Namibia and arrived at very similar results. The Guide examines nineteen different categories of indicator, evaluating each against four stages of development, where "stage 1" may be described as 'un-prepared' and "stage 4" as 'well prepared.' The categories are placed in five groups, as follows:

- ❑ **Network Access:**
 - The availability, cost and quality of ICT networks, services and equipment
- ❑ **Networked Learning**
 - Integration of ICT into the Educational Process
 - Availability of community technical training programmes to prepare ICT workforce
- ❑ **Networked Society**
 - Individual use of ICT at work and in personal lives
 - Opportunities available to those with ICT skills
- ❑ **Networked Economy**
 - Use of ICT by business and government
- ❑ **Network Policy**
 - Favourable Policy environment

Within each category indicators are used to assess the stage (e.g.: At Stage 3 tele-density is expected to be 8 - 40 mainlines per 100 people).

⁹⁹ The technique is fully described in www.readinessguide.org

¹⁰⁰ The ECA/IDRC Pan-African Initiative on e-Commerce, Third Draft, prepared by Mullin Consulting Ltd

The ECA/IDRC report separates the urban and rural segments of the population and ranks these into the four stages as described above. Their rankings for Namibia are shown in the table below:

| Characteristic/Variable | Urban Namibia | Rural Namibia |
|---|----------------------|----------------------|
| Network Access | | |
| Information Infrastructure | 2 | 2 |
| Internet Availability | 3 | 2 |
| Internet Affordability | 2 | 1 |
| Network Speed and Quality | 3 | 2 |
| Hardware and software | 2 | 1 |
| Service and Support | 3 | 1 |
| Networked Learning | | |
| Schools' Access to ICT's | 2 | 1 |
| Enhancing Education with ICT's | 3 | 1 |
| Developing the ICT workforce | 2 | 1 |
| Networked Society | | |
| People and organisations online | 3 | 1 |
| Locally relevant content | 3 | 1 |
| ICT's in everyday life | 3 | 1 |
| ICT's in the workplace | 2 | 1 |
| Networked Economy | | |
| ICT employment opportunities | 2 | 1 |
| B2C Electronic Commerce | 2 | 1 |
| B2B electronic Commerce | 2 | 1 |
| E-Government | 2 | 1 |
| Network Policy | | |
| Telecommunications Regulation | | 2 |
| ICT Trade Policy | | 2 |
| Specific Policies for e-Commerce ¹⁰¹ | | 2 |

This assessment was then used, along with the previous analysis, to develop a list of Actions that were then ranked by the participants in the Third Workshop. The actions and the number of votes cast are shown in a Table in Appendix A4.

The top 5 actions recommended were:

- Government projects to devise content relevant to local communities
- Government to accelerate on-line service delivery (high volume, high frequency aspects)
- Devise ways to strengthen and accelerate growth of ICT professionals
- Make recruitment of ICT experts from outside the country much easier in order to address the critical skills shortages, accelerate ICT growth in pace with economic development, and assist in developing a strong local ICT labour force.
- Increase points of access to the internet; Schoolnet initiatives; MPCC initiatives; business support centres

¹⁰¹ Added by Study Team

The above rankings offer useful insights into the opinions of the participants present at the workshop. The process adopted in the workshop was by no means rigorous and therefore the results should not be regarded as anything more than a rough guide.

Introduction

Although the Policy and Regulatory aspects of the development of ICT in Namibia has been mentioned elsewhere, it is important to bear in mind certain background information while examining the status of ICT in Namibia.

As a consequence of the lengthy rule by South Africa, the development of the ICT industry in Namibia mirrored developments in its larger neighbour for many years. This led to the over-reliance on skills from South Africa and in many cases a dependency on that country for certain supporting processes such as the handling of credit card transactions.

Although the ICT Industry in Namibia has been in existence for a number of years, formal measurement systems are generally not in place and therefore some of the data collected has been obtained from reliable industry sources. Wherever possible, sources have been indicated.

6.1 Telecommunications and Information Technology Infrastructure

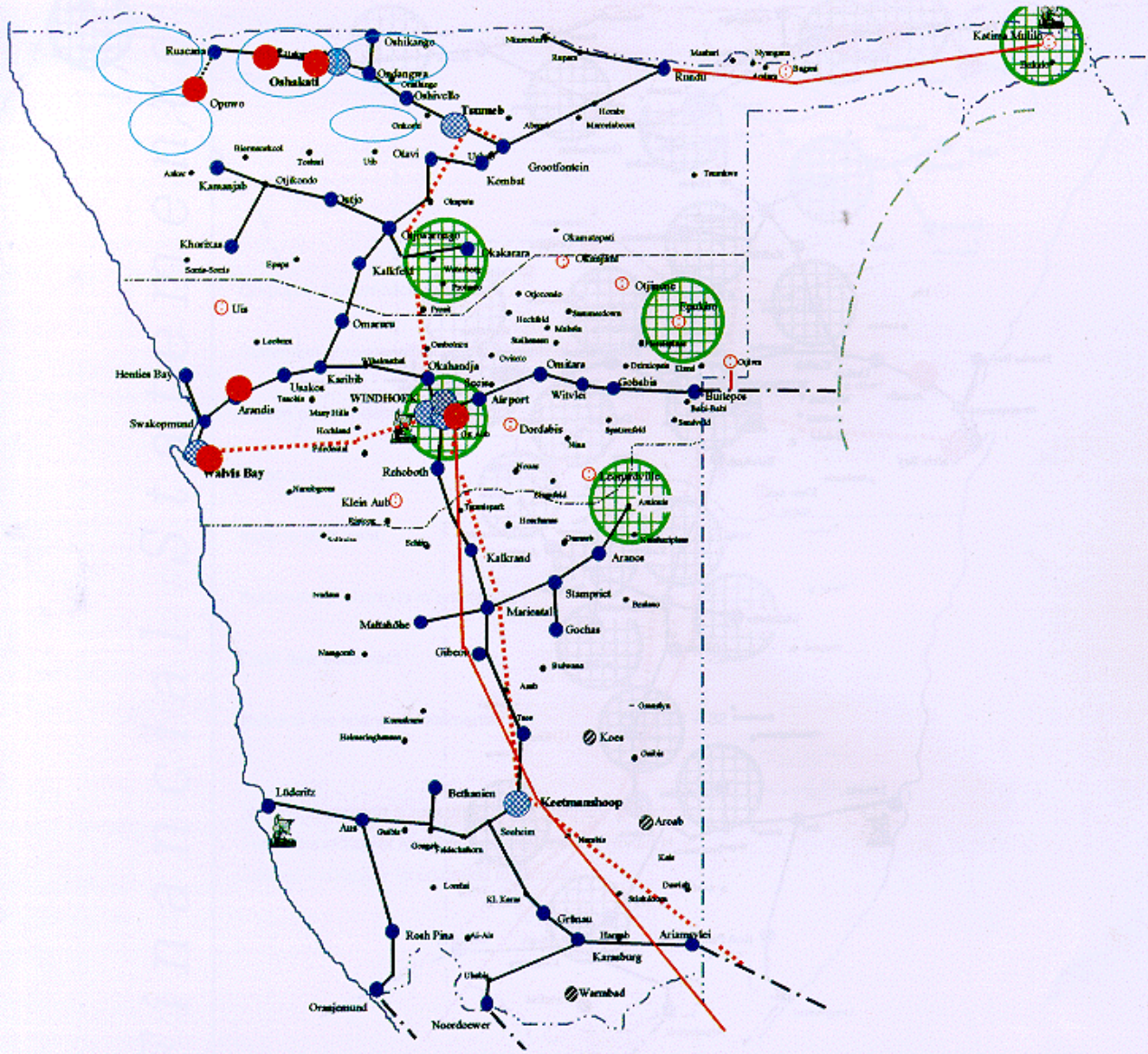
6.1.1 Fixed Line telephony

Telecom Namibia is the only supplier of fixed telephone lines in Namibia and has brought modern telecommunications infrastructure to large parts of Namibia. In 1992 it was placed on a commercial basis, but still operating as a wholly owned state monopoly. The allocation of telecommunications licences falls under the jurisdiction of the National Communications Commission. It is expected that deregulation will take place in 2003/4, although the exact form of the deregulation is not known.

A fibre optic backbone is installed countrywide. The maps below illustrate the infrastructure progression that is taking place. In 1990 the backbone stretched only from Oshakati to Tsumeb, but now covers the whole country. The fibre link runs from Ruacana to Rundu in the North (including towns like Oshikango , Oshakati , Tsumeb, Nkusennkuru) , down to the Coastal region , (Walvis Bay , Henties Bay , Swakopmund), to the Central region , (Windhoek , Gobabis , Buitpos), and finally to the Southern region , (Maltahohe , Gochas , Aminuis , Keetmanshoop) covering the coastal and border region of Luderitz , Oranjemund , Noordoewer , Ariamsvlei. The link between Rundu and Katima Mulilo is currently under installation.

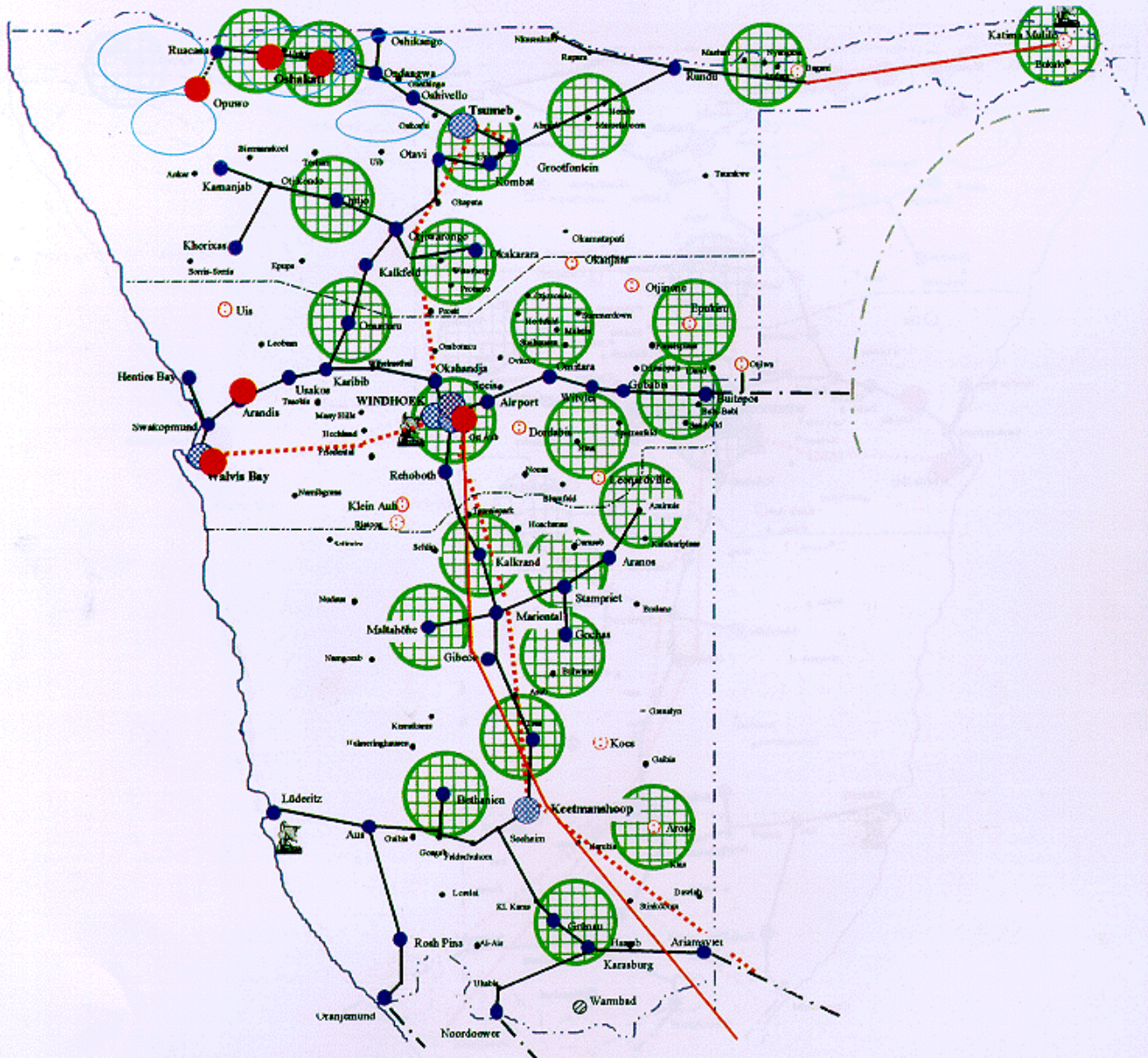
¹⁰² The main contributors to this chapter are Philip Esselaar and Anthony White

Backbone Network Map September 1999



- Existing Analogue Microwave
- Existing Fibre Links
- - - - - Existing Digital Microwave
- Links in Progress
- P-MP Rurtel System
- DECT Basestations
- ⊕ Ultraphone Basestations
- Primary/International Exchange
- Remote Line Units
- Small Digital Exchanges
- Theoretical Exchange

Target Backbone Network Map September 2000



- Existing Analogue Microwave
- Existing Fibre Links
- Existing Digital Microwave
- Links in Progress
- P-MP Rurtel System
- DECT Basestations
- ⊕ Ultraphone Basestations
- ⊗ Primary/International Exchange
- Remote Line Units
- Small Digital Exchanges
- Theoretical Exchange

Telecom maintains more than 50 offices throughout Namibia as well as a business centre in Windhoek for the sale of customer premises equipment. A wide network of well-maintained card phones has been established, catering particularly to the tourist market. The installed lines are a combination of analogue lines, leased digital lines and ISDN lines. As of 1999 there were 108193 lines installed and 2.4 public phones per 1000 people. The target for the end of 2000 was 200000 lines, but this has not been achieved.

Telecom has the capability of installing Asynchronous Digital Subscriber Lines (ADSL), a high speed, low cost alternative to fibre optic to the home/business.¹⁰³ The National Business Unit of Telecom offers a variety of business services including Tele-conferencing, Toll-free, Managed Data Network Services and TeleData. Residential customers have the choice of value-added services such as call forwarding, itemised billing and TeleMail, a free voicemail service.¹⁰⁴

6.1.2 Mobile Telephony

In concert with Europe and the rest of Africa, Namibia opted for the Global System for Mobile Communications (GSM) as the standard for their cellular network. At present only one mobile licence has been issued—to Mobile Telecommunications Corporation (MTC). Established in 1995, MTC is a joint venture company between two Swedish organisations (Talia Overseas AB (26%) and Swedfund International AB (23%) and Namibian Post and Telecommunications Holdings Ltd (NPTH) (51%).¹⁰⁵

MTC cover 15% of the geographical extent of Namibia and provide services to 90% of the population. MTC has approximately 100000 connected customers, comprising 25000 prepaid and 75000 contract subscribers. The cellular network covers all the major towns and cities in Namibia. There is partial road coverage along some roads and full road coverage from Windhoek to the Coastal region (Walvis Bay). At present MTC is extending their coverage to include all major roads. They have eighty base stations set up around the county. From those base stations they are able to cater for the remote areas (farms etc.) using their extended cell feature. This feature allows for transmission of signals within a 100km radius of the base station.¹⁰⁶

MTC has roaming agreements with thirty countries and offers value-added features including voicemail, fax, data and short message services. During 1999 MTC launched a pre-paid cellular product, an offering that has proved to be immensely popular in South Africa and other African countries.¹⁰⁷

The NCC has recently granted permission for a company (Teletwo) to install phone booths around the country using cellular technology. This has created some difficulties where both fixed line and mobile phone booth services are in close proximity. The NCC has indicated that it may approve the licensing of a second cellular operator quite soon, but at the time of print this had not materialised.

¹⁰³ Telecom: Personal Communication

¹⁰⁴ Namibia Trade Directory, p127

¹⁰⁵ MTC: Personal Communication

¹⁰⁶ Op cit

¹⁰⁷ Namibia Trade Directory 2000

6.2 Nature of the ICT Industry

At present no hardware is manufactured in Namibia and very little tailor-made software development takes place in the country. The ICT Industry has standardized on generic software products such as the Microsoft range, with a small Novel and Unix installed base.

In the following sections, the ICT Industry is analysed from the perspective of the Distribution and the Retail and Service Channels.

Distributors

As in many countries, officially Namibia measures economic activity in terms of traditional industry coding systems that are largely out of date in ICT terms. This makes it difficult to measure the size of the ICT industry with any accuracy and as a result, many of the statistics quoted below have had to be derived from Industry sources, cross-referenced where possible.

Most countries have similar measurement problems. This was identified as an issue during the course of the SAITIS study in South Africa, for example, where the use of the Industry Codes such as the North American Industry Classification (NAICS) or the Standard Industry Classification (SIC) for official reporting purposes does not provide sufficient detail for effective use by the ICT Industry. This gap is usually filled by market research firms that see this as a business opportunity.

Recommendation: Investigate latest developments in Industry classifications and ensure that Namibia has an effective system for the ICT Industry, if necessary by government tender to the private sector.

All hardware is imported from international sources, with the main supplier being South Africa. Most South African companies consider Namibia to be part of their distribution channel and are reluctant to open offices in Namibia because of the size of the local market. The largest Distributor in Namibia is Siltek Distribution Dynamics, a South African based company that presently has over 300 retailers or agents in Namibia. Of those forty-nine provide 80% of the revenue to Siltek. Products range from Personal Computers, File Servers, Printers, Off the Shelf Software programs, Toner for printers, to a whole range of accessories. Other local distributors exist but they have a very small percentage of the market place. One of those companies is Omnitech, which seems to be growing its local market base quickly, through offering rapid delivery on networking equipment, computer components and accessories.

Another form of distribution is direct marketing. This is currently taking place through companies such as Dell Direct (with a local partner), ICL via their local partner and IBM via their local channel partner (IBM deal mainly through SDD).

Suppliers tend to seek alternative distributors to avoid the monopoly created by SDD in the distribution process.

In 2000 sales revenue for SDD alone was N\$94 million, while that for the total distribution channel was N\$150 million. This is somewhat less than the revenue estimates of N\$200 million for 1999 (which probably benefited from the Y2K event).

Revenue expected for 2001 will be +/- N\$130 million for the total industry. There is a general view that the rate of PC purchases will increase with the rush of users to get connected to the Internet.

Retailers and Service Companies

Namibia's ICT industry began to grow quickly in the early nineties. The structure of the industry at that time consisted of a few key companies that provided services and support to the economy in general. From the middle to the end of the nineties, the sector saw the establishment of many more ICT-related companies. Those companies were established with a purpose of bidding for specific projects. The Ministry of Trade and Industry does not have a count of the number of ICT related companies, but according to statistics received from the distribution channel, there are +/- 320 computer companies in Windhoek alone, of which 91 are not active and 229 are active in the Namibian market.

The revenue generated from the ICT Industry has grown slowly, but the number of companies involved in the sector has increased rapidly. The revenue base is thus being shared by an ever-larger number of companies, many of which do not have any support infrastructure in place. The small size of the ICT Industry in Namibia dictates, however, that the company providing the service must also be able to support and integrate the product supplied into the customer's existing structure. This creates an exposure for the customer because an insistence on providing support often leads to those companies closing down and consumer protection laws appear to be ineffectual in this regard.

Recommendation: Establish an Industry Body that develops and enforces a Code of Ethics for the Industry. Membership should be optional, but purchasing from a member should provide security for the end-user.

Under these circumstances, the ICT industrial sector has shaped itself around a few key companies that are able to provide support to the market place. These companies include:

- ❑ AST Namibia: an SA-based company with a local office that provides software development, consultancy services, and networking
- ❑ ORBIT Data Systems: a fully owned Namibian company that provides hardware, and specialised software support
- ❑ PQ Namibia: an SA-based company with a local office that provides hardware, software development, and networking
- ❑ Schoemans Office Systems; a fully owned Namibian company that has been in existence for the longest period in Namibia, providing hardware, software, software development, consultancy, system integration, project management, networking, and technical support
- ❑ UNISYS Namibia; an SA-based company with a local office that provides hardware, software, and technical support

The major problem faced by the ICT sector is lack of available locally trained and skilled ICT personnel. As a result of this most organisations tend to opt for the impor-

tation of skills from other countries. Acquiring foreign skills is difficult because of the lengthy time it takes to obtain work permits through the Ministry of Home Affairs¹⁰⁸.

Recommendation: Strengthen local ICT Associations and lobby strongly for local ICT education and training and easing of restrictions on importation of needed ICT skills.

6.3 The Internet Sector

The Internet is a vital tool for both the ICT Industry and, increasingly, the user community. It is used mainly for correspondence (e-mail), product updates, research and software downloads. Consumers conduct very little on-line purchasing although the use of the Internet to 'window shop' online is probably much more popular. The incidence of Business-to-Business E-Commerce is also difficult to measure accurately for a number of reasons, many shared by the Developed economies. In February 2001 the United States Department of Commerce proposed setting aside \$13-million to track the growth of e-commerce in the United States. A spokesman said "Traditional categories and measures used within our national economic statistics are inconsistent and/or incompatible with e-commerce. Thus, unless its results are captured in the national statistical measures, we face the possibility of seriously underestimating productivity and growth in our economy". In Namibia, the fact that many companies are subsidiaries of South African companies and are part of the Rand currency area exacerbates this problem by making potential e-commerce transactions 'internal' and hard to capture.¹⁰⁹ Tremendous growth is anticipated in Internet related activities in the next few years.

Internet Commercial Services were established in Namibia late 1995/early 1996. Initially Internet services were provided via Namdef (Namibia Internet Development Foundation), an NGO that later became the first commercial ISP, IWWN. Since then Namibia has seen the introduction of new ISP's into the market. Iafrika (now UUNET Technologies) was the second commercial ISP to be established in Namibia. All ISP's operate on top of the Telecom Communication Backbone established for the whole country. The Government of Namibia as an ISP operates on the Telecom backbone as well. Connection out of the country is provided to the ISP's via Telecom.

Structure of Sector

There are four (relatively) large ISP's in Namibia, and two smaller ones. The large ISP's are listed below, with an indication of the type of infrastructure they operate.

- UUNET Namibia: UUNET is part of UUNET Technologies Inc., an international organization in itself now part of MCI World Com, and the largest global carrier of Internet Traffic. Their backbone with 4mb per second international capacity is purchased from Telecom and is resold to their clients. The company is mainly company network focused and supplies bandwidth and services to the corporate market in Namibia. UUNET also see their task as that of selling capacity and

¹⁰⁸ This situation is analysed in some detail in Chapter Eight: ICT Human Resources

¹⁰⁹ www.ecommercetimes.com

Internet network services for virtual ISP's like MWeb SA and Africa Online throughout Africa. Services offered by UUNET Namibia include:

- UUDIRECT-Internet dedicated Leased Lines
 - UUSECURE-Network Security
 - UUHOST-Hosting services in UUNET Namibia's Data Centre.
 - VPN-Virtual Private Networks
 - VPDN -Virtual Private Dial Networks
-
- Africa On-line: Supplier of dial-up and leased line connectivity but mainly focused on non-leased line clients, providing users with access primarily to email. Africa On-line bought the dial-up client base from lafrica to allow for lafrica (UUNET) to focus on its corporate client base.
 - MWeb: Supplier of dialup and a few leased line connections to their clients via the Internet. Additional services provided include Web hosting, domain registrations, and email access. MWeb bought out IWWN to establish it's client base in Namibia.
 - IWAY: The newest addition to the group of local ISP's is the result of a United Nations Project (UNOPS) to allow for the spreading of Internet facilities within the Republic of Namibia. IWAY is a fully owned subsidiary of Telecom Namibia. They rent services from Telecom Namibia.
 - There are also smaller ISP's operating, such as
 - NamibNet : One of the smaller ISP's present in Namibia.
 - Cyberhost: Provide dial connectivity, but not on a national basis.

International bandwidth available is currently as follows:

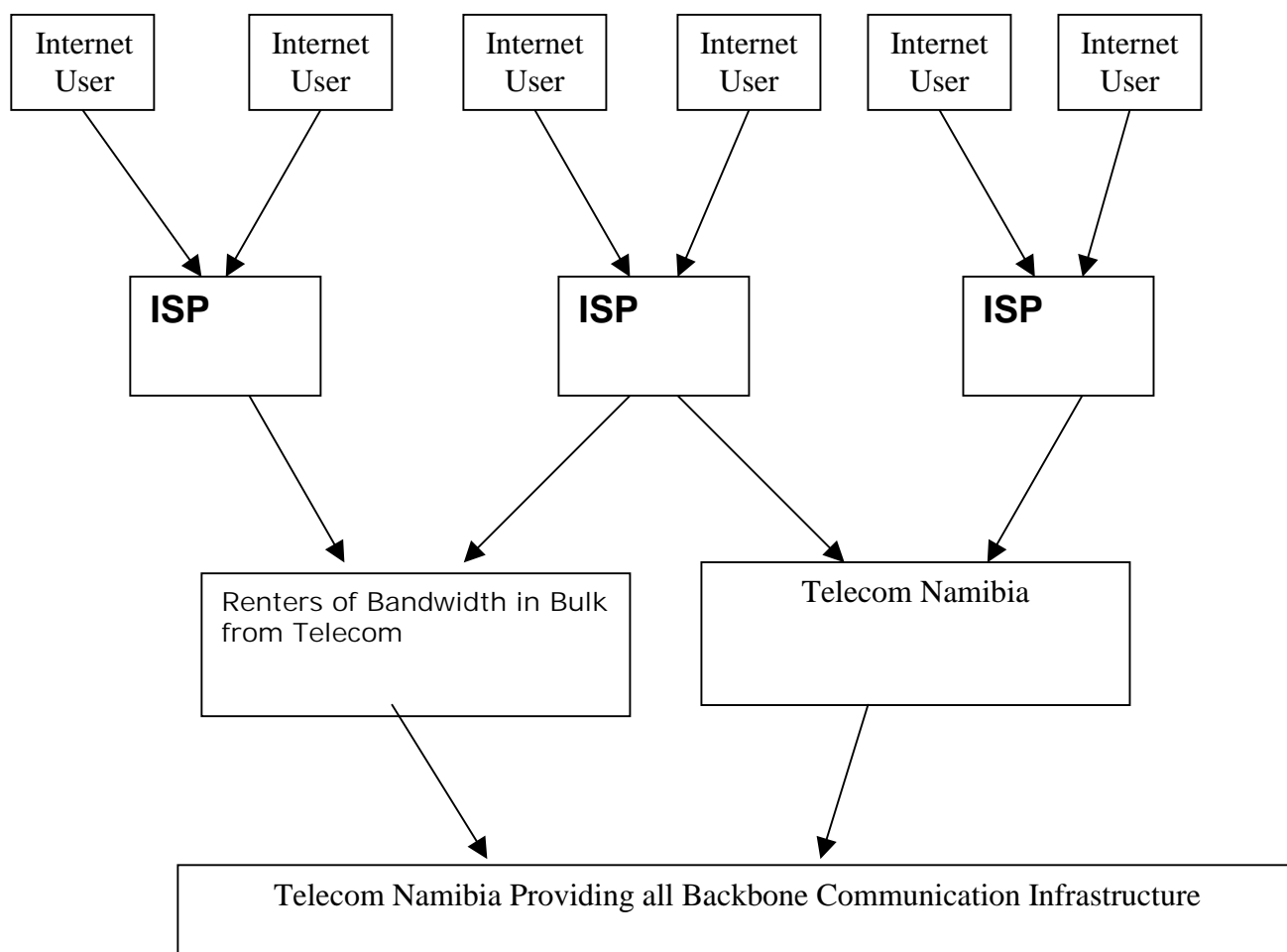
- UUNET have a 4mb connection to South Africa
- MWeb rents bandwidth to South Africa from UUNET, but Has also installed a 1mb connection to South Africa
- Africa On-line rent bandwidth from UUNET.
- NamibNet depend on the backbone of UUNET.
- Government has a 256kb international pipe via Telecom but plans are under way to upgrade to 512kb.
- Telecom Namibia has 2mb of international bandwidth

There is thus about 7mb of international bandwidth in Namibia, placing it amongst the top countries in Africa in bandwidth/capita.

Since IWAY is a wholly-owned subsidiary of Telecom and growing very fast, other ISP's perceive this as unfair competition. IWAY in turn believe that the playing fields are level because they pay the same rate to Telecom for services.

At present, regulations allow for the download of data via satellite but not the upload. MWeb, for example, uses the UUNET South African link to upload, but obtains data via their satellite DSTV infrastructure.

Structure of ISP and Telecom Services in Namibia



- ❑ The above structure is in place for all users of the Internet in Namibia.
- ❑ The government, with regards to the above structure, would be considered to be an ISP to its users, the ministries.

6.3.1 Market Segmentation with regards to Internet users.

The Internet market can be segmented into Corporate (leased-line) users and other (dial-up) users. ISP's mainly use CISCO/ Digicom routers and switches for leased-line connectivity; the operating software is Unix (some Linux) with a mix of Microsoft products.

Companies that fit into the corporate category include multinational companies with local presence, most of government and many medium to large Namibian organisations. They account for 15000 to 20000 active workstations and the bulk of Internet usage in Namibia. Because most companies utilise Local Area Networks (LAN's) the number of individual users is hard to determine. The number of installed workstations is expected to grow to 50-60000 over the next four years;

revenue flowing to the ISP's from this source is substantial. The largest ISP in this Sector is UUNET.

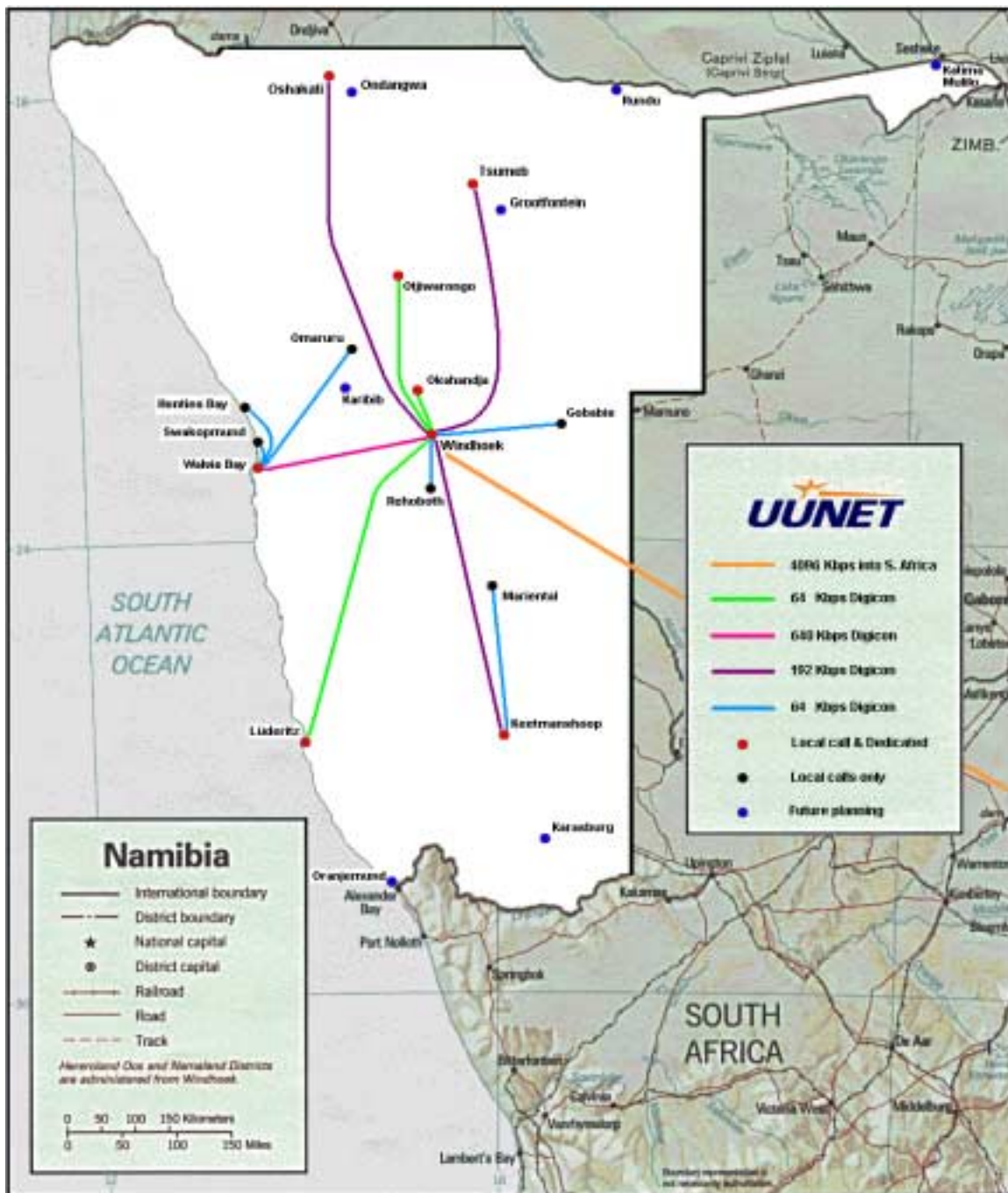
Government, via the Office of the Prime Minister (OPM) operates as an ISP in the support of Government ministries/offices, which are obliged to use their services. The estimated total number of government users is 2000. Because of slow access speeds and unsatisfactory service at times, government departments are beginning to seek Internet services from the private sector. This is achieved by holding dual accounts , with the OPM and with a private ISP.

Other (dial-up) users of the Internet, although presently less significant in terms of Internet usage, show strong growth as more people perceive the benefits. This category includes small business, home users and some schools. It is estimated that there about 12000 active workstations in this category, and revenue from this category is expected to grow substantially in the short-term. A factor inhibiting even faster growth is the low effective or 'computer' literacy level in the country generally, particularly since e-mail is the most popular application.

The dialup market shares are estimated as:

- AFRICA Online: 56%
- Mweb: 35% (Mainly comprising come-back clients)
- IWAY: 10% and climbing at fast rate. The focus of this ISP is to buy as much market share as possible by incentives such as
 - 0700 number available and accessed from any part of the country
 - Three months free internet access
 - Fast access times to services and facilities offered
 - Easy steps and terms to registration as client
- Other ISP's: 5%

The diagram below shows the installed network of UUNET Namibia, the Internet company with the greatest coverage in the country.



6.3.2 Revenues Earned by ISP's

The ISP's have provided figures that suggest total annual revenues to the industry of:

| | |
|------|---------------|
| 1998 | N\$18 million |
| 1999 | N\$22 million |
| 2000 | N\$35 million |
| 2001 | N\$45 million |

6.4 International Comparisons

The Table below shows Information Technology Indicators used as a measure of the adoption of ICT by selected countries, where the countries are ranked in terms of their Human Development Index (HDI) as calculated by the United Nations Development Program (UNDP). Except where otherwise indicated, the numbers are per 1000 people.¹¹⁰

| HDI | Country | Internet Hosts | No of PC's | Main Tel Lines | Mobile Cellular Subscribers | TV Sets | Population (Millions) |
|------------|----------------|----------------|------------|----------------|-----------------------------|-----------|-----------------------|
| 11 | Finland | 89.17 | 349 | 554 | 572 | 640 | 5.2 |
| 16 | Austria | 21.20 | 233 | 491 | 249 | 516 | 8.1 |
| 61 | Malaysia | 2.16 | 59 | 198 | 99 | 166 | 21.4 |
| 71 | Mauritius | 0.50 | 87 | 214 | 53 | 228 | 1.3 |
| 103 | South Africa | 3.26 | 47 | 115 | 56 | 125 | 39.4 |
| 109 | Indonesia | 0.07 | 8 | 27 | 5 | 136 | 206.3 |
| 115 | Namibia | 1.60 | 19 | 69 | 12 | 32 | 1.7 |
| 122 | Botswana | 0.42 | 25 | 56 | 15 | 27 | 1.6 |
| 158 | Uganda | 0.01 | 1 | 3 | 1 | 26 | 20.6 |

6.5 Building the Industry

The ICT Industry in Namibia, although small, has good supporting infrastructure, particularly in Telecommunications, but lacks the available or potential skills to show strong growth over the next few years. There is also a severe lack of resources within rural communities.

In order to maximise the growth potential of both the ICT Industry and the Namibian economy, there are constraints that need to be urgently addressed, namely:

Lack of skilled people

This is addressed in more detail elsewhere in this document. Key aspects that need to be examined are

- Remuneration: A problem, particularly in the government sector, where a re-classification of jobs and skills is necessary

¹¹⁰ UNDP Table of Indicators, May-June 2000 (www.undp.org)

- ❑ Incentives: In a growing and dynamic industry the use of incentives such as performance-based bonuses, share option schemes and travel incentives can assist in retaining key people
- ❑ Immigration: Where skills are in short supply, a much faster and easier route to allow the immigration of key personnel needs to be followed
- ❑ Training: Training, particularly in Government as a whole, is haphazard and not subject to a rigorous programme of skills upgrading.

Confidence in the Industry

The general public will only have confidence in using the more sophisticated tools of the ICT industry (e.g. Electronic Commerce) when the following issues are addressed:

- ❑ Lack of secure infrastructure: Policies and regulations are not yet in place to ensure the security of transactions over the Internet. In addition, the presence of 'fly-by-night' companies has harmed the image of the industry.
- ❑ More visible and dynamic industry bodies: The profile of organisations such as NITA should be raised and care taken to represent all the stakeholders.

General Awareness

Key issues here include:

- ❑ Government as model user: By promoting and developing the use of ICT technology to perform many essential functions and to provide routine documents such as tax returns, immigration documents and economic statistics, the government can promote an awareness of ICT throughout the society. By further requiring that organisations interacting with the government in business situations use ICT processes, technology will permeate the business sector.
- ❑ Schools: Many more students should be introduced to the technology during their early schooling years. This aspect is covered in more detail elsewhere in this document.
- ❑ Lack of Information: In common with many countries, statistics relating to the size of the ICT Industry are not routinely collected and where they are they are consolidated into other industry sectors. This is particularly true of services, considered to be a significant growth area in the 21st Century.

6.5.1 Opportunities for Growth

Greater use of Telecommunications facilities

The Telecom infrastructure in Namibia is widespread and has significant spare capacity. At present, application development has not kept pace with this capacity and usage in rural areas is well below its potential.

Emphasis on Services

Because of factors such as the country's geographic location, the small size of nearby markets and the current skills base, the manufacture of ICT products is not likely to be a profitable enterprise. However, technology has opened up opportunities to provide services to developed countries from remote locations (e.g. Call Centres), particularly where the cost structure of the remote location is lower. In addition, the development of specialised software products, particularly for markets where the traditional large players are not present represents an opportunity.

Development of Clusters

Although most of the role players interviewed did not feel that this aspect was important, the consultants stress that internationally and especially in developing countries, this is an important consideration and should not be neglected. Most ICT activity takes place in Windhoek, which has many characteristics favourable for cluster development. Another favourable site could be Walvis Bay, which has the additional attraction of being a seaside resort with good infrastructure, attractive surrounds, and a temperate climate.

A measure of the importance that this concept is assuming is illustrated by the fact that South Africa has recently established two Innovation hubs, one in Cape Town and one in Johannesburg, with strong support from both government and local authorities.

Usage of alternate communication opportunities

In future it can be expected that devices other than conventional PC's will be used to connect to the Internet. These will often be cheaper or multi-purpose (e.g. Television sets). Namibia can position itself to take maximum advantage of these opportunities

CHAPTER SEVEN: USERS AND USAGE PATTERNS¹¹¹

Chapter Six described the “supply” side for ICT in Namibia and covered telecommunications equipment and services, the Internet sector and the ICT Industry Channel structure. This chapter sets out to assess the “demand” side. Who uses the products and services provided, to what extent and in what ways? At the outset it must be noted that in Namibia, as is typical of most countries, there is very little available information on this topic. Organisations, both public and private, often have central ICT functions, but much activity is dispersed throughout organisations as well. Determining budgets, expenditure categories, staffing needs and the effectiveness of ICT usage is difficult if not impossible in some cases. In the following sections a perspective is provided of the usage of ICT in Government and Business (including parastatals). Chapter Eight focuses on the Education sector.

7.1 Government

The importance of ICT in addressing the productivity of Government has been recognised for several years and was the subject of a policy document entitled “Information Technology Policy for the Public Service “ produced in October 1993.¹¹² That document states:

“The main objective of this Information Technology Policy is to coordinate the acquisition and use of computer resources in the government, and to create an environment where ministries can exploit the benefits of Information Technology to the fullest.”

The recommendations that followed were divided into seven policy modules, including two of particular interest for the current study, namely Institutional Arrangements and Human Resource Development.

7.1.1 Institutional Arrangements

The report recommended the establishment of

- ❑ A Cabinet Committee on Information Technology (CCIT)
- ❑ A Public Service Committee on IT (PSCOIT)
- ❑ A Directorate of Public Service Information Management (DPSITM)
- ❑ Ministerial IT Units (MITU)

Appendix A7 summarises the Terms of Reference for the above groups. We have been unable to determine whether the Cabinet and Public Service Committees have been carrying out their prescribed functions. The DPSITM Directorate was indeed formed, however, and continues to fulfil its functions under the aegis of the Office of the Prime Minister. The Head of the PSITM is Mrs Hamutenya. At present, there are about twenty members of staff within this Directorate, but it is running at 50% of its

¹¹¹ The main contributors to this chapter are Philip Esselaar and Anthony White

¹¹² Information Technology Policy for the Public Service, Volume II: Prepared by Public Service Committee on Information Technology

stated establishment. Recently its status was elevated from Directorate to Department.

At present, the following ministries have fully operational MITU's:

- ❑ Ministry of Agriculture, Water Affairs and Rural Development
- ❑ Ministry of Works, Transport and Communication
- ❑ Ministry of Trade and Industry
- ❑ Ministry of Education (both Higher and Basic)
- ❑ National Planning Commission

Some of these ministries have become more or less autonomous in their ICT activities with the DPSITM servicing the smaller ministries (in ICT terms).

7.1.2 Human Resource Development

The policy document¹¹³ recognised the crucial importance of Human Resource development in creating a sustainable and productive ICT sector. It noted that a needs analysis by the DPSITM had established that almost 95% of the offices and ministries in Namibia did not have qualified computer professionals. Also lengthy recruitment procedures within the offices and ministries discouraged experts interested in joining the public service. There was also poor remuneration and lack of professional recognition due to the lack of a professional body to guide career development.

The document then established four key objectives for IT Human Resource Development:

- ❑ Create public awareness of the benefits and needs of Information Technology
- ❑ Recruit enough Information Technologists to serve the needs of the Public Service
- ❑ Ensure a rewarding career in the Public Service that will attract and retain Information Technology professionals
- ❑ Through training, develop a Public Service where individuals are capable of making efficient use of information and knowledge through the appropriate use of IT

Strategies/actions to support these broad objectives included:

- ❑ Encourage the University and Technikon to develop degree and diploma courses relevant to Public Service needs. DPSITM should liaise with the two institutions regularly to discuss current needs and solutions
- ❑ The government should commit itself to training a specific number of candidates each year
- ❑ An appropriate professional body, or an inter-ministerial committee, should be charged with the responsibility of overseeing and championing the interests of computer professionals within the Public Service.
- ❑ A list of all IT experts in the various offices and ministries should be compiled. A forum for the exchange of opinions and the circulation of a newsletter to inform on courses and other IT related issues should be considered to bond IT professionals in the Public Service.

¹¹³ Ibid, p 8

We have not been able to establish the extent to which these strategies have been executed.

7.1.3 Users and Usage Patterns within Government

The government IT budgets were: 1998/1999: N\$30 million (high because of Y2K and the Global One project for Government Internet connectivity); 2000: N\$14.9 million; 2001: N\$ 27.6 million. Government expects to spend N\$90 million on IT over the next three years.

Most offices and Ministries have Local Area Networks (LANs), but they comprise an assortment of network types. Multiple peer-to-peer networks (which are not interconnected) are currently in place with cabling done on an ad hoc office-by-office basis. The set-up and sophistication of these networks depends entirely on the level of skills available within the relevant Ministry. Those LANs that are connected use Cisco equipment. Leased lines are in place to support WAN and Government Internet facilities and are achieved via the Telecom Infrastructure, but high prices charged for bandwidth are an inhibitor. There is dial up connectivity to Internet from certain offices.

To serve its 80000 employees Government has some 5000 computers (including laptops) with 3500 in Windhoek alone. There are about 50 LAN servers. Workstation and Server operating systems comprise Microsoft Win 98/95/NT and Win NT Server. There is some presence of Unix, Linux and Novell, but this is minimal. Government has standardised on the Microsoft range of products (MS Office etc), but Lotus notes and other related products are also used.

Internet links are provided to each ministry, and in some cases directly to directorates and departments. From those points services are distributed to the people connected to the network. There are twenty-four Sun mail servers in the ministries and ten in the OPM modem rack. There are approximately 2000 Internet users with email accounts. Because of the lack of inter-connection of local area networks in a given Ministry, to enable Internet access it is sometimes necessary to have more than one Internet Hub or PC connected to the OPM.

7.1.4 Issues inhibiting the use of ICT in Government

The observations that follow are based on interviews, workshops and feedback from members of the project team. Although every effort has been made to verify the accuracy of the statements, many are perceptions that need to be corroborated.

- **Lack of suitably qualified personnel within Government:** Most departments are under-staffed as far as ICT is concerned. The core unit (PSITM) is running at about 50% of full complement, and other ministries or offices are in similar positions. This is particularly serious because this unit plays a significant role in the procurement process. The skills shortage is at least partly due to the failure of the government to implement many of the recommendations as outlined in the policy document, but is also the cause of much operational difficulty. In particular:

- There is a tendency to look at the recruitment of overseas skills as a ‘zero-sum’ game, where such recruitment will lead to job losses, even if the required skills are not available in Namibia.
 - The processing of applications is slow and inefficient unless one is well acquainted with the processes and procedures involved
 - Remuneration for ICT skills is low compared to neighbouring countries (such as South Africa) and suitably defined salary scales do not exist.
- **Inadequate training:** A consequence of the lack of qualified personnel is that departments take ‘short-cuts.’ Staff without sufficient training and/or aptitude are placed in ICT positions. This appears to be widespread. Consistent standards for the skills expected of ICT staff are not applied.
 - **Lack of integrated ICT strategy:** The success or otherwise of the use of ICT in a ministry or office is very dependent on the existence of a ‘champion’ with the necessary skills and drive in that ministry. As a consequence, certain departments have made good progress, while others have languished. The application of ICT does not reflect the optimum use of resources within the government.
 - **Clumsy and slow tender procedure:** The tender procedure for equipment or services requires intervention from at least four parties, namely, the MITU initiating the request, the ICT Steering Committee for that unit, the DPSITM, and the Government Tender Board. This procedure takes place both on the RFP (Request for Proposal) cycle and during the evaluation process. Where lack of skills exists, the danger of obtaining inappropriate equipment is high, and ‘fly-by-night’ operations can exploit this.
 - **The creation of autonomous ‘empires’ of ICT expertise:** Ministries or offices with better skills are inclined to find ways of bypassing standard procedures which are not seen as being very effective.

7.2 Business (including Parastatals)

In assessing the use of ICT in the economy it is useful to concentrate on those sectors contributing most to Gross Domestic Product (GDP), and those growing most rapidly, since arguably it is in those sectors that effective use of ICT can have most impact. Table 7.1 shows the situation for Namibia in current prices.

Table 7.1 Gross Domestic Product for Selected Sectors of the Namibian Economy

| Sector | 1993 in N\$m | 1997 in N\$m | Real GDP % growth |
|------------------------------|--------------|--------------|-------------------|
| General Government | 2162 | 3521 | 7.2 |
| Manufacturing | 1195 | 1854 | 9.3 |
| Mining and Quarrying | 851 | 1764 | 29.3 |
| Finance and Property | 779 | 1275 | 14.3 |
| Wholesale and Retail Trade | 640 | 1054 | 15.0 |
| Transport and Communications | 398 | 609 | 42.7 |
| Hotels and Restaurants | 129 | 271 | 45.1 |

| | | | |
|-----------|------|-------|--|
| Total GDP | 7602 | 13038 | |
|-----------|------|-------|--|

Source: Standard Bank Namibia, in the Namibian Trade Directory 2000, p8

It is clear from this Table that, after Government, Manufacturing and Mining remain substantially the biggest sectors in the Namibian economy. The growth rate in the Hotels and Restaurants sector indicates that Tourism is probably the fastest growing industry, although the benefits of Tourism will extend outside the Hotels and Restaurants sector.

The following sections briefly examine the Manufacturing, Mining and Finance sectors, for which some ICT data has been obtained. It needs to be stressed again that gauging the extent of use of ICT by business in Namibia is difficult because there is no reliable, recent survey data and many local corporates are effectively branch offices of South African companies. Much of the control and processing of information takes place there.

Manufacturing: Includes meat, fish and other food processing. The larger and more important companies in this sector include

- ❑ Namib Mills with three different milling facilities and ten depots around the country.
- ❑ Namibia Breweries Ltd
- ❑ Sonnex Group manufacturing paints, bricks, paving and concrete walls and importing and distributing products including earth-moving equipment and motor vehicles.

Estimate of ICT usage in this sector:

- ❑ Total Number of employees in this sector 700 employees.
- ❑ Total number of PC's in the Manufacturing sector 200.
- ❑ Total ICT budget from this sector N\$5 million.

Mining and Quarrying

Included here are diamond and uranium mining, as well as petroleum exploration. Prominent companies include:

- ❑ Namdeb Diamond Corporation: employing over 3200 people, the great majority of whom are Namibian residents. Namdeb built the town of Oranjemund, which currently houses 10000 people.
- ❑ Rossing Uranium, The 4th largest uranium producer in the world employing over 1100 people, 93% of whom are Namibian citizens. Rossing invests heavily in Technology and is a significant user of Enterprise Resource Management programmes (SAP/3).
- ❑ Namco: An independent marine diamond company.

Description of ICT Usage in this Sector

- ❑ Total number of employees including miners 12,300.
- ❑ Total number of PC's installed within the mining sector is 3000.
- ❑ Total consolidated ICT budget from this sector N\$82 million.

(In certain years this figure has been as high as N\$120–200 million depending on the project and equipment requirements.)

This sector is the most developed sector with regard to IT. It depends heavily on ICT and all staff members who require access to computer systems have a PC available

to them. State of the art equipment has been installed. Internet usage is very high with email being used extensively. There are communications links to South African mining operations. Most ICT expenditure goes into staff development, and ICT R&D focuses on the development of exploration equipment. Examples of this include the NamSol sea-bed crawler built for the Namco Luderitz Bay Mining Licence area that uses Differential Global Positioning Systems (DGPS) to precisely locate the crawler.

Banking

The largest component of the Finance and Property Sector, Namibia has a sophisticated banking system, with a large network of Automatic Teller Machines installed throughout the country. The banks support and issue most major credit cards and are linked to major international communication networks such as SWIFT. The major banks represented in Namibia are:¹¹⁴

- Bank Windhoek: established on April 1, 1982 after the takeover of Volkskas Limited in Namibia. Subsequently local branches of Trust Bank and Boland Bank were also incorporated. Bank Windhoek currently maintains 21 branches, 12 service points and 41 ATM's around Namibia.
- City Savings and Investment Bank (CSIB): targets the previously disadvantaged communities. CSIB has 5 branches in Windhoek and Northern Namibia.
- First National Bank of Namibia: FNB Namibia has the largest banking network in the country, with 26 branches, 2 sub-branches, 10 agencies, 2 mobile agencies and 71 Automatic Teller Machines (ATM's)
- Standard Bank Namibia: a subsidiary of Standard Bank of South Africa. Has a network of 19 branches and 19 agencies across Namibia.
- Commercial Bank of Namibia: concentrates on the corporate market and the upper end of the commercial market.

The banks that are closely associated with South African banks are all linked into their networks and systems, which are largely mainframe based. The individual banking ATM networks in Namibia are linked to each other and also to South Africa, so that access to a bank account can be effected from any terminal. There are more than 150 ATM's in Namibia. Banks which are not connected to mainframe systems use software from Bankmaster and Phoenix.

Banking over the Internet has been introduced in Namibia. Banks that have this facility include Standard Bank of Namibia, First National Bank of Namibia, Commercial Bank of Namibia and Bank Windhoek to start on the first of April. They will be providing the first online credit card clearances for Namibia.

Large expenditure items for banks include

- Human Resource Development (essentially basic computer skills for users and advanced skills for the IT Department)
- Software upgrades on standard packages (Typically MS Office)
- Upgrades/new installations of ATM's
- New products (e.g. smartcard, internet banking)

There are an estimated 1700-plus PC's installed within the Banking Industry in Namibia,

¹¹⁴ Namibian Trade Directory 2000

Wholesale and Retail Trade

Prominent companies in this sector include:

- ❑ AMEC Holdings, involved in the supply, installation and maintenance of air-conditioning systems
- ❑ M Pupkewitz and Sons, a diversified group participating in the motor trade, catering, retail and finance
- ❑ Consolidated Sugar Industries, dealing with sugar processing, packaging and distribution
- ❑ Meat Corporation, a company involved in all aspects of the meat and leather industries
- ❑ Namib Mills, which runs three wheat milling operations and manufactures wheat-based products
- ❑ Kalahari Holdings, a diversified Holding company operating in the property, transport, financial services, retail, agriculture and mining industries

Transport and Communications

Prominent companies in this sector include:

- ❑ Air Namibia, a private company with the Government of Namibia as the sole shareholder. Air Namibia is a full member of IATA and SITA (the airlines global communications network). It participates in various computerised reservation systems such as Amadeus, Sabre and Galileo.
- ❑ Maersk Namibia, a shipping company, with 8 modern vessels and over 400 000 containers to serve Namibia
- ❑ Transnamib Holdings, a private company with the Government as sole shareholder, operating rail and road transport. Subsidiaries include Namrail as the largest operating entity with a rail network, diesel locomotives, wagons and passenger coaches and also offering container, general freight and parcel services; TransNamibia Travel with four offices in Namibia; the Namibian Ports Authority which owns port assets in Walvis Bay and Luderitz. The Ports Authority has established a progressive ICT training programme.

Hotels and Restaurants (Tourism)

Official Statistics are not maintained on the Tourism Industry per se, but rather on individual components such as Hotels and Restaurants. Tourism is currently the fastest growing industry in the world and in line with this the Hotel and Restaurant sector showed a CAGR in real terms of 45% from 1993 to 1997. Namibia has a well-developed infrastructure to accommodate tourists, including urban hotels, game parks and a burgeoning bed-and-breakfast sector. The larger establishments and many of the smaller ones can be found on the Internet. The Federation of Namibian Tourism associations (FENATA) is an umbrella body for the tourism sector.

Recommendation: Establish a body, either public or private, responsible for the capturing and maintenance of information on the use of ICT within government and industry.

8.1 Profile of the ICT Human Resource

Today Information and Communication Technology is recognised as one of the main ingredients for success and a dominating factor in both the industrialised and emerging economies. As is well known, however, there is a worldwide shortage of ICT professionals. For instance, in the United States it is estimated that currently the ICT industry has a million vacancies for ICT experts. In Western Europe, the shortage is expected to reach 1.5 million by Year 2003.¹¹⁶ Different countries have responded differently to the ICT skills shortage. The United States has attempted to headhunt mainly from the East and countries such as Russia and South Africa, and has dramatically increased the number of work permits available for foreign ICT workers. Germany has provided open work permits for ICT professionals, while Pakistan has decided to spend as much as sixty percent of the government allocation for IT to human resource development. Indeed, identifying priority areas for attracting skills has been used in many countries.

In this light, numerous studies and government documents have also highlighted the shortage of educated, skilled and experienced human resources in the Namibian labour market.^{117,118} The problem is rendered more acute by the fact that young people dominate the age profile of the country's population, with over 42% below the age of 15 years.

South Africa remains Namibia's major external source of ICT people, so it is important to note that South Africa's ICT skills shortage was estimated to be 33 % in 1999 rising to 62 % in Year 2003, while its ICT skills demand is estimated to rise by 40 % over the same period². With the ability of South Africa to pay better salaries, an accelerated brain drain of ICT skills from Namibia thus seems inevitable. Namibian decision makers clearly recognise this. In a series of interviews conducted for the drafting of this policy document and presented in Chapter Five, general human resource development was ranked as national priority number one. In the workshop that followed the interviews, participants stressed the need to ensure adequate development of ICT human resources, for instance by introducing ICT courses right from primary schools, broadening basic ICT literacy, providing ICT training to teachers, and involving all stakeholders to obtain the necessary funding.

This chapter reviews the nature and status of the ICT human resource within the Namibian ICT industry, including opportunities, pay structure, incentive schemes, etc., and examines the contribution of the ICT education and training sector to HR

¹¹⁵ This chapter has been contributed by Professor Geoff Kiangi of UNAM with substantial input from Mr Ed Du Vivier, Advisor for Institutional Development, Ministry of Basic Education, Sport and Culture.

¹¹⁶ African Business, No 260, IC Publication, December 2000.

¹¹⁷ See, in particular, Republic of Namibia, National Planning Commission. *National Human Resource Plan (1998 - 2010)*. Windhoek: NPC, October 1998; and *First National Development Plan (NDP1): 1995/96 - 1999/2000*. Windhoek: NPC, 1995.

¹¹⁸ In recognition of the central role of education and training in the process of national development, the government allocates between 20 - 25% of annual recurrent expenditure to the two Ministries of Education and to associated educational institutions.

development. It is based upon previous research and analysis as well as a brief survey and analysis of a sample of Namibian organisations conducted for the current study.

8.1.2 Number of ICT Workers in Public and Private Sectors and the Brain Drain

There are about 200 registered ICT companies in Namibia, but most of these do not have a depth of expertise and resources. In terms of effectiveness of systems implementation and service support, there are probably ten big players in the industry most of whom offer a wide range of ICT services.

There has, however, been no systematic study of the number of ICT professionals as such in Namibia and no statistics are available. From the current sample study conducted specifically to provide information for this ICT policy study, it is projected that there are about 500 ICT professionals in the country. This study also suggests that ICT staff form about 1.5 % of the total workforce, but the ratio varies from company to company depending on the nature of the core business. Proportionately, government has a substantially lower number of ICT staff than the private sector. About 25% of ICT staff has neither formal college training in ICT nor industry certification, but most companies felt that college training was not very useful, because specialised skills are required. They always preferred and actively sought out industry certified qualifications. The survey suggests that, over the last three years about thirteen percent of ICT staff have moved to South Africa, Europe and USA. This trend will become worse as the ICT skills shortage worldwide is expected to worsen. If Namibia is to retain ICT experts and maintain a vibrant industry, drastic measures to arrest the brain drain need to be instituted. In general, staff turnover in the ICT industry in the country is fairly high. Over the last three years, fifty five percent of ICT personnel left their current employers for jobs overseas, or simply moved to other companies within the country. Most of those moved to newly formed parastatals like Telecom (the highest attraction), Nampost, Nampower and Namwater, which also seem to offer higher salaries. Some analysts, however, think that staff leave mainly due to lack of training support within the companies where they work, and not because of money.

8.1.3 Projected Shortfalls in Numbers and Categories of ICT Professionals

All companies in the current survey indicated that it is very difficult to recruit ICT staff, particularly in senior levels. A few companies said that it was easy to recruit ICT staff at lower levels. It is interesting to note, however, that while it is widely perceived that there is a large shortfall in ICT skills in the country, few companies in the survey said that they have vacancies available. The overall ICT shortage was only about 8%. This is surprisingly small compared to South Africa's current shortfall of 33%. The reason may be because Namibian companies prefer to keep a small ICT unit, and outsource from South Africa for major ICT tasks. Thus, if all ICT work done by non-Namibian companies were to be translated into an equivalent number of local jobs, the shortfall would be significantly larger. In attempting to project ICT skill demands over the next few years, many companies expected the use of ICT to increase within the operations of their companies. Indeed, many companies envisage using newer hardware and software technologies, and concern was raised as to

whether appropriate human resources will be available to meet those needs. It was noted that the demand for ICT human resource is towards more specialised skills and almost all companies mentioned the need for more specialised skills as their future requirements. One company, for example, reported, "*Limiting factors could be a shortage of staff and lack of technical understanding of specialised systems, as IT staff would require an above average knowledge of very advanced systems and integration with other electronic devices.*" College education in ICT cannot provide specialised training in every possible field of specialty, particularly when some required knowledge is vendor-specific (e.g., Cisco routers, IBM systems, etc). This means if Namibia will need to meet future human resource requirements of the industry, a lot more resources than at present will need to be provided by the industry for in-service training.

Recommendation: Government should consider providing tax rebates and other incentives for companies offering training support to their ICT staff.

Another major problem in the Namibian ICT industry is lack of proper categorisation of ICT staff. Different companies use varying job level names and varying job descriptions. Even when similar names like "programmer" or "controller" are used, the responsibilities and the job descriptions may be very different. The problem of categorisation and designation of ICT professionals is even more acute in the government, where ICT professionals are worst paid; this may explain why the government faces the highest ICT staff turnover. It appears that many ICT professionals use the government simply as a stepping-stone to other better paying offers, leaving the government to pay the price through high support costs and high costs of recruitment.

Recommendation: Standardise professional categorisation in the industry and use for job designation and appointments. For each category, give an outline of the expected skills, qualifications and duties^{119,120}.

8.1.4 Employment Opportunities and Labour Market Needs

While Namibia's thirty four percent rate of unemployment is very high, employment opportunities for ICT professionals remain good, and are poised to be better as ICT application in the industry continues to grow. Some companies in Namibia estimated a twenty five percent growth of the industry over the next five years. Currently, all graduates of Computer Science from both the University and Polytechnic obtain employment. Following the trend in South Africa, however, the above situation may change soon. An expert from Microsoft South Africa was quoted saying, "*Many educated, and qualified people are still unemployed because their skills are not those in demand.*¹²¹" This is because generic ICT training may not necessarily alleviate the

¹¹⁹ The Namibian Information Technology Association (NITA) could assist in this as a natural extension of its other efforts such as developing a Code of Conduct and Ethics for the ICT professionals.

¹²⁰ In South Africa, the SA Qualifications Authority is driving a similar process, the results of which could short cut a great deal of work in Namibia.

¹²¹ African Business, December 2000

skills shortage. The most needed skills are specialised skills that are acquired through experience and on-the-job training schemes.¹²²

Recommendation: The industry and training institutions should partner to invest resources jointly for both in-service and pre-service training to ensure that the training given meets the labour market needs. Training institutions should combine some industry certification programmes into their curricula.

A group of ICT professionals has also noted a serious labour market need for Project Management Skills. In most instances wherever these skills are required they are sourced from outside the country. As a result, the University of Namibia was requested to start an Association of Project Managers for the ICT industry in the country. These efforts need to be supported.

Recommendation: Training Institutions should emphasise the development of Project Management Skills and Computer Associations should attempt to promote discussions where insights in the development and implementation of specific projects can be reported and shared.

Some ICT experts contend that most of the labour market needs above are self-generated. This is because many companies fear that once new recruits are trained they will leave. Companies are therefore not interested in taking on trainees and developing them into good professionals. One company interviewed stated the following; *"At the moment we regularly fly experts from Europe to assist us on the billing system at extremely high costs. Even if we could fill this position locally, the training costs are very high, and we run the risk to lose the staff to competitors, shortly after we train them."*

Recommendation: Encourage companies to offer training and bond their trained staff; allowing employees to undertake self-study using computerised programmes like Microsoft Press, which offer interactive self-paced courses over the network, as a cheaper training method.

Recommendation: Set up ICT Centres of Excellence at universities and colleges. These should be well linked to the product suppliers, and the industry in general.

These solutions, however, are long term. For the interim, the comments of one company are very relevant:

"Namibia and the IT sector would greatly benefit from the easing of work visas for IT professionals from other SADC countries to work in Namibia. For example, Zambia has some of the best qualified IT staff in the region, but we are unable to obtain work visas for SADC IT professionals. The IT staffing pool (therefore) will remain low for the foreseeable future and will have negative impact on Namibia's growth potential. However, that said, the Government of the Republic of Namibia has taken commendable steps to understand IT..."

¹²² But there is also the risk of oversupply of specialised skills. For instance South Africa apparently has a surplus of MCSE graduates.

Recommendation: Make recruitment of ICT experts from outside the country much easier in order to address the critical skill shortages, accelerate ICT growth in pace with economic development, and assist in developing a strong local ICT labour force.

Recommendation: Contractors undertaking work in Namibia—particularly external contractors—should be required to include capacity building as a deliverable in their contracts. The government should encourage this by creating incentives and ensuring compliance.

8.1.5 Salary Structure

Salaries of ICT staff in Namibia are remarkably low, with top staff earning only about N\$14000 per month. In some companies network administrators and technicians earn as little as N\$3000 per month, lower than the average salary of a fresh college graduate. This dampens morale and tempts younger staff to change profession. Only in a few organisations like in the banking sector and new hi-tech companies like Telecom and cellular phone businesses, do top ICT professionals earn up to N\$400000 a year.

Compared with other professions in Namibia and the higher salaries paid for equivalent ICT jobs in South Africa, the salary structure offered by the Namibian ICT industry will not attract and retain good ICT professionals. The reasons for the poor salary structure are not difficult to find.

- In many companies the ICT department is very small (as small as one member in some cases). Therefore, most of the work is outsourced. For large-scale ICT development work, expertise is usually sought from South Africa. This leaves the ICT skills within a company, and the country at large, undeveloped. With ICT personnel thus under-utilised and undeveloped, they cannot attract high salaries.
- ICT has not yet been established in the country as a profession like engineers, doctors, etc. In the minds of many managers, particularly in the government, ICT staff are regarded only a little higher than typing staff. Indeed, because of this, the government for one has failed to build a robust ICT support team to run government systems efficiently.
- There is a lack of clear job and skills categorisation mentioned previously, and thereby poor career path development. With no career path development, salaries remain stagnantly low.
- The industry has tended to rely more heavily on experience in specific skills and industry certification. Those not having such skills are not marketable and are forced to accept any salary.
- Lacking structured in-house training facilities and the finances to pay for the expensive industry certified courses, many individuals fail to develop themselves much further. This lack of ICT skills hinders the proliferation of ICT into new areas of application, and prevents the possibility of developing ICT to levels of technological sophistication that can attract top-level ICT professionals.

8.1.6 Current Incentives and Reward Structures

Based on the survey, very few companies mentioned that they offer high salaries as a bid to attract ICT professionals. There are also no specific reward schemes for ICT staff in most companies within Namibia. Incentives provided to ICT staff are those common to other professionals as well, such as performance-based salaries and bonuses. Medical Aid and Pension Schemes are common to many companies. In most finance and banking institutions, staff are given low interest housing schemes and loans as an employment incentive.

Only a few companies mentioned training bursaries to support their staff. Given the fast changing nature of the industry, the severe shortage of ICT skills, and the fact that specialised training is required over and above the formal college training, it is important that employers of ICT professionals see training of staff as an important part of the condition of service. In addition to this, employers should, as far as possible, ensure that the ICT work environment offers the opportunity to share, in order that required working skills can be passed to new employees more effectively and learnt within the shortest possible time. A trainee scheme and field attachment like in the engineering and legal professions will do a lot of good to the industry.

The fact that ICT staff in Namibia seem to change employment quite frequently indicates an element of employee dissatisfaction within the industry. If Namibia wishes to build an efficient and competent ICT industry, these issues need to be addressed. In addition to offering competitive pay packages, the industry should ensure that ICT skills have an opportunity to develop.¹²³

Currently, ICT staff in the government are the lowest paid compared with industry and other professions in government. Government also seems to have the poorest incentive and reward structures for ICT personnel. Without good skills, however, major government projects such as the Government intranet will end up white elephants. In addition, the government is a key player in the implementation of ICT policy. If government is to encourage the industry to offer attractive conditions of service in order to develop ICT skills in the country, the government should be the first to show the example.

Recommendation: Government must recognise ICT as one of the key professions and—as has been done in the past with other professions—offer additional professional allowances.

8.1.7 Profile of ICT User Community

While almost all offices use computers for word processing and secretaries will usually have good word processing skills, the ICT user community in Namibia is still very small. Secretaries will likely take computer literacy courses, which include word processing, spreadsheet, database management, presentation packages, and in some instances e-mail and internet. However, since secretaries' jobs confine them

¹²³ The SAITIS baseline study analyses what keeps people in ICT jobs in South Africa. In many cases, it is the training opportunity that is offered as much as the salary. See www.saitis.co.za

mainly to word processing and e-mailing, skills acquired in the other areas can get lost.

Many senior professionals in the government and private sector are still computer illiterate. For instance, apart from using computers in performing routine transactions like storing and retrieving information, very few senior managers use Decision Support Systems. The skills of most other ICT users are limited to receiving and sending e-mails, and some knowledge of word processing. An exception is in financial institutions, where users tend to have a level of ICT knowledge higher than computer literacy, and where there are a few financial experts who have good knowledge of networking like TCP/IP, and database and server management skills.

While computer literacy within government remains low, the government has worked commendably well to assist employees to become computer literate. Ministries that have computer-training programmes for their staff include the Ministry of Defence, Ministry of Health and Social Sciences, and Ministry of Local Government and Housing. These Ministries have forged links with training institutions to offer basic computer skills. Some ministries, like the Ministry of Defence have organised training on Project Management Packages and how they can be used in decision-making. The office of the Prime Minister's Directorate of Information Technology has been organizing suitable courses. Despite the efforts by government, however, an increased training effort is required to provide the needed skills.

Recommendation: To demonstrate its role as a model user of ICT, Government should work together with other institutions like the University and the Polytechnic of Namibia to develop and enhance training programmes and programmes to increase ICT awareness.

In short, examining the ICT user community in Namibia, there is a need to expand the teaching of computer literacy to as many users as possible, both in the public and private sectors, and to also ensure that top managers are trained in ICT skills including familiarisation with Decision Support Systems. The good efforts made by some government ministries are noted and should be encouraged.

8.2 ICT Human Resource Development

To meet the demand for increased and changing ICT human resources, Namibia has two options: recruit the required manpower from outside, and/or develop the required manpower locally through appropriate ICT training and education programmes. Given the worldwide shortage of ICT professionals and for sustainable development of a country, recruitment from outside the country should be regarded only as a short-term measure. *This means that Namibia's main way forward is through the training and development of local ICT professionals.*

For the purposes of this review, two broad categories are considered: ICT Training and Education and the Use of ICT in Training. While Use of ICT in Training is not, strictly speaking, an issue of ICT human resource development, it is included here firstly because it concerns training institutions, most of which offer ICT courses; secondly, ICT may be used as a medium for delivering ICT Courses; and lastly because of its catalytic role in ICT human resource development. The more an institution uses

ICT-based training modes, the more likely and easier for the institution to train ICT professionals.

8.2.1 The Computer Education Policy

In 1995, the Ministry of Basic Education and Culture through the National Institute for Educational Development (NIED) developed a policy document for Information Technology in Education in Namibia (NIED, 1995). This brief but fairly detailed document set out the objectives for developing an ICT Policy in Education and expounds on key issues regarding the strengthening and exploitation of ICT courses in schools, including ICT utilisation. The policy argues that for Namibia to participate effectively both economically and socially, the country needs to keep pace with progress made by other countries including progress in ICT, which is now recognised as an essential part of modern life. The document also points out that use of ICT in education can significantly improve the teaching and learning process. Recognising that distribution of facilities and resources is still very uneven in our schools, the document recommends a number of didactical approaches to ICT education. Community involvement is strongly encouraged in order to assist in provision of ICT facilities in schools.

After identifying the rationales for introducing ICT in schools as: social; vocational; pedagogical; and catalytic,¹²⁴ the document enlists the policy options, software, training, hardware and qualitative estimates of costs, for each rationale. These rationales are further broken down into aims, objectives and strategies for both short term (three year) and long-term (five year) plans. Target organisations were identified to undertake the identified tasks in order to achieve the stated objectives. The short-term plan, covering the years 1995 - 1997, included among others, the following objectives:

- ❑ Achieve computer literacy for students graduating from Tertiary institutions;
- ❑ Establish a database with appropriate content to be agreed, which will be shared by tertiary institutions, and link all institutions to the internet;
- ❑ Establish various pilot projects that expose learners to ICT concepts;
- ❑ Train sufficient number of teachers to teach ICT related subjects; and
- ❑ Extend the teaching of ICT related subjects to many schools, and link Teacher Resource Centres (TRCs) to libraries.

The long-term plan, which was to extend to year 1999, established the following objectives, among others:

- ❑ Connect all secondary schools to the Internet;
- ❑ Most learners completing senior secondary to be computer literate;
- ❑ Most teachers use computers as a working tool;
- ❑ Short INSET courses on ICT available for teachers; and
- ❑ Establish a computer-training centre at NIED.

The following were some of the long-term objectives extending to year 2005:

- ❑ Connect all junior secondary schools to the Internet;

¹²⁴ Hawkrige et al, 1990

- ❑ Establish various ICT projects in all school phases to allow self-study by learners using computers;
- ❑ Ensure that all teachers are trained and use computers as a working tool; and
- ❑ Supply an adequate number of ICT professionals.

Unfortunately not much has been done to meet the objectives of this policy. The reason given is lack of financial resources and qualified teachers. More likely, however, is the fact that this policy lacked a champion to drive its implementation. Furthermore, the policy lacked an implementation strategy to ensure that finances are obtained from the centre, and adequately allocated to achieve the stated objectives.

Over the years, ICT training world-wide has developed into two distinct categories: College-based training, which leads to formal qualifications like degrees and diplomas; and professional courses which lead to industry certification. This dichotomy has arisen due to the diverse needs of the industry, with many specialised fields requiring varied practical skills, impossible for any training college to cover *in toto*. Naturally, industry certifications have grown to be more marketable and as a result many colleges collaborate with the industry to offer industry certified courses in parallel with the provision of degrees and diplomas. The following two sections discuss the actual state of play regarding ICT in schools and tertiary institutions with regard to both aspects of training and education.

8.2.2 ICT Training In Schools

In Namibia, ICT training in schools is covered under four subjects: Basic Information Science, Computer Literacy, Computer Practice, and Computer Study. Briefly:

Basic Information Science: The curriculum is designed for Grades 4-7. It includes providing skills for retrieving and using information from a variety of sources (the community, media, audio-visual and electronic sources, databases, etc.); trains learners to distinguish between information and knowledge; develops skills on how to communicate information using a variety of media. This subject is very important in fostering the concepts of learner-centred education, and life long learning both of which are central pillars in the Namibian Education System.

Computer Literacy: The curriculum outlines seven levels of basic competency that learners can achieve within their basic and secondary education. This curriculum does not provide a separate subject, but is to be implemented across the curriculum and be integrated into other subjects. The curriculum has no grading prescriptions, but schools and teachers have the freedom to decide on which level should be taught when, including the decision on the software which will be taught.

Computer Practice: Taught in Grade 8-10. Provides vocational orientation in ICT and includes the basic architecture of computers and Spreadsheets, Files, Desktop Publishing, Application Software, Hardware, Programming, Data Organization and the Internet. Allows learners who will continue with studies to use computers effectively in their field of study, while for those who leave their studies, to allow them use computer practically in their vocation.

Computer Studies: Usually undertaken after Computer Practice and is examined both at IGCSE and HIGCSE levels (Cambridge Secondary and Higher Secondary Certificates respectively.) The content is similar to Computer Practice, but covered in greater depth, and adds Systems Analysis, Specification Design and Development. Part of the assessment includes project work where the candidate identifies a significant problem, proceeds to solve the problem and documents his/her attempt to solve it.

Table 8.1 summarises the statistics for these subjects for the year 1998.

Table 8.1 ICT related school subjects (source - EMIS, 1998)

| Subject | Grades taught | Number of students taking the subject | Total number of students for the Grades | % of students taking the subject | % passing with A* or A | % passing with A* or A all subjects |
|---------------------------|----------------|---------------------------------------|---|----------------------------------|------------------------|-------------------------------------|
| Basic Information Science | Grades 4 - 7 | 3623 | 149 115 | 2.4 % | | |
| | Grades 8 - 10 | 556 | 85 206 | 0.65 % | | |
| Computer Literacy | Grades 4 - 7 | 233 | 149 115 | 0.15 % | | |
| Computer Practice | Grades 8 - 10 | 2617 | 85 206 | 3.1 % | 11.1 % | 2.7 % |
| Computer Study | Grades 8 - 10 | 27 | 85 206 | 0.03 % | | |
| | Grades 11 - 12 | 439 | 24 480 | 1.8 % | 4.5 % | 1.2 % |

Since there is no national examination in Grade 7 (i.e., end of primary education phase), Basic Information Science and Computer Literacy are not examined nationally. Therefore, as shown in the table, no examination results are available.

Table 8.1 shows that only about 2 % of all learners do Basic Information Science¹²⁵, about 3 % do Computer Practice and 2 % do Computer Studies. These figures are very low if Namibia intends to develop as a society that will participate effectively in the Information Age and assist in economic development of the country. Strategies need to be effected to increase enrolments in these subjects. It is interesting to note in Table 8.1 that student results in ICT-related subjects are very good, ICT being one of the subject areas with best performance. This could mean that, if afforded the opportunity, Namibian learners are capable of developing the required ICT skills. However, it is also possible that the good performance is due to the fact that the schools that are offering computer subjects are usually relatively better resourced than others.

¹²⁵ Since Basic Information Science is designed for Grades 4-7, it seems that those students doing this subject in Grades 8 - 10 are doing it as a back subject (i.e., a subject they ought to have done before).

There is no record of teachers qualified in ICT-related subjects. However, five years ago, only seven teachers were recorded as qualified to teach Computer Practice and Computer Studies.¹²⁶

Recommendation: In order to promote ICT in school education, it is critical to emphasise training of teachers who will teach ICT-related subjects.

Of course promoting ICT in schools needs equipment and physical resources. Namibia has one of the best telecommunications infrastructures in sub-Saharan Africa. However, of the total of 1489 schools in Namibia in 1998 only thirty percent had a telephone connection. About thirty five percent have electricity.¹²⁷ If a policy is made to connect all schools to have computers, it will be important to consider solar driven computers for the sixty five percent of schools that do not have electricity. The University of Namibia through the NUFU programme has been working on a project to ensure the feasibility of solar driven computers for rural schools.¹²⁸

8.2.3 SchoolNet Namibia¹²⁹

Another approach that many other developed and developing countries have used is to adopt a demand-led approach to the development of ICTs in education. In this approach, all teachers and learners are expected to develop a fairly basic level of computer literacy, after which those that wish to develop advanced skills are given the opportunities and incentives (e.g. competitions, small grants) to do so. Such an approach assumes that both teachers and learners will gain knowledge and develop skills at their own pace and through a variety of learning styles/resources (including discovery, skills transfer from peers, reading of manuals, project-based activities, etc.), rather than only through formal teaching mechanisms.

SchoolNet Namibia is employing this approach by emphasising learners as the driving force in the dissemination of skills. In such a case, certification can be competency-based and examine generic skills. In August 1999, the National Museum of Namibia, in collaboration with 51 corporate sponsors, hosted an Insect@thon for students from schools in Namibia. This is a project to computerise insect inventory records. Approximately US\$1m was raised for Insect@thon involving 92 children between the ages of 11 and 19, from 16 schools. The success of the Insect@thon resulted in the launch of SchoolNet Namibia¹³⁰, constituted of Internet, telecommunications and electricity service providers, government ministries, other public sector organisations, research and higher education institutions, business organisations and donor agencies. SchoolNet Namibia aims to have all schools connected by 2004.

Addressing connectivity in Schools

Through its subsidiary Internet provider Iway, Telecom Namibia and SchoolNet Namibia have agreed that Iway will provide free Internet access to all SchoolNet users. Under Iway, a reduced local telephone tariff is available countrywide through a 0700

¹²⁶ Kiangi, 1995

¹²⁷ EMIS, 1999

¹²⁸ NUFU, 1997

¹²⁹ This section and the subsequent one on Open and Distance Learning have been contributed by Mr Ed du Vivier.

¹³⁰ www.schoolnet.na

number. This arrangement is one of the few of its kind in Africa. In this case, it has been negotiated by the parties themselves, indicating that a high degree of independence on policy and pricing issues already exists within Telecom Namibia. Telephone charges for Internet use are still relatively high in Namibia, and particularly for school use lower tariffs are needed.

Technical Support

SchoolNet has already been a very active agent through the experiences being gained by its "Kids on the Block" initiative, in which SchoolNet is installing and maintaining its school networks with the help of volunteer students, many from the Polytechnic. In the course of their training, they are gaining practical hands-on training in network installation and maintenance, as well as hands-on experience in refurbishing donated computer equipment. This is being achieved through a mentoring approach, and peer-to-peer training. A Help Desk has also been created to assist schools. The Polytechnic or UNAM cannot provide practical training on this scale, and SchoolNet has played a key role in accelerating the process and in providing an enabling environment.

The Swedish International Development Agency (Sida) is supporting SchoolNet in a start-up phase, and a large part of the Sida grant will go towards subsidising telecom costs for SchoolNet access. Telecom Namibia are meeting the SchoolNet initiative with a promise to give priority to the installation of telephones at rural schools, in coordination with SchoolNet's implementation plans.

The SchoolNet Namibia experience shows that successful implementation can be achieved with wide support from individuals, public and private organizations. This was achieved without the existence of national policy. SchoolNet has been free to create alliances with a large number of partners within and outside of government. The Internet community (ISPs, computer companies, Telecom Namibia, Nampower) have all supported SchoolNet as a way to expand Internet use in the country, some of them realising the commercial opportunities at the end of the road.

8.2.4 ICT Training in Tertiary Institutions

There are two main Tertiary institutions in Namibia: the University of Namibia and the Polytechnic of Namibia. In addition to those, there are seven Vocational Training Centres (VTCs), four Colleges of Education, three Agricultural Colleges and one Police Training College. There are also Private Colleges like Damelin and the Higher Education Institute, which offer a variety of programmes in collaboration with external institutions.

The University of Namibia

The University of Namibia has three main programmes relating to ICT: Computer Science, Information Studies, and Journalism.

- **Computer Science** (which has a heavy emphasis on programming, database management and networking) is offered as one of two majors in the BSc Degree. Thus a student can combine Computer Science with Mathematics, Physics, Statistics, Management Science, etc. This approach has proved to be very useful because of its versatility in producing ICT experts with expo-

sure in several specialist fields. All graduates in this programme immediately get employed, and many are offered employment before leaving College. Often organisations come seeking more Computer Science students than available graduands.

- **Information Studies** combines Library Science and Information Technology, with a bias towards database management. Again graduates in this programme are highly sought after.
- **Journalism** covers the normal courses in news reporting, publishing and other aspects of the media, and also concentrates on Desktop Publishing and Graphics Design.

All these are full time programmes, but there are plans to start part time degree programmes in Computer Engineering, as well as professional programmes such as A plus, MCSE, E-Commerce, etc. These new programmes are anticipated to start in year 2001 and will be offered on demand. The University also offers a wide range of short computer courses as and when demanded by the public both at the main campus in Windhoek and at the Northern Campus in Oshakati. The Table below shows enrolment figures for various ICT related courses.

Table 8.2 ENROLMENT IN UNIVERSITY OF NAMIBIA ICT RELATED SUBJECTS

| | 1999 | | | | 2000 | | | | 2001 | | | |
|------------------------------------|---------------|----|----|---|---------------|----|----|----|---------------|----|----|----|
| | YEAR OF STUDY | | | | YEAR OF STUDY | | | | YEAR OF STUDY | | | |
| | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| Information Studies ¹ | - | - | - | - | 43 | - | - | - | 206 | 24 | - | - |
| Library Info. Studies ² | | | | | 3 | 1 | 3 | 2 | 9 | 4 | 2 | 3 |
| Computer Science (BSc) | 88 | 23 | 16 | 6 | 72 | 54 | 21 | 23 | 79 | 76 | 22 | 11 |
| Computer Literacy ³ | 580 | | | | 587 | | | | 725 | | | |

¹The Course was started in year 2000

²Statistics for 1999 are not available

³This is a one-year Course offered to all interested students

The Polytechnic of Namibia

The Polytechnic of Namibia offers Diploma and B Tech Degrees. With regards to ICT Courses, the Polytechnic offers a variety of Programmes.¹³¹ For a long time the Polytechnic has been offering a Diploma in Business Computing, which has been highly applauded by the industry. This Diploma, which was started in collaboration with the industry, is now being phased out. Also being phased out is the National Certificate in Business Computing. The Polytechnic is currently introducing two Diplomas: National Diploma in Information Systems Administration, and National Diploma in Software Engineering. In addition to these the Polytechnic intends to introduce Bachelors degree (B Tech) in Information Technology in Year 2003. These programmes are modular, allowing a student to start with a Certificate, proceed to a Diploma and finally obtain a Degree. Computer Literacy or Computer User Skills is taught to all Polytechnic students. The College also offers a number of ICT programmes and ICT short courses to the Public. Table 8.3 gives enrolment figures for the year 2000.

¹³¹ Polytechnic, 2000

Table 8.3 ENROLMENT IN POLYTECHNIC ICT RELATED COURSES IN 2000

| | Y E A R | | |
|---|---------|----|----|
| | 1 | 2 | 3 |
| Certificate in Information Technology | 72 | - | - |
| Diploma in Business Computing | 10 | 27 | 14 |
| National Diploma in Info Systems and Admin [*] | - | - | - |
| National Diploma in Software Engineering | - | - | - |

^{*}Course not offered before year 2001

Vocational Training Centres

There are seven Vocational Training Centres. Two of these centres offer ICT-related courses. One of these two centres teaches Computer Studies, but with very few students subscribing to the course (11 candidates in 1998), while the other teaches Computer Literacy. Statistics are not available to know how many candidates learn Computer Literacy, but it is understood that the number is fairly low.¹³²

Namibian College of Open Learning (NAMCOL)

NAMCOL is a recently formed College which according to its Act, is mandated to provide "opportunities for adults and out-of-school youths to upgrade their professional and vocational skills" through "the use of modern instructional techniques, including, but not limited to, the media, and utilisation of technological equipment." Although most people are familiar with NAMCOL's Alternative Secondary Education Programme for out-of-school learners at Grade 10 and Grade 12 levels, the College is empowered to make tertiary-level awards and is currently offering tertiary-level programmes. In terms of enrolment statistics, NAMCOL is the largest educational institution in the country. NAMCOL has recently established a Computer-Based Learning Centre (CBLC) that is offering a variety of ICT related courses. The overall student enrolment figures for NAMCOL are given below.

Table 8.4 NAMCOL ENROLMENT FIGURES FOR 1997-1999

| | 1997 | 1998 | 1999 |
|--------------------|-------|-------|-------|
| Distance Education | 8443 | 9707 | 10263 |
| Face-to-Face Mode | 8197 | 10311 | 11040 |
| TOTAL | 16640 | 20167 | 21303 |

Colleges of Education and Private Institutes

Colleges of Education train teachers for a Basic Education Teaching Diploma (BETD). Within the BETD there is no formal training offered on IT-related subjects.

Among Private Institutes, Damelin and the Institute of Information Technology (IIT), offer a few professional courses, including PC repair and maintenance, A plus, MCSE, etc. There is no credit to the BETD or any other teaching qualification if a teacher undertakes any of these courses.

A number of other Private Institutes offer ICT-related Courses. These range from those offering fairly lengthy professional courses to those offering simple one-day Computer Courses. Professional courses include the International Computer Driving License, MCSE, A+, as well as a variety of Certificate and Diploma Courses. Many organizations, including some Government Departments (e.g., Directorate of Infor-

¹³² EMIS, 1998

mation Technology in the Prime Minister's Office) also offer a variety of courses on computer skills.

Recommendation: The Ministry of Basic Education and Culture should consider accrediting some of the computer courses above within the BETD programme in order to accelerate the process of obtaining computer teachers in schools.

8.2.5 Open and Distance Learning in Namibia

At Independence, Namibia inherited an education system that was characterised by gross inequalities in the allocation of resources to schools for different ethnic groups. However, the country's unique geographical circumstances, with a small population unevenly distributed over a vast territory, have posed additional barriers to overcoming this legacy of unequal access. Furthermore, the country cannot afford to release " . . . large numbers of its professional, managerial, and para-professional staff for extended periods of in-service full-time training or upgrading".¹³³ Such a strategy for redressing inherited inequities would prove too costly and too disruptive to daily activities.

Even before Independence, it was recognised that open and distance learning (ODL) has the potential to address Namibia's educational and training needs in a cost effective manner. The experience of other countries has shown that courses of comparable or higher quality can be provided through ODL at considerably lower unit costs. Furthermore, ODL has the flexibility to accommodate varying levels of enrolments and the capacity to reach out to all corners of the country. As the *White Paper on Higher Education* notes:

*. . . distance and open learning can in the very near future offer the majority of Namibian adults the most economic, effective, and available opportunities to seek tertiary level qualifications. Limited financial resources, family and professional responsibilities, and geography make other alternatives unaffordable or inaccessible.*¹³⁴

Tournas (1998) provides a comprehensive overview of the current state of Computer-based Education Technology in Namibia. He then identifies opportunities available in utilizing and enhancing Computer-based education in the country. Tournas emphasises that the most successful computer-based education programs are "based on national coordination between the education ministry for administration, a research institute at a University, and classroom teachers."

At the tertiary level, both the University and Polytechnic of Namibia have fairly good computer networks that can be effectively used for on-line Internet-based courses as well as courses using other ICT-delivery modes. In addition, both the University and Polytechnic have more than eight Campuses around the country that can be used as centres for delivery of various on-line courses. Currently most course materials use only print media. The University, however, has launched a Video Conferencing facility between the Main Campus and its Oshakati Campus. This facility is used for both

¹³³Republic of Namibia, Ministry of Higher Education, Vocational Training, Science and Technology. *Investing in People, Developing a Country: Higher education for development in Namibia* (White Paper on Higher Education). Windhoek: MHEVTST, 6 May 1998.

¹³⁴*Ibid.*, p. 68.

meetings and teaching, and has significantly reduced the cost of transport of staff and lectures respectively. Efforts are still underway to train lecturers to ensure the best use of this technology for effective teaching.

The University has about 1240 students on distance learning while the Polytechnic has 1300 students. Syllabuses, course materials and assignments are run using traditional course guides in printed form. A great deal of benefit can be derived if these programs can begin to use CD-ROMs with Hyperlinks, E-mails, list servers and Bulletin Boards.

Recommendation: Learning institutions should develop an IT strategy that includes the use of ICT as a learning tool, particularly in distance education.

The University of Namibia is a member of African Virtual University Programmes, which offer training and on-line resources through Satellite and the Internet. With this, the University has access to 1700 full electronic journals for staff and students. A number of courses are offered interactively via Satellite. The University is also participating together with a group of other universities in an Internet course of Urban Public-Private Partnership (UPPP), which started to be offered in Year 2001. Through this, students are able to interact with other students and lecturers in eleven other universities throughout the world.

Plans are also underway for the University of Namibia to establish a Knowledge Centre. This centre will link to other similar centres throughout the world, most of them established through the World-Bank Programme called the Global Learning and Development Centres (GLDC). Using Satellite and the Internet, the Centre will be able to provide a variety of highly professional interactive video, and on-line courses, both for working communities and university students in Namibia.

Since 1990, there has been considerable progress in transforming Namibia's education system at all levels. Reforms at secondary level have led to a more balanced curriculum and dramatic increases in the number of successful learners. Nevertheless, the prevailing academic orientation of the education system means that over a quarter of a million secondary school leavers will be unable to find employment between now and the year 2010.¹³⁵ Furthermore, the tertiary education sector in Namibia has been characterised as follows:

*Generally supply driven rather than need driven or demand driven, other programmes in our higher education institutions also seem out of touch with current realities. There is therefore an urgent need to synchronise tertiary education programmes with the rest of the education system and with the development needs of our country.*¹³⁶

The provision of programmes through ODL has also expanded considerably in an independent Namibia. In 1998, over half (52%) of all Namibians studying at tertiary level were enrolled for ODL programmes with domestic or foreign institutions. Forty-seven percent of all candidates who entered for the two sittings of the IGCSE (Grade 12) examination in 1999 had prepared through ODL courses. Although ODL is cur-

¹³⁵ National Human Resource Plan, p. ix and Appendix, Table 29.

¹³⁶ White Paper on Higher Education, p. 5.

rently seen as the 'poor relation' of the formal education system, it is likely to play an ever-increasing role in the development of Namibia's human resources.

Nevertheless, publicly funded ODL institutions display some of the shortcomings identified above. There has been an over-reliance on "an individualised, home study correspondence model" of distance education, with minimal student support and little use of media other than print.¹³⁷ Concern has also been expressed about the quality of some ODL courses provided by external institutions.¹³⁸ As a result, public acceptance of and confidence in the ODL approach is generally low in Namibia.

In order to address these deficiencies and maximise the value obtained for money spent by government, the *White Paper* advocates closer cooperation and collaboration among ODL providers.¹³⁹ Several factors have converged at this time to lend urgency to the need to redefine government policy in this field. First, in terms of the *SADC Protocol on Education and Training*, member states are obliged to formulate national policies on distance education so as to improve access, maximise economies of scale and provide a framework for cooperation at the regional level.¹⁴⁰ Second, the worsening financial climate in Southern Africa and the corresponding constraints on State finances, coupled with concerns about the output of the education system, have served to dampen the extraordinary growth that the sector experienced since Independence. Publicly funded educational institutions are under pressure to improve the quality of their programmes and to produce more visible outcomes without significant additional resources.

There are several projects that will be extending access to ICTs in the education sector, and improving integration between these projects. A feasibility study for Integrated Community Centres (ICCs) is also currently underway under the auspices of a Governmental Inter-Sectoral Steering Committee established in 1999. The lead agency for the feasibility study is the Ministry of Health and Social Services.

Existing and planned initiatives include:

Community Learning and Development Centres (CLDCs)

The Ministry of Basic Education, Sport and Culture (Directorate of Adult Basic Education) and CISP are in the process of setting up thirteen centres in rural areas.

Human Resources Project/Information and Learning Resource Centre

The aim of this project is to provide Internet-linked computers to UNAM's nine Regional Outreach Centres (which also serve distance education students from the Polytechnic of Namibia, UNISA, Technikon SA and Vista University);

Project *LearnLink* Namibia

This is based at the National Institute for Educational Development and which will set up computer laboratories at NIED (Okahandja) and at the Teachers' Resource Cen-

¹³⁷ *Ibid.*, p. 70.

¹³⁸ *Ibid.*, paragraph 379, p. 71.

¹³⁹ *Ibid.*, Section E, Chapter VII, pp. 71 - 72.

¹⁴⁰ Southern African Development Community. *Protocol on Education and Training in SADC*, from Review of the Implementation of Council Decisions (SADC/CM/1/98/4). SADC Secretariat, 8 September 1997., pp.16 - 17.

tres in Ongwediva, Rundu and Katima Mulilo. This project is intended to support qualifications upgrading and in-service training for teachers.

Namibian Open Learning Network (NOLNet)

In February 2000, the two Ministries of Education concluded an agreement for the coordination of open and distance learning with the publicly funded, educational institutions - the University of Namibia, the Polytechnic of Namibia and the Namibian College of Open Learning. The agreement provides, *inter alia*, for cooperation in the establishment of a network of open learning centres. Detailed planning for this development is being carried out by a Working Group, under the guidance of a Steering Committee that includes representatives of all the signatories. Preparations are at an advanced stage for the establishment of a national trust, to be known as the Namibian Open Learning Network (NOLNet), to act as a legal vehicle for future developments.

NOLNet was set up primarily as a networking initiative to avoid duplication of resources in Namibia and to enhance opportunities for supported, independent learning for all who cannot undertake formal institution-based learning (See Appendix X for more details). Thus, NOLNet does not have any centres of its own, but donates equipment and study materials to fill in the gaps at existing centres in the education sector. All of the UNAM Regional Outreach Centres and the CLDCs will be invited to affiliate to NOLNet, as well as some other centres that were not mentioned above. In total, NOLNet network should consist of twenty seven centres with Internet-linked computers i.e. Categories 1 and 2+ .In addition, NOLNet will be providing support to about fourteen additional centres (Category 2), though these will only have fax machines, photocopiers and audio cassette players.

Several recommendations flow from the above commentary:

- ❑ **The Ministry of Foreign Affairs, Information and Broadcasting (MFAIB) should, as a matter of urgency, establish stronger relationships with the Ministry of Health and Social Services to discuss collaboration between planned MPCC initiatives, NOLNet, and the outcomes of the feasibility study on ICCs.**
- ❑ **Strong consideration should be given to linking to and/or strengthening existing initiatives such as SchoolNet, CLDCs and ICCs.**
- ❑ **a GIS-based system should be established so that locations of all MPCC-like institutions can be mapped – this will allow better coordination between government departments, and NGO/ private sector initiatives in this area;**
- ❑ **Reduced telecommunications tariffs for schools, MPCCs, ICCs and other rural access mechanisms should be negotiated.**

This brief overview of the current status in ICT Human Resources Development shows that although a number of ICT programmes are run in the country, they lack an overall national strategy. Many institutions and organizations are working hard to catch up, but in most cases significant resources are required. Without clear ICT policies in these institutions, ICT tends to compete for resources with other demands, resulting in haphazard ICT development, and inadequate number of trained ICT professionals. Great potential exists in developing various ICT programmes that

will increase the supply of ICT professionals. Distance Education Programmes offer opportunities to increase reach and efficiency if ICT is considered as the delivery mode.

Chapter Nine: Overall Recommendations

“Our vision is that Namibia will be an industrialised state by 2030, with a significant improvement in the essential quality of life of all Namibians.”

(Rt. Hon. Hage G. Geingob, Prime Minister of the Republic of Namibia)

The recommendations in this chapter are based on analysis of written and oral inputs from almost a hundred role players in ICT, study of available data on the state of the sector in Namibia, review of relevant Namibian Statutes and other documents such as the National Development Plan, the Terms of Reference for the study itself, and knowledge gleaned from African and international experience. It also benefits from the results of the recent ECA/IDRC Pan-African e-Commerce Initiative and the Draft Report of the DOT Force.¹⁴¹ The chapter sets out to consolidate and prioritise the recommendations in the previous chapters, which have a sectoral focus.

Because ICT is mainly enabling technology—i.e. the fishing rod and not the fish—progress needs to take place on a broad front. This often leads to an overwhelming number of recommendations or projects that all appear to be equally important. Accordingly, the project team has endeavoured to prioritise those actions that it believes are most critical for the successful transformation of Namibian society into an industrialised state with ICT as a key driver.

The recommendations are grouped as follows:

- Critical Success Factors
- High Priority Actions

9.1 In Brief

The key actions are summarised below, with the following sections providing further explanation. By definition, critical success factors are those few aspects that must go right in order to achieve overall goals.

First Critical Success Factor

A strong national body with committed leadership to guide the implementation of ICT Policy

Second Critical Success Factor

A detailed implementation plan that defines indicators against which to measure success, lays out practical growth steps towards achievable targets, names responsible parties and sets realistic timelines.

¹⁴¹ www.markle.org/dotforce.html

High Priority Actions

1 Enhance rural access to information

- Strongly supporting and encouraging synergy between the existing multi-purpose telecentre and community centre projects.
- Realising the proposed Universal Service Agency and corresponding Universal Service Fund comprising mandatory contributions from all telecommunications licensees

2 Grow and stabilise the ICT professional community by

- Encouraging immigration of skilled ICT workers
- Forming a single Namibian ICT Association
- Providing incentives to all government employees to obtain ICT qualifications

3 Facilitate excellent ICT public education especially in schools through

- Recognising ICT qualifications as a key factor in the promotion of teachers
- Continuing to support schools connectivity through strong initiatives such as SchoolNet
- Revising the 1995 IT in Education Policy and implementing it.

4 Strongly foster e-commerce, e-business and e-government by

- Amending all relevant laws
- Establishing Appropriate Statutory Bodies
- Carrying out a pilot e-procurement project in government

5 Proceed with the programme of liberalisation of the Telecommunications environment

6 Create an ICT Cluster in Windhoek linking the ICT industry, academic institutions and government

9.2 Critical Success Factors

1 A strong national body with committed leadership to guide the implementation of ICT Policy

This is in line with a key DOT Force recommendation that calls for all countries to create:

“A national high-level focal point/implementing agency that coordinates the actions of all governmental sectors in support of this an ICT for development strategy and assures close collaboration with the private and not-for-profit sectors, civil society more broadly (including, for instance, trade unions) and the international community.”

To sustain action in developing the ICT sector, particularly as the emphasis shifts from policy formulation to implementation, such a coordinating body needs strong leadership and participation from all major stakeholder groups. It is seen as pivotal that this body has at least a small core of permanent members, with relevant background, who are well remunerated and of the highest quality.

This body must be fully supported by Government in both voice and action, and have credibility with key stakeholders. In principle the existing Resource Network Group fulfils this role, but given the shift in emphasis, the projects already underway in the country and the areas for action proposed in this document, it is recommended that

- ❑ **A new mandate and modus operandi for the RNG be defined.**
- ❑ **The membership of the RNG be re-assessed, with nomination of a new board from among existing members as well as newcomers from the ICT community.**
- ❑ **The RNG be renamed, perhaps the "The Namibian Council for ICT."**

2 A detailed implementation plan that defines indicators against which to measure success, lays out practical growth steps towards achievable targets, names responsible parties and sets realistic timelines.

This study has revealed several solid attempts to formulate different aspects of ICT policy in Namibia, such as the IT in Government Policy, the IT in Education Policy and the Telecommunications Framework. Implementation has been very slow, however. The study has also identified a severe lack of reliable quantitative data on the state of ICT in Namibia. This lack is common to most countries, because a focus on ICT-related issues is very new. The importance of measurement is widely recognised, however, and there are now several assessment methods and indicators.¹⁴² The key word in this success factor is 'achievable.' Often over-ambitious targets are set that cannot be realised and create discouragement.

As discussed previously, this study applies the so-called "Readiness for a Networked Society" guide.¹⁴³ The guide contains a rich, practical set of possible indicators to assess current status and measure progress against targets. Chapter Five presents an assessment of the current status for each category in both urban and rural Namibia as supported at the final stakeholder workshop. The example below shows how targets might be set for each item in the Readiness Guide and serve as a simple way to measure progress.

¹⁴² For a comparative analysis see at www.bridges.org

¹⁴³ The Centre for International Development at Harvard University www.readinessguide.org

| <i>Characteristic/Variable</i> | <i>Urban Namibia</i> | <i>Target 2004</i> | <i>Rural Namibia</i> | <i>Target 2004</i> |
|--|--------------------------|------------------------|--------------------------|------------------------|
| | | | | |
| <i>Networked Learning</i> | | | | |
| - <i>Schools' Access to ICT's</i> | 2 | 3 | 1 | 2 |
| - <i>Enhancing Education with ICT's</i> | 3 | 3 | 1 | 2 |
| - <i>Developing the ICT workforce etc.</i> | 2 | 3 | 1 | 2 |
| | | | | |

1= unprepared to 4 = prepared

The rating of each stage is a composite of levels of a number of measurable indicators. To illustrate, if the target was to move Urban Namibia from Stage 2 to Stage 3 on "Schools Access to ICT's" then the appropriate indicators would need to move from

Stage 2

defined as:

- ❑ While there is ICT in schools, it is primarily at the University level, and there are generally fewer than five computers in a school or faculty
- ❑ Access to the computer(s) is limited to computer teachers and/or administrators
- ❑ Computers tend to be older generation models, such as stand-alone 486 PC's or the equivalent
- ❑ Where there are multiple computers installed, they are not networked
- ❑ Use of the computer(s) is limited to electronic documents that are available on the hard drive or diskettes
- ❑ There may be connectivity for store-and-forward e-mail

To Stage 3

- ❑ Computers can be found in primary and secondary schools as well as at the university level
- ❑ Ten to fifteen computers can be found in laboratories for classroom group work, with about four students per computer
- ❑ Computer labs are generally only open for computer studies during the day and closed after school, or may be open to teachers for class preparation but closed to students
- ❑ Computers tend to be older generation models, such as 486 PC's or higher, and they may be networked with a file and mail server
- ❑ There may be an internal Local Area Network in place. If there are multiple computer labs, they may be connected through the school network
- ❑ Where there are stand-alone PC's, they may have a limited CD-ROM library.
- ❑ The networked lab achieves connectivity through a dial-up connection to the Internet, which supports limited World Wide Web Access

Indicators such as these are tangible and allow targets for which responsible people and organisations can be identified. Those people can then develop detailed action

plans and realistic timescales to move from one level to the next. Progress can be monitored at regular intervals.

9.3 High Priority Actions

- 1 Enhance rural access to information by
 - Strongly supporting and encouraging synergy between the existing multi-purpose telecentre and community centre projects.

There is already a rich set of initiatives to enhance rural access via MPCCs and other forms of public access. It is strongly recommended that those be supported and that ongoing efforts be coordinated to ensure that technical and human resources are used most effectively. A body such as NOLNET may be appropriate for this task.

While enhancing rural access is vital in principle, each local community has its own specific needs, perhaps to grasp particular opportunities or conduct their businesses in a more efficient manner. It is important that the real needs for given communities are determined and that the delivery mechanisms are cost-effective, including broadband facilities such as radio or community TV.

- Realising the proposed Universal Service Agency and corresponding Universal Service Fund comprising mandatory contributions from all telecommunications licensees

The idea of having licensees contribute to Universal Service objectives through a body such as a Universal Service Agency has been implemented in other countries. The advantage of a Universal Service Fund is that it can be made to focus exclusively on affordable access within marginalised communities. There is now a growing body of literature available analysing the successes and failures of these programmes to guide implementation in Namibia.

- 2 Grow and stabilise the ICT professional community by
 - Encouraging immigration of skilled ICT workers
 - Encouraging immigration of skilled ICT workers

Many countries—especially in the developed world— have adopted a policy of easing immigration for highly skilled ICT workers. A strong reason for the extended boom in the United States is the steady supply of those workers from countries around the world. At present Namibia's private sector ICT staff shortage appears to be small, but as the industry develops the lack of high-level skills will become an increasing restraint. Easing immigration requirements will also send a clear message that Namibia is serious about exploiting ICT and this should further encourage immigration.

- Forming a single Namibian ICT Association

Namibia has three fledgling ICT professional associations, namely: NITA, ISPAN, and the IS Managers' Group. While there are differences in focus areas for the different associations, the Namibian ICT community is too small to warrant several separate ICT professional bodies. There is also no formal association representing the ICT industry as such. A single association covering the different aspects can play a strong role in raising awareness of the potential of ICT in all sectors of the economy and society for instance by conducting awareness campaigns, offering business briefings, maintaining and disseminating information on ICT-related projects, collaborating with academic institutions and other groups on training and educational curricula, etc. They can also strengthen the voice of the ICT sector by making coordinated submissions to Government.

- Providing incentives to all government employees to obtain ICT qualifications

For ICT to be most effective, its use needs to become all-pervasive—like the telephone is in large cities—but to reach this point requires an extensive ICT skills base. The government suffers from the most acute lack of ICT skills of all sectors in Namibia, and, not surprisingly has set up few if any systems that deliver services to the public or enhance procurement activity. To create appropriate incentives, pertinent courses can be established in conjunction with Tertiary Institutions. Those qualifying could become eligible for salary increases or promotion. The resulting costs will be amply offset by the efficiencies derived. Ministers and Permanent Secretaries should show leadership by visibly enhancing their own basic skills.

3 Facilitate excellent ICT public education especially in schools through

- Recognising ICT qualifications as a key factor in the promotion of teachers

Teachers need particular attention because of their importance in developing a knowledge-rich society. Even if additional ICT resources such as funding and equipment are committed to schools, they will fall short of their potential if teachers lack confidence in their ability to teach the subjects and have no motivation to improve their skills. In conjunction with the Tertiary sector, courses should be developed and provided in a readily accessible way and form pre-requisites for promotion and upgrading of levels.

- Continuing to support schools connectivity through strong initiatives such as SchoolNet

Many studies underline the great value of schools' access to the Internet for communications, distance learning and research purposes. There are a number of very positive programmes that Namibian organisations have introduced such as SchoolNet and NAMCOL. Government should continue its active support for such projects. The strong support of the donor community is vital and should be fostered.

- Revising the 1995 IT in Education Policy and implementing it.

Chapter Eight noted the existence of a 1995 policy document for Information Technology in Education in Namibia. The policy argued that for Namibia to participate ef-

fectively in the global arena both economically and socially, the country needed to keep pace with ICT progress in other countries. It also pointed out that use of ICT in education could significantly improve the teaching and learning process. The document contained laudable recommendations for the short, medium and long term, but little has happened to implement its findings. In the meantime profound changes have taken place in the ICT arena, increasing the importance of ICT as a discipline and an educational delivery mechanism (as recognised by the Namibian Open Learning Network). As a matter of urgency a task force should revisit and revise the 1995 document and accelerate implementation of an ICT Policy for Education.

4 Strongly foster e-commerce, e-business and e-government by

- Amending all relevant laws

Globalisation is driving the standardisation of transactions and countries that do not conform will lose trade. Similarly, companies that already trade internationally will become increasingly disadvantaged if their home environment does not provide legislative certainty in the areas of security; privacy; the law of contract; and intellectual property rights, amongst others. Chapter Four offers an extensive analysis of the areas where legislation/regulation is either missing or inappropriate. It also underlines the need for thorough legal analysis. Legal experts need to be appointed to undertake such work, building constructively on the UNCITRAL Model Law for Electronic Commerce and formulating the necessary amendments to the laws of Namibia.

- Establishing Appropriate Statutory Bodies

Chapter Four also indicates possible legal entities that are typically used to bring order to the complex environment of the Internet, e-commerce, etc. These include Licensing and Certification Authorities to handle security encompassing digital signatures, encryption and other related issues, a Data Protection Authority to safeguard the protection of individual information and a Domain Name Authority to manage assignment of Internet domain names, dispute resolution and other matters.

- Carrying out a Pilot e-Procurement Project in Government

It is becoming clear that within the African context, there are much greater benefits in business-to-business and government-to-business transactions than in the business-to-consumer arena. Given government's major role as a purchaser in the Namibian economy, it could play a vital role in changing the behaviour of the business community and encouraging business-to-business e-commerce. Government should demonstrate its commitment to the efficient and effective conduct of its own business by implementing a pilot e-procurement system and encouraging all suppliers to register on the system and conform to its requirements.

5 Proceed with a programme of liberalisation of the Telecommunications environment

Even since 1999 when a Telecommunications Policy and Regulatory Framework for Namibia was proposed by the Namibian Communications Commission, the environ-

ment for telecommunications has changed rapidly. In particular cellular telephony is sweeping the world and changing perceptions as to what is meant by for instance "universal access" and "universal service." This study supports rapid action to implement, possibly with modification, the findings of the 1999 framework.

6 Create an ICT Cluster in Windhoek linking the ICT industry, academic institutions and government

Worldwide, the notion of economic clusters is now recognised as an effective means to accelerate the development of particular industrial sectors. A "cluster" is the mutually supporting presence of related firms, academic institutions, government agencies, and NGO's, within a given geographic area. Its presence leads to the clustering of capabilities to support the innovation process and promote existing and new opportunities for firms. The synergy created in the process encourages other firms to locate within the region, both from within the country and from elsewhere in the world.

This is especially relevant since Namibia is a low-cost country with regard to skilled human resources such as software developers, Call Centre staff, etc. The positive cycle engendered by a successful cluster initiative will encourage competent staff to stay in the country.

9.4 Concluding Comments

The project team believes that Namibia is well-positioned to take strong advantage of the opportunities afforded by the new information and communication technologies and the massive potential of globalisation in the Information Age. Namibia, in contrast with most developing countries in Africa has a well-developed telecommunications infrastructure upon which to build. Over the last few years the country has also carried out several policy actions designed to exploit ICT for social and economic growth. What remains is effective and aggressive implementation of actions such as those recommended in this draft policy document.

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Appendix A1

List of Acronyms

| | |
|-------------|--|
| 3G | Third Generation |
| ADF | African Development Forum |
| ADSL | Asynchronous Digital Subscriber Lines |
| AETA | Australian Electronic Transactions Act |
| AIDS | Auto-Immune Deficiency Syndrome |
| AISI | African Information Society Initiative |
| APEC | Asia-Pacific Economic Cooperation |
| ATM | Automatic Teller Machine |
| B2B | Business-to-business electronic commerce |
| B2C | Business-to-consumer electronic commerce |
| BETD | Basic Education Teaching Diploma |
| CAGR | Compound Annual Growth Rate |
| CBLC | Computer-based Learning Centre |

| | |
|---------------------|---|
| CCIT | Cabinet Committee on Information Technology |
| CDMA | Code Division Multiple Access |
| CD-ROM | Compact Disc – Read Only Memory |
| CISP | Center for Information Strategy and Policy |
| CLDC | Community Learning and Development Centres |
| COMESA | Common Market for Eastern and Southern Africa |
| DFAIB | Department of Foreign Affairs, Information and Broadcasting |
| DGPS | Differential Global Positioning System |
| DMCA | Digital Millennium Copyright Act |
| DNA | Domain Name Authority |
| DNS | Domain Name System |
| DOT Force | Digital Opportunities Task Force |
| DPSITM | Directorate of Public Service Information Technology Management |
| DSTV | Digital Services Television |
| E-Business | Electronic Business |
| ECA | Economic Commission for Africa |
| E-Commerce | Electronic Commerce |
| ECOSOC | United Nations Economic and Social Council |
| E-Government | Electronic Government |
| E-mail | Electronic Mail |
| EMIS | Education Management Information System |
| EPZ | Export Processing Zones |
| E-Readiness | Electronic Readiness |
| EU | European Union |
| FDD | Frequency Division Duplex |
| FDI | Foreign Direct Investment |
| FENATA | Federation of Namibian Tourist Associations |
| G7 | Group of Seven industrialised countries (US, UK, Germany, Japan, Canada, France, Italy) |
| G8 | G7 countries but including Russia |
| GDP | Gross Domestic Product |
| GIS | Global Information System |
| GLDC | Global Learning and Development Centres |
| GRN | Government of the Republic of Namibia |
| GSM | Global System for Mobile Communications |
| HDI | Human Development Index |
| HIGCSE | Higher International General Certificate of Secondary Education |
| HIV | Human Immunodeficiency Virus |
| HR | Human Resource |
| HTTP | Hypertext Transfer Protocol |
| IBM | International Business Machines |
| ICANN | Internet Corporation for Assigned Names and Numbers |
| ICC | Integrated Community Centres |
| ICL | International Computers Ltd |
| ICT | Information and Communication Technologies |
| ID | Identification Document |
| IDC | International Development Corporation |
| IDRC | International Development Research Centre (Canadian NGO) |
| IGCSE | International General Certificate of Secondary Education |
| ILO | International Labour Office |
| IMT-2000 | Incorporates FDD with a single or multi-carrier operation, as well as TDD operation |
| INSET | In Service Training |
| ISAD | Information Society and Development Conference |
| ISDN | Integrated Services Digital Network |
| ISP | Internet Service Provider |
| ISPAN | Internet Service Providers' Association of Namibia |
| IT | Information Technology |
| ITU | International Telecommunications Union |

| | |
|-----------------|---|
| LAN | Local Area Network |
| Mb | Megabyte |
| MBESC | Ministry of Basic Education, Sport, and Culture |
| MCSE | Microsoft Certified Systems Engineer |
| MFAIB | Ministry of Foreign Affairs, Information and Broadcasting |
| MHETEC | Ministry of Higher Education, Training and Employment Creation |
| MITU | Ministerial Information Technology Units |
| MPCC | Multi-Purpose Community Centre |
| MS | Microsoft Corporation |
| MTC | Mobile Telecommunications Corporation |
| MTN | Mobile Telecommunications Network (Pty) Ltd |
| NAICS | North American Industry Classification System |
| NAMCOL | Namibian College of Open Learning |
| NAMDEF | Namibian Internet Development Foundation |
| NBC | Namibian Broadcasting Corporation |
| NCC | National Communications Commission |
| NDP | National Development Plan |
| NGO | Non-Government Organisation |
| NICI | National Information and Communication Infrastructure |
| NIED | National Institute for Educational Development |
| NII | National Information Infrastructures |
| NITA | Namibian Information Technology Association |
| NOLNET | Namibian Open Learning Network |
| NPC | National Planning Commission |
| NPO | Not for Profit Organisation |
| NPTH | National Posts and Telecommunications Holdings Ltd |
| NUFU | Norwegian Council of Universities' Committee for Development Research and Education |
| ODL | Open and Distance Learning |
| OECD | Organisation for Economic Cooperation and Development |
| ONP | Open Network Provision |
| OPM | Office of the Prime Minister |
| OSP | Online service provider |
| PC | Personal Computer |
| PICTA | Partnership in Information and Communications Technologies in Africa |
| PINS | Personal Identification Number System |
| PKI | Public Key Infrastructure |
| PoN | Polytechnic of Namibia |
| PoN-COLL | Centre for Lifelong and Open Learning at the Polytechnic of Namibia |
| POP | Point-of-Presence |
| PSCOIT | Public Service Committee on Information Technology |
| R&D | Research and Development |
| RF | Radio Frequency |
| RFP | Request for Proposal |
| RIPE | Réseaux IP Européens |
| RNG | Resource Network Group |
| SADC | South African Development Community |
| SAITIS | South African Information Technology Industry Strategy |
| SATCC | South African Transport and Communications Commission |
| SDD | Siltek Distribution Dynamics |
| SDI | Spatial Development Initiative |
| SDMA | Space Division Multiple Access |
| SIC | Standard Industry Classification |
| Sida | Swedish International Development Agency |
| SME | Small and Medium Enterprises |
| SMME | Small, Micro and Medium Enterprises |
| TABD | Trans-Atlantic Business Dialogue |
| TCP/IP | Transmission Control Protocol/Internet Protocol |
| TDD | Time Division Duplex |
| TDMA | Time Division Multiple Access |

| | |
|--------------------|---|
| Teledensity | Number of telephone lines per 100 people |
| TRC | Teacher Resource Centre |
| UCC | Uniform Commercial Code |
| UCITA | Uniform Computer Information Transactions Act |
| UETA | Uniform Electronic Transactions Act |
| UNAM | University of Namibia |
| UNCCUSL | US National Conference of Commissioners on Uniform State Laws |
| UNCITRAL | United Nations Commission on International Trade Law |
| UNCTAD | United Nations Commission on Trade and Development |
| UNDP | United Nations Development Program |
| UNISA | University of South Africa |
| UNOPS | United Nations Office for Project Services |
| UPPP | Urban Public-Private Partnership |
| US | United States |
| VAT | Value-Added Tax |
| VCR | Video Cassette Recorder |
| VPDN | Virtual Private Dial Networks |
| VPN | Virtual Private Networks |
| V-SAT | Very small aperture terminal |
| VTC | Vocational Training Centre |
| WAN | Wide Area Network |
| WAP | Wireless Access Protocol |
| WCT | WIPO Copyright Treaty |
| WIPO | World Intellectual Property Organisation |
| WPPT | WIPO Performances and Phonograms Treaty |
| WTO | World Trade Organisation |
| XML | Extensible Markup Language |

APPENDIX A.2

Participant Comments and Recommendations on Structured Interviews – Workshop 1

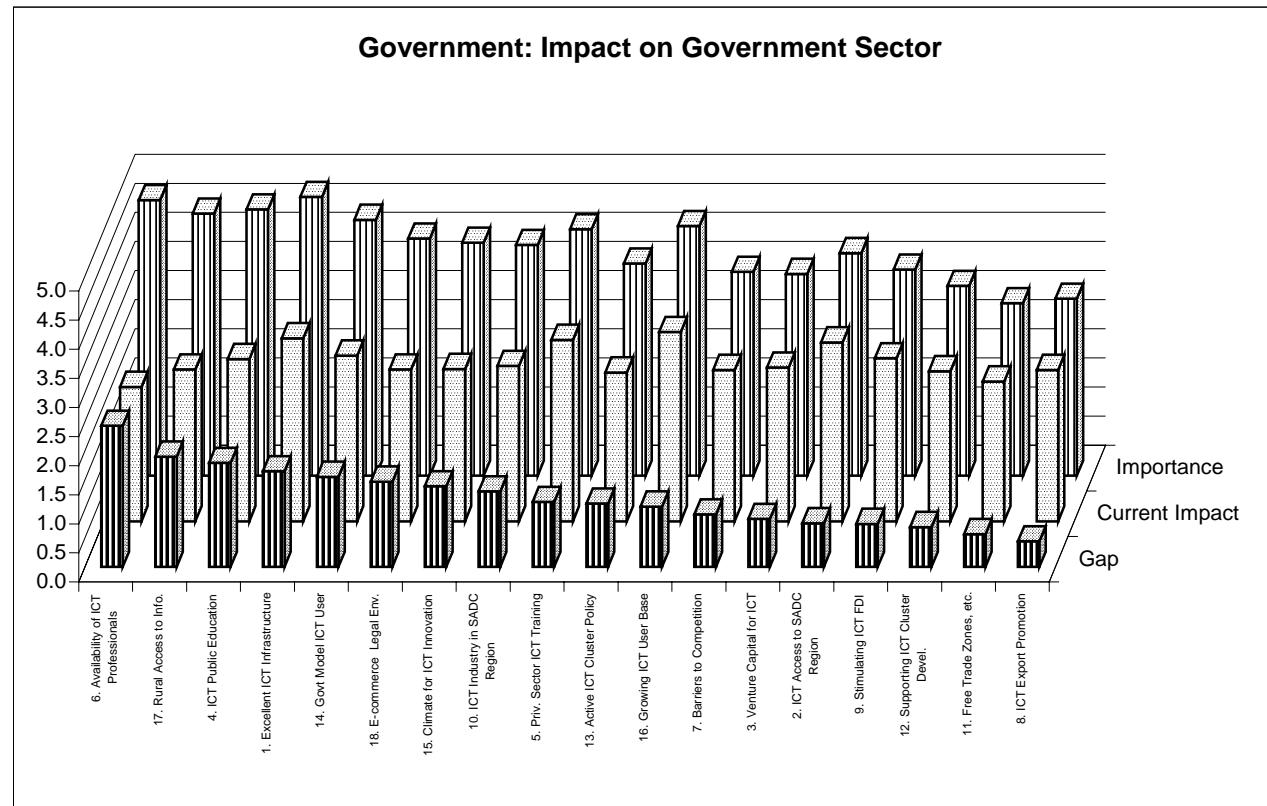
| # | Aspect | Comments on Ratings | Participant Recommendations (where any) |
|---|--|--|--|
| 1 | Availability of excellent IT and Communications infrastructure | All groups regard as most important. Private Sector and the Parastatals rate impact as very positive, while Education rate as among the most negative. | Where infrastructure is available, provide 2nd telephone line free of rent for internet use |
| 2 | ICT-enhanced access to your regional markets | Not stressed | |
| 3 | Ready availability of venture capital for ICT businesses | Not stressed | |
| 4 | Excellent ICT public education at all levels | Widely regarded as very important and a large gap to be closed. | <p>Goal: To Provide an ICT-rich education to every child in the country</p> <p>Make schools a focal point for development. SchoolNet is attracting enormous foreign investment; support SchoolNet in private sector client loyalty dev.</p> <p>Inject public sector funds with prioritisation for educational sector - e.g. electrification and telecommunications</p> <p>Online learning should have regulatory framework</p> <p>Independent salary structures for IT professors</p> |
| 5 | Ready access to private sector ICT training | Not stressed | Develop Partnerships (e.g. With Windhoek International School Foundation) for IT Training among school teachers and the general public |
| 6 | General availability of ICT professionals in your sector | Probably the most important issue and about the largest gap. Government most concerned, Private Sector slightly less so. | <p>Create massive Govt/private investment in IT-specific HR</p> <p>Pay IT workers private sector salaries</p> <p>Improved incentives for IT experts, including increased employment opportunities for non-Namibians</p> <p>Apply less stringent policies regarding immigration for needed skills; Govt to facilitate entry by IT professionals</p> <p>Promote/strengthen NITA; Create new body to represent IT in Namibia; Establish professional body for IT professionals</p> <p>Create National Register of ICT Professionals</p> |
| 7 | Barriers to competition, including monopolies, import restrictions, tax biases against ICT prod- | Negative impact but, apart from Other group not regarded as of major importance. | <p>Rebalance the Telecom Tariffs Local/International</p> <p>Privatisation of Telecom, NamPost and NBC and open up to competition</p> |

| | | | |
|----|---|--|--|
| | ucts/services | | |
| 8 | Vigorous export promotion for ICT products/services | Generally low importance and small gaps. | |
| 9 | Active programmes to attract Foreign Direct Investment to the ICT sector | Low importance, small gaps except for some concern by Other group. | |
| 10 | Development of ICT industry at a regional level (SADC, COMESA, etc.) | Not stressed | Lobby Govt/SADC for revision of taxation and duties |
| 11 | Free Trade zones, supplier parks or industrial parks | Among least important and smallest gaps. | EPZ's have potential to impact on social and economic development, but not working properly The EPZ process has been a failure. Lack of infrastructure and labour issues undermine the incentives. Proclaim more free trade zones |
| 12 | Concept of cluster development well supported | Among least important and smallest gaps. | |
| 13 | Active cluster policy from both govt and business | Not stressed except for some importance from government and education groups. | |
| 14 | Government as a model ICT user (procurement policy, sophisticated buyer, electronic government) | Most groups rate as very important and quite large gaps. Private sector and government focus on this item more than other groups. | Streamlining of govt/procurement/tender/maintenance procedures for IT Get systems working for all ministries Streamline inter-ministerial Government Intranet Establish proper project office for Govt Establish central ICT equipment purchasing unit for Govt Requires political will + funding to promote IT production and dissemination Greater use of Govt website, particularly to allay damaging fears over security, lawlessness etc Institute an anti-corruption unit run by external auditors and with no politicians Ethical Standards need to be promoted |
| 15 | Pro-innovation regulatory standards and incentives for ICT | Middle ratings except for Other group which rates this issue as very important and Education group which rates it as relatively unimportant. | |

| | | | |
|----|---|---|---|
| 16 | Growing base of users: business and civil society | Private Sector and Education regard as important and with large gap. | Stress importance of ICT in hierarchy of every govt ministry plus private sector Resource Network Group should be revived |
| 17 | Ready communications and access to information in rural communities | All groups except for Parastatals regard this issue as extremely important and with large gaps. Education and Other groups feel especially strongly about this issue. | More focus on infrastructure across country Necessary to provide equal access to info. Link regions to ICTs. Make computers available to regional offices Provide reasonable ICT access everywhere encourage purchase of home computers through tax incentives etc Institute small scale microfunds for villagers to assist with internet access Develop MPCCs Promote Telehealth |
| 18 | Legal environment for electronic commerce (electronic contracts, evidence, security, intellectual property) | Among the most important and with large gaps. Largest gap for Private Sector. | |

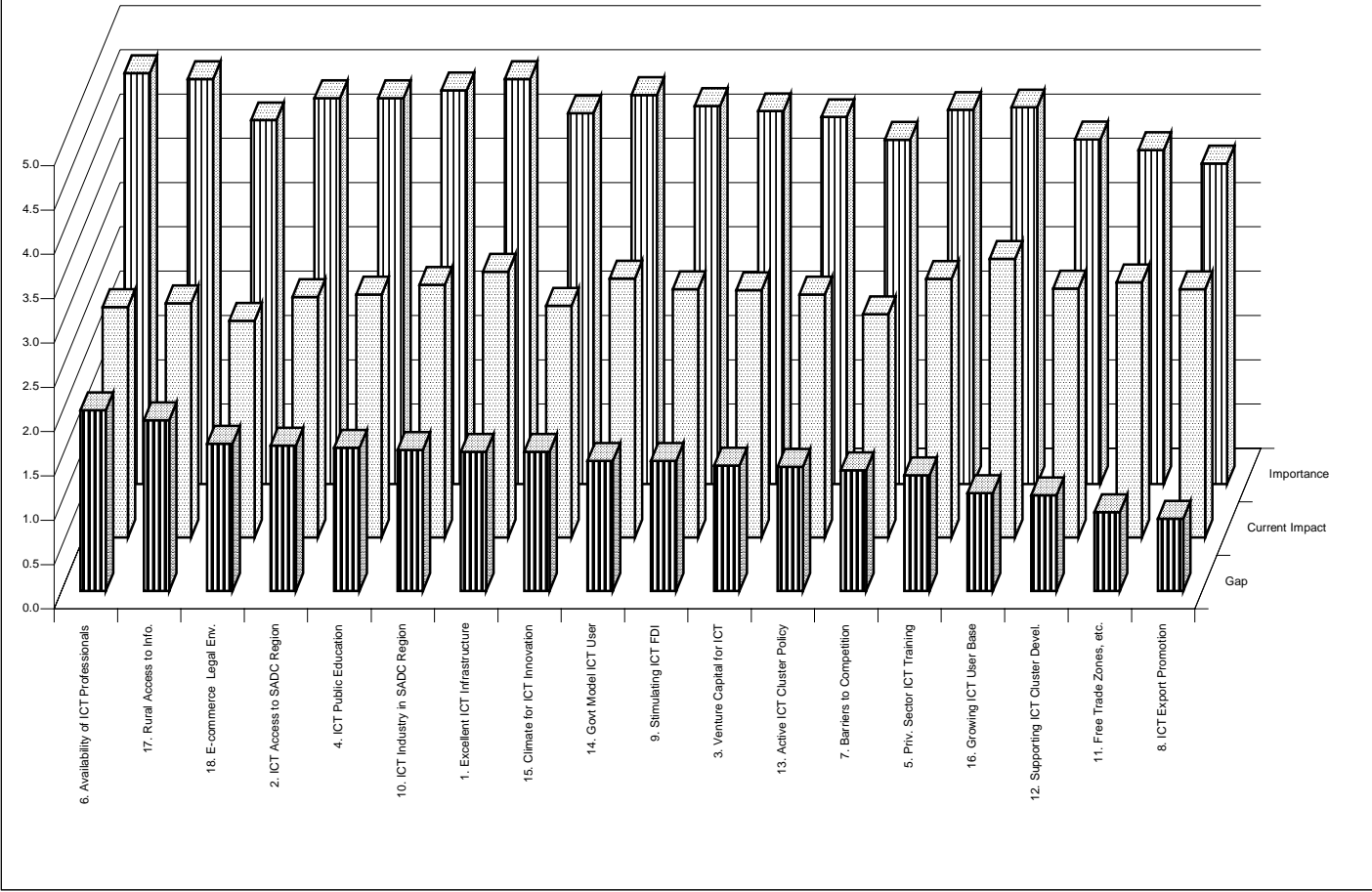
Appendix A3

Gap Analysis – Workshop 1

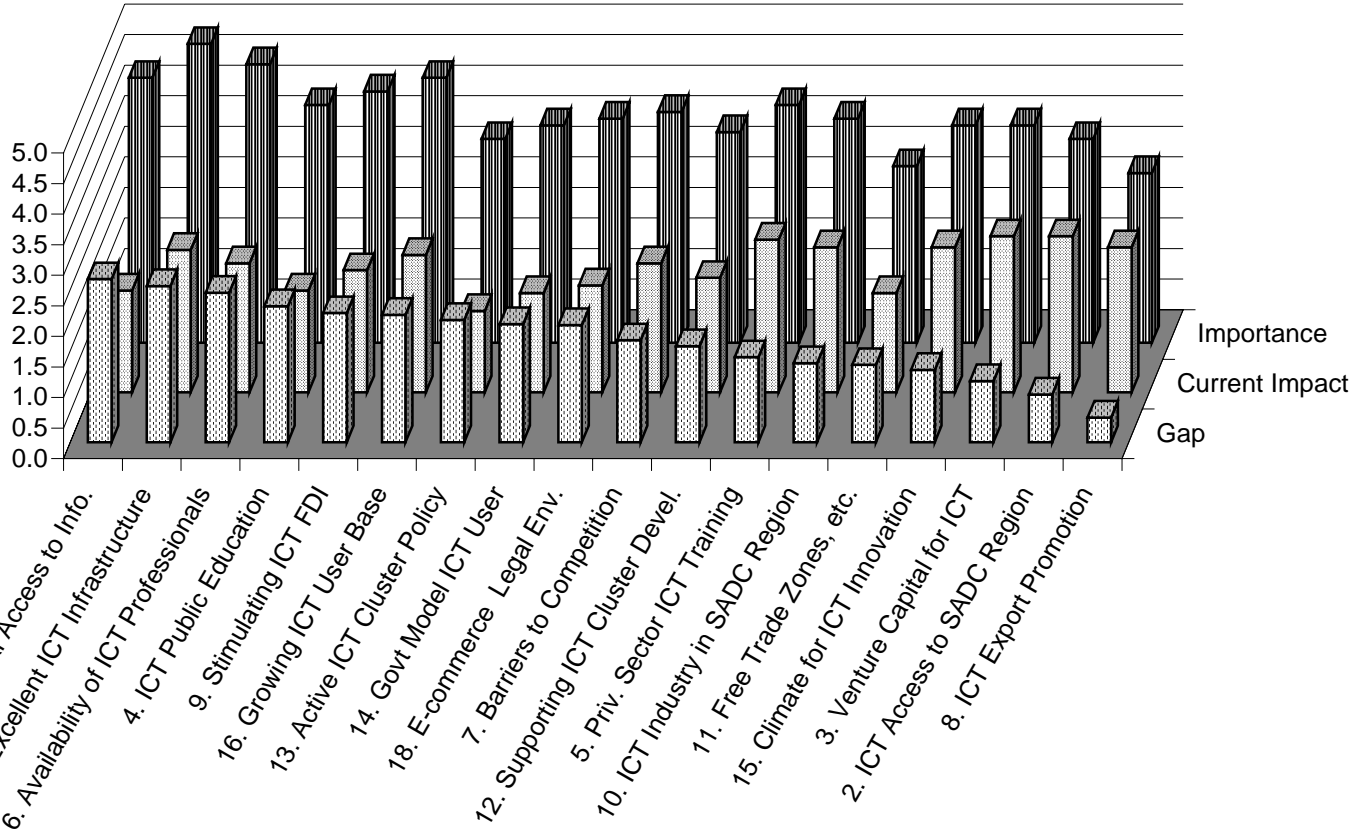


Government regards the gaps for the country as being smaller than other groupings, because generally they regard impacts as more positive. The largest gap and the most negative impact is *availability of ICT people in government*. The smallest gaps and least important items are *exports, attracting ICT FDI, Free Trade Zones, and support for cluster policy*.

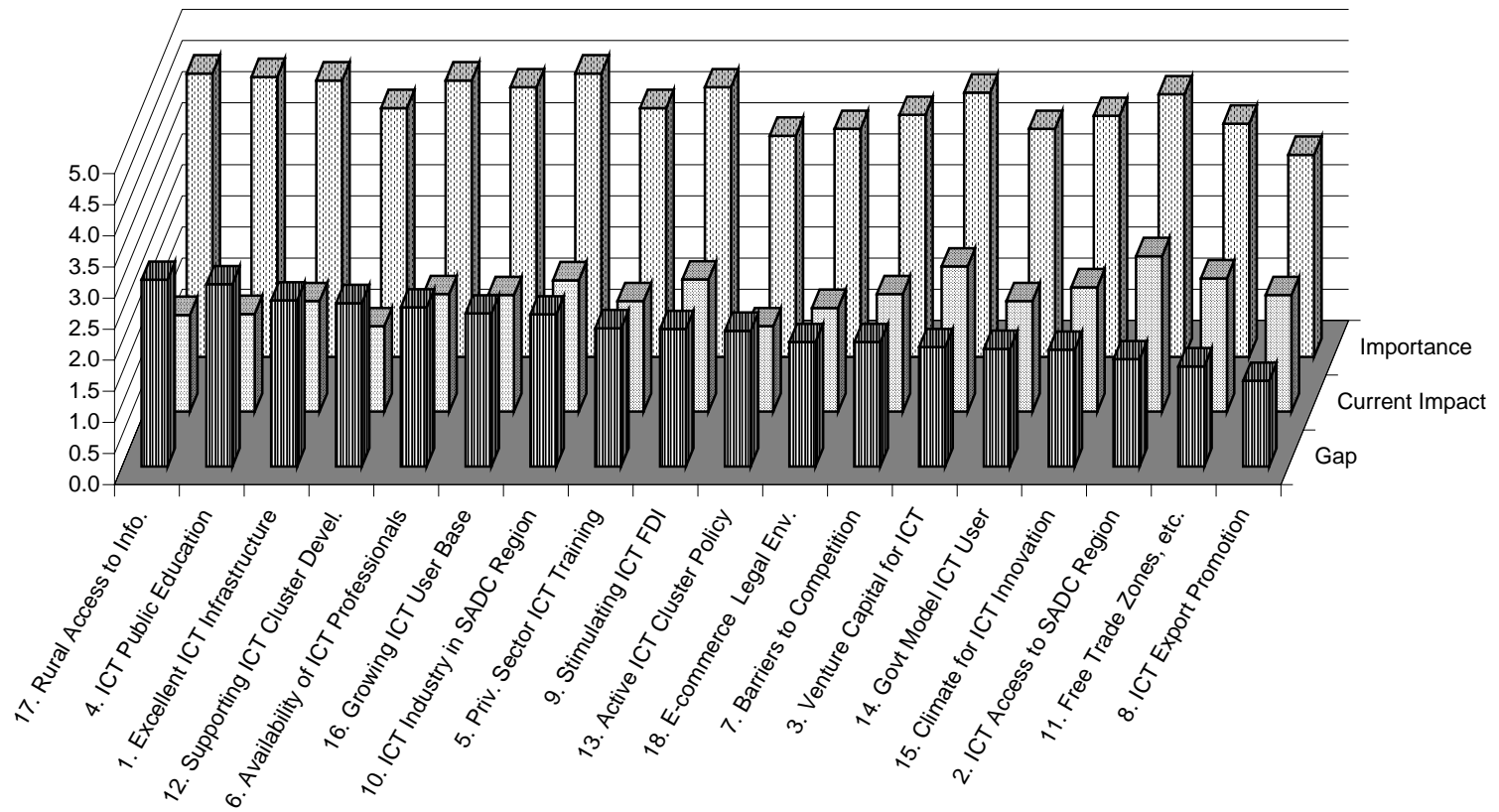
Government: Namibia as a Whole

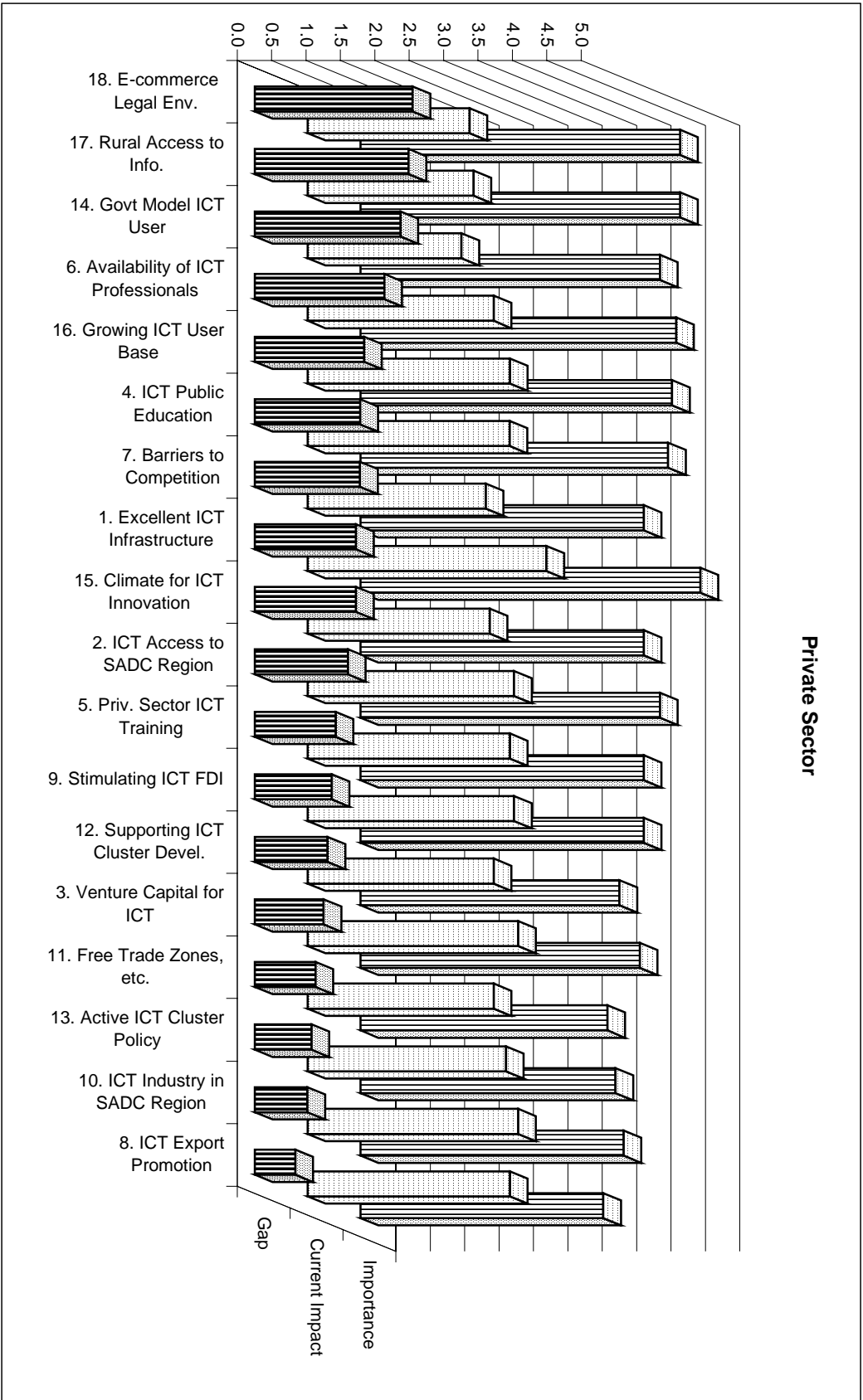


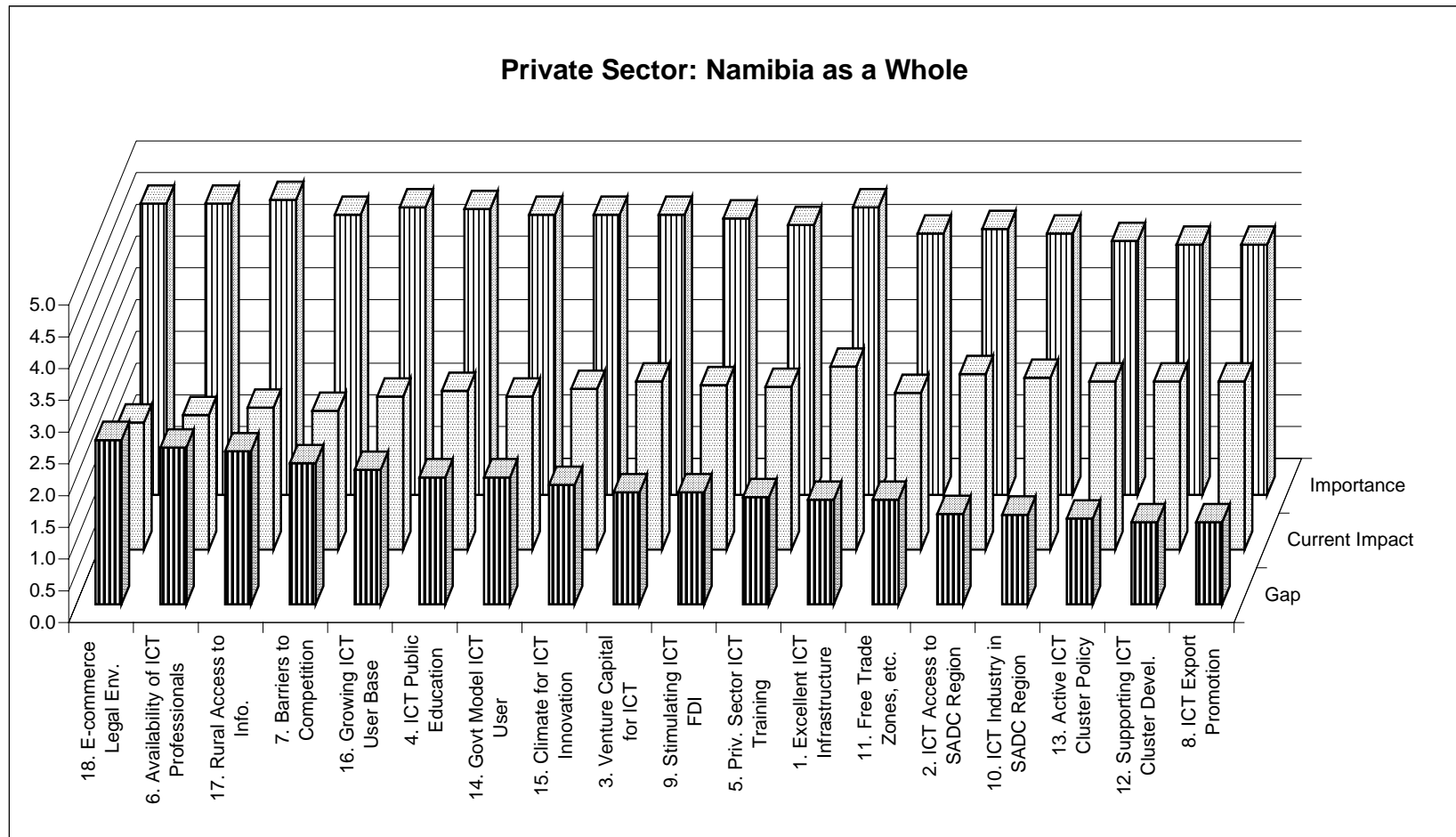
Education Sector



Education: Namibia as a Whole

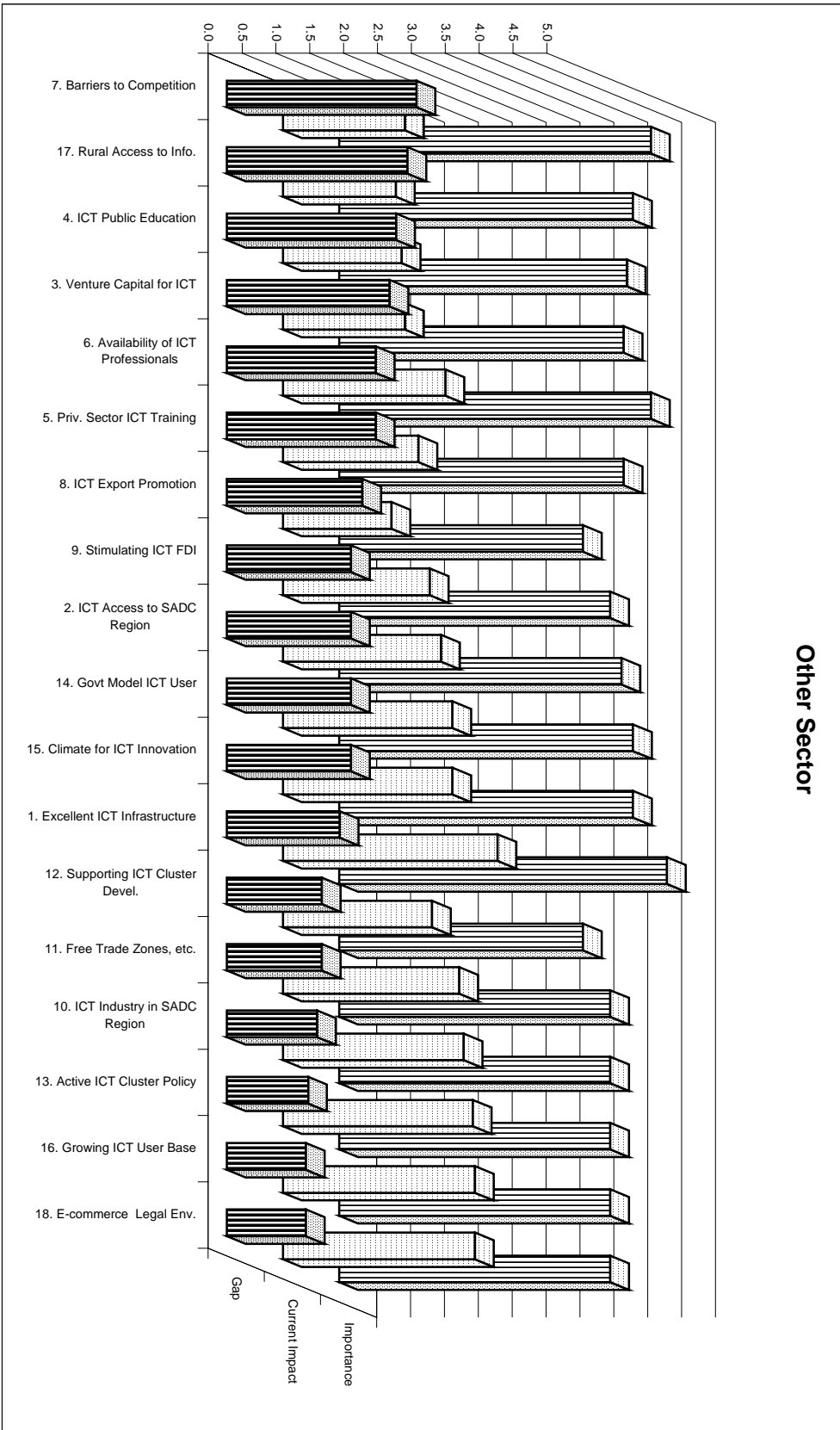


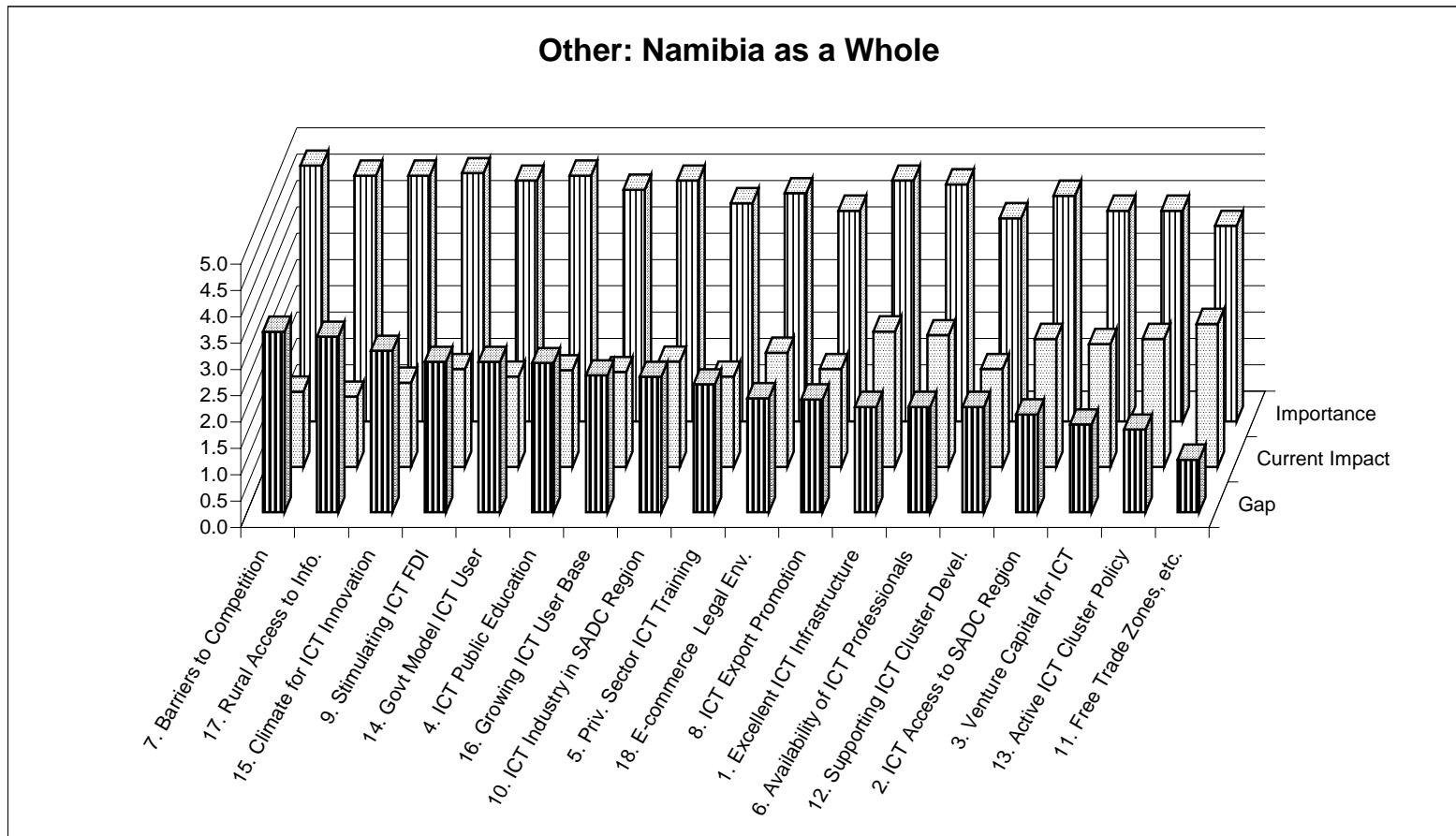




The Private Sector regard ICT as slightly more important than average. The largest gaps are the *legal environment for e-commerce, rural access and government as model user*. *Government as model user* shows the most negative impact. *Limited availability of ICT people* is serious, but more so for country as a whole than for the private sector. Most important and also showing the best impact (by a long way) for the sector is *Communications infrastructure*.

Least important and smallest gaps relate to *export promotion, free trade zones and cluster development*.





The 'Other' group is quite disparate, so it makes more sense to look at their perceptions for the country as a whole. They regard ICT as more important than average, and having stronger negative impact. They highlight negative impact due to *barriers to competition* and *rural access* as well as *pro-innovation regulatory standards* and *government as model user*. The smallest gap and lowest importance assigned to *free trade zones*.

Appendix A4

Priority Projects – Workshop 3

| Votes | Actions |
|-------|---|
| 16 | Government projects to devise content relevant to local communities |
| 16 | Government to accelerate on-line service delivery (high volume, high frequency aspects) |
| 15 | Devise ways to strengthen and accelerate growth of ICT professionals |
| 13 | Make recruitment of ICT experts from outside the country much easier in order to address the critical skill shortages, accelerate ICT growth in pace with economic development, and assist in developing a strong local ICT labour force. |
| 13 | Increase Points of Access to the Internet; SchoolNet Initiatives; MPCC Initiatives; Business Support Centres |
| 11 | Government works together with other institutions like the University and the Polytechnic of Namibia to develop and enhance training programmes and programmes to increase ICT awareness. |
| 10 | 0700 number affordability project |
| 8 | Standardise professional categorisation in the industry and use for job designation, salary structures and appointments. |
| 7 | Enhance teacher training in ICT |
| 7 | Accelerate curriculum redesign to address ICT education |
| 6 | Formulate and Implement legislative reforms to encourage Electronic Commerce, referring to the ILO's World Employment Report 2001: Digital Divide as a point of departure, and addressing especially: Contracting, Copyright Law, Domain Naming and Trade Mark Law, Database Protection, Indigenous Knowledge, Security, Privacy, E-Payments, Customs & Excise Duty and Tax Law |
| 5 | Source and refurbish used equipment; Use lean software products; Consider open source software; Encourage alternatives to PCs |
| 5 | NGO projects to champion ICT awareness campaigns in rural areas; Professional bodies (e.g. NITA) to extend their efforts to boost ICT in the business arena |

| | |
|---|--|
| 5 | Continue Implementation of Telecomm Regulatory Process |
| 4 | Formulate and implement Cluster Development Policy |
| 1 | Government programme to provide tax rebates and other incentives for ICT professional training linked to certification of training courses and establishments. |
| | Promote FDI and venture capital market |
| | Strengthen and re-enforce SchoolNet projects already underway |
| | Establish ICT Centres of Excellence at tertiary level |

Appendix A5

What would effective ICT Look Like?

| Theme Area | What would effective ICT look like? | How will we know whether we have succeeded in achieving effective ICT? |
|-------------------|---|---|
| Access | Radio: An expanded transmitter network. Widespread use of satellite, windup radio, solar radio, community radio. | Universal access to all services of NBC radio by 2005. Achieving targets as to number of households with a radio set number of language services |
| | Comms and Telephony: Introduction of Ultraphone, V-Sat 2 nd Mobile phone license Broadband access Supporting infrastructure especially in rural areas Liberalised telecomm sector Universal Service Fund for ICT A strong and independent regulator established | 80 – 90% of population have access to affordable telephone services by 2004 A telephone in walking distance (i.e. not more than 1 kilometre) and affordable to the majority of the population all monopolies removed by 2004 all ICT companies contributing to Universal Service Fund Measurable increases in quality and quantity of investment in ICT |
| | Television: each school has access to television and access to educational material | 70% of population to have access to television A TV set in every school Growing incorporation of TV-based educational material in lessons |
| | Information Technology: Computers and Internet access available to all schools in Namibia Computer studies introduced from primary school level. multi-purpose community centres with services like telephone, fax, photocopy, computer and internet access | Achieving targets as to numbers of schools with computers connected to internet (e.g., 50% of rural schools connected to Internet) and as to number of active internet users. Measurable increase in basic computer skills in population to make use of available ICTs Achieving targeted number of MPCCs Increasing range of services in use. |
| | Commissioning of alternative power solutions | Increased levels of access to affordable power supply |
| ICT Sector | Increasing application of venture capital to grow the industry. | Double venture capital investments in 5 years |
| | Increased ICT research and development | Double R & D capital investment in 5 years |
| | More strongly developed market for ICT products | Double ICT contribution to GDP in 5 years |
| | Presence of suppliers for infrastructure maintenance | maintenance suppliers/support available in all major centres |
| | Certifying Authority for digital signatures | Measurable growth in activities of Certifying Authority |
| | Regulatory policies conducive to effective ICT (infrastructure) | Reported satisfaction of ICT communities |
| Education | Computer literate teachers | Growth in use of ICT in the classroom |
| | ICT Train the Trainer programmes | Relevant curricula Growth in ICT-certificated teachers and trainers |

| | | |
|-------------------|--|--|
| | Funding available for short-term ICT education | Banks, non-ICT firms and government all contributing funds Increased numbers of short-term educational programmes |
| | ICT Awareness Programmes | Measurable increase in awareness of benefits of ICT literacy among scholars, parents, management and educational institutions |
| | Development of local content for ICT education | Increased volume of local content. |
| | Coordination among role players | Active associations and umbrella organisations |
| | Processes in place to create and employ ICT-literate people | Broadening of reach of ICT literacy beyond the minority Real rewards for ICT literacy. |
| Government | Policy and legislation on ICT; E-commerce; E-governance; purchasing procedures; copyright; intellectual property; standards | Legislative framework in place and effectively operational |
| | Development and expansion of infrastructure Government Intranet National gateway Effective use of GRN regional offices | Infrastructure in place in all 13 regions Maximum and measurable use of infrastructure Expanded bandwidth |
| | ICT used and accessible in public institutions/MPCCs | Demonstrated accessibility, affordability, sustainability |
| | Human Resource Development defined as a priority area; resources allocated Compulsory ICT training at primary, secondary and tertiary level introduced On-going training | Visible recognition of ICT skills Increased no. of ICT-literate professionals Dependency on external ICT professionals measurably reduced |
| | Promotion of investment in ICT sector Incentives defined SDIs in place | Increased investment in ICT sector Increased ICT sector support to industry |
| | Content ICT used as effective tool to disseminate information Effective gathering of national data | Effective mechanisation of data gathering and management in place |
| Business | 4 Manufacturing Computer integrated manufacturing where appropriate Access to information on inputs into manufacturing Sector networking agents Automating border post facilities E-Commerce Association Legal instruments in place | 15% increase in contribution of manufacturing sector to GDP by 2005 Improvement in per capita earnings, with increase in production capacity Access to markets for SMMEs/rural areas Reduction in general sales agents (GSA) and "middle-men" Cross-border regional interaction National register of "e-commerce" institutions Reduced tariff barriers |
| | Marketing Facilitating inter-industry financial transactions Synergistic websites An ICT strategy for tourism sector Access to SADC secretariat for trade facilitation | More effective corporate governance Increased ICT entrepreneurs Leading companies setting sector standards |

| | | |
|--|---|---|
| | Banking E-banking: fully automated clearing and settlement systems – domestic and cross-border. | Cash transactions decrease Successful broking services (commodity prices) Electronic transactions between individuals, SMMEs and govt Rapid growth in “home industries” Improvement of share holder value |
| | Other Capital – available/provided Matching company/ies in “cross border” industries | Number of “informal” sector user groups Visible trans-national business groupings in related sectors e.g., engaging in E-purchasing (B2B E Commerce) |

Appendix A6

| MPCC Type | Properties of MPCCs | | | | | |
|---|-----------------------------------|---|--|--|---|--|
| | <i>What would they look like?</i> | <i>What services would they offer?</i> | <i>Where would they be established?</i> | <i>Who would run them? (alternatives)</i> | <i>Who would fund them? (alternatives)</i> | <i>Who would own them? (alternatives)</i> |
| Schoolnet Up to 1500 schools, 500 000 pupils and teachers. | Classroom | Internet & email Training through doing, peer-to-peer Entertainment | First in rural disadvantaged schools | Student driven Tech support from national SchoolNet network | Consortium of private and public organisations; Govt. & donor funding. Operating costs through community outreach activities | 1. Community board 2. Student board 3. Parent Teacher Associations |
| Petrol Stations Up to 500 places | Like service station shops. | Email, “post restante” facilities for email. Fax, laminating, Copying, printing, ATM tellers. Two-way communication. Entertainment | Upper limit is one in every service station in the country - >500. | 1. The oil company 2. Local groups 3. Franchising chain | Capital: 1. Oil companies 2. Franchising Chain Operations Market driven & self sustaining | 1. Franchising chain 2. Local entrepreneurs 3. Local cooperatives |
| Churches | Small shop | Email, internet | Near churches, > 1500 places? | Church groups Requires champion! | ? | 1. Church groups |

Appendix A7

Terms of Reference for Structures proposed in the 1993 IT Policy for the Public Service

Cabinet Committee on Information Technology (CCIT)

Setting overall goals and objectives of Government IT

Formulating a national IT policy

Promoting and facilitating the establishment and growth of the local IT Industry

Ensuring an integrated planning and development strategy for Government IT

The Committee was to consist of Cabinet members only.

Public Service Committee on IT (PSCOIT)

- Formulating government IT policy proposals
- Co-ordinating the implementation of policies and professional standards in government
- Serving as a forum for discussing IT policies affecting more than one ministry
- Reviewing and providing IT policy amendment proposals for approval by the Cabinet Committee on IT

The Committee was to consist of representatives appointed by the Permanent Secretaries in the ministries or offices.

Directorate of Public Service Information Technology Management (PSITM)

- Developing and co-ordinating the implementation of professional standards and technical support programmes
- Periodically conducting IT needs analysis in government
- Reviewing, monitoring and co-ordinating the implementation of integrated strategic plans for the development of inter-ministerial management information systems (MIS)
- Being responsible for data and information resources management within the government including computer, data and information security
- Monitoring the acquisition of hardware, software and service agreements

Developing, managing, operating and maintaining an integrated government-wide MIS which is to be located in the PSITM

Ministerial Information Technology Units

These units were to be responsible for rendering computer services to individual government offices and ministries. Every office or ministry that intends to embark on a computerisation programme was required to set up an Information System Steering Committee (ISSC) and an Information Systems Division (ISD).

Information Systems Steering Committee

- Setting goals and objectives in the development of information systems and identifying and drafting short and long term project proposals for approval by DPSITM
- Providing overall direction and leadership for computerisation in the office/ministry
- Endorsing the acquisition of hardware, software, master plans and other services
- Submitting all proposals, master plans, and other computerisation plans to DPSITM for approval

Information Systems Division

It was expected that an individual ISD would be staffed by between 3 and 10 computer professionals, depending on the extent of computerisation, charged with:

- Executing strategies and plans for the execution of MIS in the office/ministry
- Drawing up of tender proposals before submitting them to ISSC for approval
- Responsibility for technical systems design, testing, operations and maintenance
- Responsibility for the acquisition of hardware and software

Appendix A8

The Namibian Open Learning Network

Introduction

Open and distance learning (ODL) is a broad concept that is used to refer to a more flexible approach to providing education, involving a combination of traditional face-to-face contact and independent study using a variety of media. Since Independence, the Namibian Government has established four institutions that provide courses through ODL methods, including:

- Centre for External Studies at the University of Namibia (UNAM-CES)
- Centre for Open and Lifelong Learning at the Polytechnic of Namibia (PoN-COLL)
- Namibian College of Open Learning (NAMCOL)
- National Institute for Educational Development (NIED)

In May 1999, a number of structures were set up to improve coordination and cooperation among these publicly-funded ODL institutions. A high-level Steering Committee, comprising the heads of the four institutions mentioned above, was convened, under the chairmanship of the Under-Secretary for Culture and Lifelong Learning. In addition, a Working Group was tasked with developing practical plans for inter-institutional collaboration. This Working Group includes representatives of the Directorate of Library and Archive Services in the MBESC and the Directorate of Higher Education in the MHETEC, as well as the ODL institutions.

The work of these bodies was endorsed on 17th February 2000, when the Permanent Secretaries of the two ministries, and the Heads of NAMCOL, PoN and UNAM signed a Memorandum of Understanding for the coordination of open and distance learning in Namibia.

The Open Learning Network

In terms of article 1.1.1 of this Memorandum, the parties have agreed to work together to ". . . establish a network of open learning centres throughout the country at which certain facilities will be shared and services offered on a collaborative basis. . .". The intention is to maximise the use of existing centres by improving their facilities.

Funds have been made available by the European Union, as part of the Namibia Human Resources Development Programme, to provide equipment and materials for these centres. However, it must be emphasized that the project will NOT provide any support for the construction of new buildings, the employment of additional staff or the day-to-day running costs of any centre. Once equipment has been provided, then each centre will be responsible for its maintenance and upkeep through the collection of user fees.

The overall aim of this initiative is to enhance opportunities for supported, independent learning for adults and young people who cannot take part in conventional, institution-based education. Although the primary target group includes students registered with the publicly-funded ODL institutions listed above, it is expected that other ODL providers will make arrangements for their students to have access to these centres as well. However, the benefits of the initiative are not limited to ODL students alone. Once equipment and materials have been put in place, any other user of the centre will be able to avail of the facilities to obtain information or engage in individual study. In this way, the Open Learning Network will improve the services provided by some community libraries, Teachers' Resource Centres, school libraries, NAMCOL tutorial centres, and Community Learning and Development Centres.

Coordinating the Open Learning Network

The initiative will be structured as a voluntary network of centres. Plans are advanced stage to establish a trust to act as the central coordinating body. Designated centres that wish to take part can join the network by subscribing to a common framework agreement. This will not change the status of the centre in any way, since day-to-day control of management and administration will be retained by the parent institution. Thus, if a community library or TRC affiliates to the Namibian Open Learning Network, it will still be accountable to regional and head office structures of the MBESC in the same way as at present.

Different Categories of Centres

From May to August of 1999, a consultant carried out a survey of centres that might form part of the Open Learning Network. Through discussions with ODL providers and relevant directorates within the two Education Ministries, a total of 177 potential sites were identified. A questionnaire was circulated to these centres, and information was received on 91 of them. The consultant visited 75 of these centres to discuss the initiative with stakeholders and to conduct inspections of the facilities available. The recommendations in the attached list are based upon the information obtained in this investigation, plus additional consultations with stakeholders.

In order to get maximum value from the available funds, the ODL Working Group has proposed four categories of centre, each of which will receive a different level of support. In all cases, consideration will be given to what facilities are already available at a particular centre in order to avoid duplication. Once this has been established, then additional equipment and materials can be provided to bring the centre up to the standards outlined below. The number of centres that have been allocated to each region is based upon considerations of geographical spread, proportionality and the needs of historically disadvantaged areas.

Category 1 or Regional Centres

Provision has been made for one highly-resourced centre in the principal town/city of each of the thirteen political regions. Support will be provided to existing centres, which already have one or more full-time staff, in order to assist them in providing the following materials and facilities:

- reference library with books for tertiary- and secondary-level programmes;
- photocopying facilities;
- audio tape players with headphones and a selection of educational cassettes;
- television and VCR (or a 'movie box') with headphones and a selection of educational videos;
- at least two multi-media personal computers, linked to the Internet and with a selection of software;

Appendix A9

| BENEFITS AND DISADVANTAGES OF MPCCs | |
|--|--|
| Benefits | Disadvantages |
| <p>National priorities</p> <ul style="list-style-type: none"> • Contributes to the country's GDP • Raises expectations and aspiration • Employment opportunities • Improve standard of living • Raises levels of computer (IT) and language literacy, and narrows the literacy gap e.g. urban vs rural • Human resource development - focus on youth • Tourism opportunities | <p>National priorities</p> <ul style="list-style-type: none"> • Submersion / subversion of indigenous cultures |
| <p>Infrastructure and Access</p> <ul style="list-style-type: none"> • Easy access to information • Improvement in communications infrastructure • Provides service networks to rural communities • Remote area MPCC development is possible through new technologies e.g. satellite • MPCCs based on the SchoolNet model will reduce commercial bandwidth demands | <p>Infrastructure and Access</p> <ul style="list-style-type: none"> • Inconvenient access points • If using schools, they may be difficult to access • Duplication of services, structures, etc • Places where Telecom Namibia has access networks • Affordability • Technophobia |
| <p>Financing / sustainability</p> <ul style="list-style-type: none"> • Cost-sharing in pooled MPCC alliances • Integration of initiatives will provide better services (sharing of human resources, ICT infrastructure and skills) • Place MPCCs on top of schools = reduced centre: population ratio • Complement SchoolNet – do not steer resources away from SchoolNet | <p>Financing /sustainability</p> <ul style="list-style-type: none"> • High costs with low benefit (hidden costs in terms of running costs) • High costs of technology • Sustainability of Centres (Return on investment is questionable) • Availability of funding in rural areas. Not highly profitable to run in rural areas. Will only be profitable for some entrepreneurs • Financing of MPCCs requires hardware, software, technical service level agreements, venue, feedback, local champion, etc. N\$500 000 per centre is not enough |
| <p>Services</p> <ul style="list-style-type: none"> • Entertainment centres especially for rural youths • Marketing tools for uses • E-mail is a substitute for travel • Must be linkages with needed/desired services (positive if there is a linkage) | <p>Services</p> <ul style="list-style-type: none"> • Lack of exposure • Misuse of purpose • Practical difficulties associated with e-commerce • Is e-mail communication enough to motivate users? • Must be linkages with needed/desired services (negative if there are no linkages with need and demand = white elephant MPCCs) |
| <p>Content</p> <ul style="list-style-type: none"> • Provides central/common repository for data • NICI - resource gateway and interactive database • Everyone can be a producer as well as a user • Development of rural population by providing sources of information • Information is a base for democracy | <p>Content</p> <ul style="list-style-type: none"> • Saving of user data |
| <p>Social Development / Human Resource Development</p> <ul style="list-style-type: none"> • Community building = increased social standards • empowering through knowledge / information • Information enablement especially youth • Builds on existing social forms of communication e.g. communal debate • Sharing of ideas / development of minds • Better communication channels • Meeting point of physical and digital • Community education • Raising political awareness • Widens economic space, by helping fast-track and cut the costs of e-commerce | <p>Social Development / Human Resource Development</p> <ul style="list-style-type: none"> • More training needed in IT • Untrained users will damage PCs |
| <p>Other</p> <ul style="list-style-type: none"> • NICI - should there be a permanent infrastructure? | <p>Other</p> <ul style="list-style-type: none"> • Donor-funded independent MPCCs have no alliances to sustain them • Danger of becoming elitist, excluding real user needs • Most programmes only centrally based <p>Training</p> <ul style="list-style-type: none"> • More training needed in IT |