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Using information and communication technology for human development: Comparing strategies

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**USING INFORMATION AND COMMUNICATION
TECHNOLOGY FOR HUMAN DEVELOPMENT:
COMPARING STRATEGIES**

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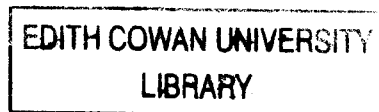
**A thesis submitted in partial fulfilment of the requirements
for the degree of**

**Bachelor of Science Honours
(Communication & Information Technology)**

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ABSTRACT

In the last 20 years, applications of Information and Communication Technologies (ICTs) have impacted on the economies of the industrialised world. In today's "information society", information and knowledge are essential to social and economic development. However, not everyone has access to ICTs and the information they may provide. There is concern that existing inequities of income, knowledge, skills and measures of social development may increase as a result of a growing "digital divide" both between and within countries. There is an ongoing discussion within the international community about whether ICTs may play a significant role in human development. This study contributes to that discussion.

This study evaluates the aims and outcomes of two of the ICT projects sponsored by the Swedish International Development Cooperation Agency (Sida) in developing countries, the SchoolNet Namibia project and the ICT project for the public universities of Nicaragua and two of the ICT projects sponsored by the Australian government in rural Australia, the Outback telecentre network Inc. project and the Networks For You program. The study is qualitative and uses a multiple case study approach wherein selected ICT projects are evaluated in terms of whether they lead to human development. The strategies concerning ICT for such development by the Swedish and Australian governments are compared both for similarities and differences.

TABLE OF CONTENTS

1 INTRODUCTION.....	1
1.1 THE BACKGROUND TO THE STUDY	1
1.2 THE SIGNIFICANCE OF THE STUDY.....	5
1.3 THE PURPOSE OF THE STUDY	6
1.4 RESEARCH QUESTIONS	7
1.5 DEFINITIONS OF TERMS OR OPERATIONAL DEFINITIONS.....	8
1.6 SUMMARY AND SYNOPSIS OF THESIS.....	9
2 REVIEW OF THE LITERATURE.....	10
2.1 THE DIGITAL DIVIDE.....	10
2.2 THE DIGITAL DIVIDE IN AUSTRALIA.....	12
2.3 THE SIGNIFICANCE OF ICT FOR DEVELOPMENT IN DEVELOPING COUNTRIES	13
2.4 THE SIGNIFICANCE OF ICT FOR DEVELOPMENT IN RURAL AUSTRALIA	21
2.5 SUMMARY OF THE LITERATURE REVIEW	24
3 RESEARCH DESIGN	25
3.1 METHOD	25
3.2 PROCEDURES.....	25
3.3 DATA ANALYSIS	25
3.4 SUMMARY OF THE RESEARCH DESIGN	27
4 FINDINGS.....	28
4.1 THE SWEDISH INTERNATIONAL DEVELOPMENT COOPERATION AGENCY(SIDA)	28
4.2 SCHOOLNET NAMIBIA.....	32
4.3 ICT PROJECT FOR THE PUBLIC UNIVERSITIES OF NICARAGUA.....	35
4.4 NETWORKING THE NATION (AUSTRALIA)	41
4.5 OUTBACK TELECENTRE NETWORK INC.	44
4.6 NETWORKS FOR YOU	49
4.7 EVALUATION OF THE PROJECTS	52
4.8 CROSS CASE ANALYSIS	76
4.9 SUMMARY OF FINDINGS.....	83
5 CONCLUSION.....	84
6 REFERENCES.....	91
7 APPENDIX.....	97
7.1 QUESTIONNAIRES USED	97

DECLARATION

I declare that this thesis does not incorporate without acknowledgment any material previously submitted for a degree in any institution of higher education, and that, to the best of my knowledge and belief, it does not contain any material previously published or written by any other person except where due acknowledgment is made.

Signature: 

Date: 6/10-2005

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1 INTRODUCTION

1.1 The Background to the Study

Over the past 20 years new technologies have impacted on the economies of developed countries. Advances in information and communication technology (ICT), such as the Internet, have made the development of new products, services, business models and methods of interaction possible. During the last decade, such developments have contributed to economic efficiency and growth in developed countries (Marker, McNamara, & Wallace 2002, p.54). However, there is a disparity reported by Chacko (2002, p. 270), wherein 900 million people live in developed market economies while 5 billion people live in developing countries. Since 1990, Fakuda-Parr, Lopes and Malik (2002, p. 2) found that the number of “income poor” has increased every year in sub-Saharan Africa, South Asia, Latin America and the Caribbean. In terms of distribution of wealth, Roy (1998, p. 8) found that, whereas 30 years ago the wealthiest 20 per cent of the world’s population were 30 times richer than the poorest 20 per cent, the ratio had risen to 60. In other words, despite the presence and seeming application of ICTs the ratio of poor to wealthy has doubled.

While, globally, economies rely increasingly on generating, distributing and using knowledge and technology, Fakuda-Parr et al. (2002, p. 4) suggest that such reliance poses difficulties for developing countries to compete. As Stephen Denning (2002, p. 230) states, the gap between developed and developing countries today not only exists in financial and physical resources but also in information and knowledge. This gap in accessing information and ICTs may lead to further exclusion of people in developing countries and that inequities of income, knowledge, skills and measures of social development are increased (Marker et al., 2002 p. 16). Simon Batchelor (2002) explains that ready access to relevant information is crucial to creating a sustainable livelihood. He argues that the poor may use the vast amounts of information offered by suitable ICTs to improve their lives. Notwithstanding such

a link between information and ability for improvement, Sarrocco (2002) notes the challenge of information delivery/availability when approximately 80 percent of world's poor live in remote, rural areas.

In development, knowledge has been recognised as being an important factor. As Kuramoto and Sagasti (2002, p. 204), state initiatives for development cooperation in the last 50 years have involved the transfer of knowledge from developed to developing countries. However, those international cooperation and technical assistance projects implemented to help developing countries have usually had little positive effect. Kuramoto and Sagasti (2002, p. 204) find that this may be due to a reliance on the transfer of generic information without addressing sufficiently the organisational, economic, financial and political constraints extant in the recipient countries. Such observations have led to scepticism, within the international community in both developed and developing countries, of whether ICTs really play a significant part in poverty reduction within developing countries. Funding agencies and donor governments find it difficult to decide whether to support ICT activities in their development projects (Arunachalam, 2002). One remedy for such hesitation may lie in the correct analysis of the suitability of aid in ICTs provided.

One government that has decided to support ICT activities in their development projects is that of Sweden. The Swedish International Development Cooperation Agency (Sida) sponsors ICT projects in developing countries as a part of its aid programme and as a strategy to reduce poverty in those countries. A part of such projects involves assisting universities, research institutions and schools to access the Internet. The Swedish budget for IT projects at universities in developing countries is 30 million Swedish Crowns a year (Sida, 2000d). The projects also involve human resource training and development of IT based services such as distance learning, policy and organisation development (Sida, 2000d).

The digital divide is not just perceived to exist between countries but also within countries. For people within rural communities in Australia, long distances affect access to information and markets, education and social life (White, Bradbury, & Malafant, 1995). Venkatesan, Eversole, Robinson and Clark (2002) describe the widespread opinion in Australia that people living in the large Australian cities benefit more from the digital revolution than those living in remote regions. They explain that one of the reasons for this view is that the major part of the Australian

population inhabits the bigger cities. Australian regional areas are thinly populated and have substantial distances between small towns and communities. Those distances affect the provision of infrastructures such as telephony or the Internet. In Australia, non-metropolitan areas have much lower Internet connection rates than metropolitan areas (Simpson, 2001). Additionally, rural and remote areas in Australia have limited access to Internet service providers, higher telephone costs and where Internet access is available it is often slow (Human Rights and Equal Opportunity Commission, 2000a).

The Australian government funds programs and sponsors community initiatives that aim to assist the economic and social development of regional, rural and remote parts of Australia through the application of ICTs. *Networking the Nation* (NTN) is a government program that commenced in 1997 to be funded with AU\$250 million over a five-year period. In June 1999 the government added a further AU\$214 million (DCITA, 2002b). Government funded activities in Australia include the provision of new telecommunications infrastructure and services, training, skills development, and awareness-raising programs. The activities also include assistance for local government authorities in regional Australia to provide online access to information and services including the Internet (DCITA, 2002b). In short, it is the completeness of an ICT package that is important, rather than simply the supply of it. As Gómez and Casadiego (2002) state,

Connectivity is not an end in itself, but a tool that can help find concrete solutions to people's problems and needs. ... The real contribution to development will come not from the capacity to process and accumulate information, but from generating new knowledge. ... ICTs can play an important role in human development, to the extent that they become tools for generating useful knowledge and contributing to the transformation of our reality.

They believe that education, in line with the range of Australian government's funded activities, is one of the fields where ICTs offer the most significant opportunities toward development when used as tools to generate useful knowledge.

In summary, the application of new ICTs has impacted on the economies of the industrialised world and, increasingly, is being introduced in developing countries as a means to offer opportunities to poor people in those countries. Even though ICTs may help people in developing countries to be a part of the global community, there is scepticism within the international community about whether ICTs really play a valid part in poverty reduction in developing countries. Concerns are evident that gaps will increase between rich and poor people, both between and within countries. The Swedish government sponsors ICT projects in developing countries as a strategy to reduce poverty. In like manner, the Australian government sponsors ICT projects as a strategy to assist the economic and social development of regional, rural and remote Australia.

1.2 The Significance of the Study

From the background discussion above, it is evident that there is much debate of whether ICTs may play a significant role in human development. Several (Marker et al., 2002; Sarrocco, 2002; Harris, 2002) argue that there is a need for international cooperation to share experiences in the use of ICTs. Both Swedish and Australian government ICT initiatives aim to contribute to human development and overcome the effects of distances with the use of ICTs. The Swedish government sponsors ICT projects in developing countries and the Australian government sponsors ICT projects to offer benefits for regional, rural and remote Australia. This comparative study contributes to the ongoing discussion within the international community about the role of ICTs in developing areas.

1.3 The purpose of the Study

This study evaluates the aims and outcomes of two of the ICT projects that the Swedish International Development Cooperation Agency (Sida) sponsors in developing countries: namely, the SchoolNet Namibia project and the ICT project of the public universities in Nicaragua. This study also evaluates the aims and outcomes of similarly focussed projects in rural Australia sponsored by the Australian government, the Outback Telecentre Network Inc. project and the NetWorks For You program. The evaluation will be in terms of whether the projects lead to human development and whether strategies used are effective in overcoming disadvantage in previously poorly developed regions.

1.4 Research Questions

Do the ICT projects in developing countries sponsored by the Swedish International Development Cooperation Agency (Sida) and those sponsored by the Australian government in rural Australia contribute to human development and how do the strategies of the Swedish and Australian governments compare?

The question may be seen as comprising the following sub-questions:

1. What are the aims and outcomes of ICT projects sponsored by Sida in developing countries and what strategies are used?
2. What are the aims and outcomes of ICT projects sponsored by the Australian government in rural Australia and what strategies are used?
3. How do the strategies used by Sida compare to the approaches taken by the Australian government?

1.5 Definitions of Terms or Operational Definitions

Human Development - Promoting democracy with social justice, economic prosperity with equity, and realisation of the full human potential (Gómez & Casadiego, 2002)

ICT – Information and Communication Technology

IT – Information Technology

NTN – *Networking the Nation*

OECD - Organisation for Economic Co-operation and Development

Sida – Swedish International Development Cooperation Agency

1.6 Summary and synopsis of thesis

This chapter described the background to the study; how the application of new ICTs has impacted on the economies of the industrialised world and how ICTs, increasingly, are being introduced in developing countries as an apparent means to offer opportunities to poor people in those countries. It was noted that there is, however, scepticism within the international community about whether ICTs play a significant part in poverty reduction and there are concerns that gaps will be enlarged between rich and poor people, both between and within countries. The purpose of this study was then described. Swedish and Australian government ICT initiatives aim to contribute to human development and overcome the effects of distances with the use of ICTs. Aims and outcomes of two of the ICT projects that the Swedish International Development Cooperation Agency (Sida) sponsors in developing countries have been evaluated. These two projects are the SchoolNet Namibia project and the ICT project of the public universities in Nicaragua. Aims and outcomes of two similarly focused, Australian government sponsored projects in rural Australia have also been evaluated. These two projects are the Outback Telecentre Network Inc. project and the NetWorks For You project. The evaluation is in terms of whether or not the projects and strategies used in them lead to human development. Finally, the research question was presented together with its components.

2 REVIEW OF THE LITERATURE

2.1 The Digital Divide

Robin McKinnon (2002) describes the term “digital divide” as:

the perceived division between the digital haves and have nots; that is, those with access to information technology, including personal computers, the Internet, and telecommunications technology, and those who do not.

Joseph E. Stiglitz (2002, p.273) explains that the “digital divide” has been the subject of a major concern due to a supposed link between changes in technology and an increasing global inequality between poor and rich.

To explain the background to the concern about the “digital divide”, it is necessary to describe the nature of its underlying technological changes. Claudia Sarrocco (2002), in describing the world of today, uses the term “information society”. She argues that ICTs are as important to today’s “information society” as the new industrial machines were to the industrial revolution. Fakuda-Parr and Hill (2002, p.186) also describe the replacement of the industrial age with what they call the “networked age” stating that this historic shift is driven by technological transformation and economic globalisation. They argue that due to advances in technology, information and knowledge can be stored, processed and communicated in ways that were unthinkable in earlier decades. Antonina Espiritu (2003) explains that innovations such as the creation of the World Wide Web in the early 1990s in combination with falling computer prices have made the Internet accessible to a much wider community than before. To illustrate the rapid expansion of the Internet in the last decade Kenny, Navas-Sabater and Qiang (2000) state that the 15 million Internet connections that were made between 1991 and 1994 increased to 88 million in the period 1995-1998. Furthermore, they note that it took 75 years before the telephone reached 50 million users but it took just 4 years before the World Wide Web had reached that number.

Fakuda-Parr and Hill (2002, p.188) explain that national and global economies are increasingly reliant on generating, distributing and using knowledge and technology. They describe that between the mid 1980s and the mid 1990s, Organisation for Economic Co-operation and Development (OECD) countries increased investment in intangible assets such as research and development (R&D), education and software by 3 per cent. Furthermore they argue that among the fastest growing sectors in the global economy are businesses that are knowledge intensive, for example in computers, R&D and training. Knowledge is increasingly important to economic activity and, accordingly, businesses use knowledge as a competitive edge and they participate in networks that provide them with valuable knowledge (Fakuda-Parr & Hill, 2002, p.188).

Hierarchically organised geographically concentrated structures in economies and societies are being replaced with networked structures that link actors across communities and countries (Fakuda-Parr & Hill, 2002, p.188). For example, of those global corporations that are distributing products worldwide, practically all businesses and organisations use outsourcing (Fakuda-Parr & Hill, 2002, p.188). Claudia Sarrocco (2002) argues that the benefits for businesses that have a networked production structure are vast in the way that they can use the Internet to access global markets and transmit, receive and process routine business communication tasks, thereby reducing transactional costs significantly. She argues that in today's "information society" where information and knowledge are essential to social and economic development, everyone in the world should have access to and be able to use that information.

However the "networked age" is far from being a reality in developing countries. Kenny et al. (2000) explain that citizens in developing countries, especially the poorest citizens, have much less access to telephones and the Internet than the citizens of rich countries. For example, Rwanda, with a population over 6.5 million, had in 1998 11,000 telephones - only half the number of telephones that Gibraltar, with a population of 27,000, had in the same year. Within Rwanda there were 4 telephones per 100 people in the capital city, while there were 4 telephones per 10,000 in the rest of the country. Several authors (Marker et al., 2002; Kenny et al., 2000), explain that this obvious gap between developing and developed countries in accessing information and ICTs may lead to people in developing countries being

excluded from the benefits of the knowledge economy. Furthermore, such exclusion may increase the existing inequalities of income, knowledge, skills and measures of social development. Marker et al. (2002) explain that the phenomenon of poverty is complex in nature and has more causes than simply being deprived of basic resources. They argue that poor people do not have access to information that is crucial to them, for example, information about market prices for their goods, income earning opportunities, health information, public institutions and their own rights. They argue that the connection between access to knowledge and education and signs of poverty, such as health problems, infant mortality and family size, is strong. For these reasons, they propose that it is necessary to address the information and communication needs of the poor as a part of a wider strategy to tackle poverty.

2.2 The Digital Divide in Australia

The digital divide is not just perceived to exist between countries but also within countries, as the example from Rwanda illustrated above. The technological revolution in the last decade has had an extensive effect on Australian society and businesses (Simpson, 2001). Bell, Bush, Nicholson, O'Brien and Tran (2002) explain that Australians are now using the Internet regularly in their daily lives. They illustrate this by describing that there were 3.7 million Australian household subscribers to the Internet in September 2001. In addition, 66 per cent of Australian adults had used a computer and 50 per cent of Australian adults had accessed the Internet in the year 2000-2001. Furthermore, Venkatesan et al. (2002) state that 37 per cent of all Australian businesses are online, placing Australia close to the top among the OECD countries. However, they also explain that it is mainly large businesses that have successfully implemented and benefited from using information technology and e-commerce. They note, further, that the general population uses the Internet to gather information rather than to do business online.

A study conducted by the National Centre for Social and Economic Modelling at the University of Canberra, cited in Simpson (2001), found that non-metropolitan areas have much lower Internet connection rates than metropolitan areas in Australia. The

reasons for the difference were attributed to lower levels of education and income in non-metropolitan areas and not solely the geographic location of the area.

Venkatesan et al. (2002) describe a widespread opinion in Australia that people living in the large Australian cities benefit more from the digital revolution than those living in regional areas. They explain that one of the reasons for this view is the demographic fact that the major part of the Australian population lives in the larger cities. Regional areas are thinly populated and there are substantial distances between small towns and communities, both of which affect the provision of infrastructure such as the telephone or the Internet. In a report from the Human Rights and Equal Opportunity Commission (2000a), it is described that rural and remote areas in Australia have limited access to Internet service providers (ISPs), endure higher telephone costs and where Internet access is available it is slow.

In summary, the technological revolution in the last decade has had an extensive effect on Australian society and businesses and Australians are now using the Internet regularly in their daily lives. Despite the progress in communications, those people living in the metropolitan areas benefit more than their rural counterparts from the digital revolution.

2.3 The significance of ICT for development in developing countries

While there are concerns, described above, about a growing digital divide both between and within countries there is, additionally, debate about the significance of using ICT for development in developing countries. This section will discuss the ways in which ICTs may be used in developing countries and the critical views and the strategies for the use of ICTs in development.

2.3.1 The ways in which ICTs may be used in developing countries

According to Claudia Sarrocco (2002)

Information and communication technologies are seen by various bodies of the international community as being, inter alia:

- a bridge between developed and developing countries

- a tool for economic and social development
- an engine for growth
- the central pillar for the construction of a global knowledge-based economy and society
- an opportunity for countries to free themselves from the tyranny of geography.

Several authors (Marker et al., 2002; Kenny et al., 2000; Malik & Waglé, 2002, p.90; Sarrocco, 2002) discuss how ICTs may be used toward a reduction in poverty and to achieve improvement within developing countries.

Marker et al. (2002) looks at three different levels of the potential impact of ICTs on poverty: namely, micro, intermediate and macro. ICTs are seen to be able to have a direct impact on the lives of the most underprivileged or poor (Marker et al., 2002; Kenny et al., 2000). This direct impact on the lives of the poor is seen by Marker et al. (2002) as being at the micro level. At that level ICTs may be applied to give the poor access to the information they need to be able to develop their own ideas of how they may improve their lives and express their views to society (Marker et al., 2002). The different kinds of information that may be accessed using ICTs and which are suggested to be of great help to the most underprivileged include:

- information on market prices for example on crops and goods, (Marker et al., 2002; Kenny et al., 2000)
- health information, (Marker et al., 2002)
- educational resources, (Marker et al., 2002; Kenny et al., 2000; Sarrocco, 2002)
- government information and information about rights as they have as citizens. (Marker et al., 2002; Malik & Waglé, 2002, p.90; Sarrocco, 2002).

ICTs are seen not only as a tool for the poor to access information that may be used to improve their lives but also as a mean for communication. Marker et al. (2002) point out that ICTs may be used by poor people to share knowledge and ideas on how to solve problems. New ways of communication may increase the participation of the poor in policy-making in a manner that gives them opportunities to express their ideas and their needs to decision-makers (Marker et al., 2002; Kenny et al., 2000; Malik & Waglé, 2002 p.91).

At the intermediate level Marker et al. (2002) argue that ICTs may facilitate institutions to be more efficient and reactive in endeavours to aid the poor. ICTs may help, for example:

- health workers to retrieve the latest information on health issues and get support with diagnosis from specialists remotely (Marker et al., 2002; Sarrocco, 2002). An example of this is the high percentage of health workers in Uganda (54%) and Kenya (20%) per year who have participated in radio-backed training courses, and reports have shown that the courses result in improved knowledge, attitudes and practices (Kenny et al., 2000).
- agricultural extension agents to retrieve information locally and globally about different aspects of agriculture such as on crops, pest management, irrigation which can be used to help the poorest farmers (Marker et al., 2002).
- teachers to share knowledge and ideas through networks nationally and internationally and get access to information to continue their own learning (Marker et al., 2002).
- local governments to make information available to the public, such as information about laws, statistics, health and information that supports public services such as education, and transport. Making information available to people can help governments to be more responsive to the needs of the poor. ICTs can also help in supporting internal management in governments and, by extension, communication with other levels of government may be improved (Marker et al., 2002).
- local businesses to access markets, be more competitive, work more efficiently so that they may be more productive and respond better to their customers (Marker et al., 2002; Sarrocco, 2002).
- non governmental organisations and community groups to communicate more efficiently and, as a result, help to express the interests of the poor at the local level and to share information and strategies with similar groups elsewhere (Marker et al., 2002).

At the macro level Marker et al. (2002) and Sarrocco (2002) argue that ICTs help to create effective markets and increase information flow within a government that, in turn, leads to informed decision making and may diminish corruption. Marker et al. (2002) explain that in well performing markets it is crucial to have efficient information flows and robust communication infrastructure. They argue that barriers for sustainable economic growth in developing countries include insufficient communication structures and weak information flows. Furthermore, they explain that when government institutions lack information they become less responsive and are less accountable for their actions, increasing the risk of corruption. Marker et al. (2002) continue to argue that ICTs may be used to share information and to raise awareness within the development community, to tackle poverty and progress the International Development Targets that have been identified by the international community. The seven international development targets are:

1. Reduce the proportion of people living in extreme poverty by half between 1990 and 2015
2. Reduce infant and child mortality rates by two-thirds between 1990 and 2015
3. Reduce maternal mortality rates by three-quarters between 1990 and 2015
4. Provide access to all who need reproductive health services by 2015
5. Implement national strategies for sustainable development by 2005 so as to reverse the loss of environmental resources by 2015
6. Enrol all children in primary school by 2015
7. Make progress toward gender equality and empowering woman by eliminating gender disparities in primary and secondary education by 2015 (Marker et al., 2002).

It is also suggested by Marker et al. (2002) that ICTs may be used by the multilateral and bilateral development agencies to share knowledge and experiences more efficiently. ICTs may also help the agencies to communicate better with their partners in developing countries, allowing views of people in developing countries, including the views of the poor, to be brought into the international debate on poverty and development (Marker et al., 2002).

2.3.2 Critical views

Alongside the optimists who believe ICTs play a significant role in developing countries, there are concerns about its efficacy. A shared concern of Keniston,

Dagron (cited in Arunachalam, 2002), Senyak and Fong (2000), Lall (2002, p.101) and Verzola (2002) is that governments and organisations have too much faith in the positive effects that ICTs may bring to developing countries. Kenneth Keniston, Director of the MIT-India programme quoted by Arunachalam (2002) states:

Groups as diverse as the United Nations, the G8 nations, Foundations, national, state and local governments, and private companies seized upon the hope that the use of ICTs could enable even the poorest of developing countries to ‘leapfrog’ traditional problems of development like poverty, illiteracy, disease, unemployment, hunger, corruption, social inequalities so as to move rapidly into the modern Information Age.

Keniston’s notion of traditional problems of development is supported by Senyak and Fong (2000) and Kenny et al. (2000) who note that while organisations commit to removing the digital divide, it is important to acknowledge that there are also fundamental inequities in distribution of, for example, wealth, education, health and housing. Senyak and Fong (2000) argue that organisations and governments focus too much on the access to computers while they point out that access in itself will not, for example, teach people how to read or write or get people jobs. The gap in opportunities and privilege is much deeper than the gap in accessing ICTs. Robert Verzola (2002) supports this view and argues that governments and organisations often discuss ICTs as class neutral, believing ICTs to be as useful to the poor as to the rich once they become accessible to all. Furthermore, he states that while optimists often cite Internet growth trends in trying to project that technology will eventually be accessible to all, access to the Internet in developing countries still ranges from less than one to five per cent of the population.

Gumucio Dagron, cited in Arunachalam (2002) as a leading expert in development communication, explains that the idea of installing and applying modern technology to reduce poverty in developing countries is not new. Misguided international cooperation agencies have, in the past, tried to introduce modern technology in an attempt to industrialise rapidly the third world. Kuramoto and Sagasti (2002) suggest that many of the initiatives for development cooperation in the last 50 years were inspired by the Marshall plan, which involved providing financial and technical assistance to Europe after World War II. Kuramoto and Sagasti (2002) suggest that, although the Marshall plan was considered to be very successful, many similar

technical assistance programmes have had little positive impact in developing countries. They say, further, that countries have become dependent on the programs to support their production systems and have lost indigenous knowledge trying to implement foreign solutions. Arunachalam (2002) notes ICT projects where developing countries are provided with computers. In such cases, he suggests, the only winners are the hardware and software companies and not the recipients, who are ill equipped to employ the computers in any gainful manner.

Sanjaya Lall (2002, p.101) argues that governments and organisations have an oversimplified view of how developing countries may be industrialised with “market-friendly” policies. He explains that this view comes from the successes of the export-oriented newly industrialised economies in East Asian, where “market friendly” policies means international trading, flows in investment and technology and government involvement is removed. He then points out that countries differ in their ability to handle globalisation and competition internationally. One example to illustrate such differences is that of growing disparities in incomes between countries where income per capita in the richest 5 per cent of all countries was 30 times higher than in the poorest 5 per cent in 1960 while the equivalent ratio had grown to 74 in 1997.

Senyak and Fong (2000) argue that technology, by itself, will by no means make gaps in wealth or opportunity disappear. Conversely, they argue new technologies may be expected to continue to advantage the rich instead of the poor. To illustrate this, they state that in 1983-1995, at a time when there was a significant rise of PC and web users, there was a 17 per cent growth of inflation-adjusted net wealth for the richest 1 per cent of Americans while the poorest two fifths of Americans saw an equivalent adjusted reduction of 80 per cent. Furthermore Marker et al. (2002) explain in their report that because the rich are more likely to have more access to ICTs than the poor, the gaps in income, knowledge, skills and social inequities may become even wider.

George Caspary (2002) points out that there is not yet much evidence of success in ICTs for development. He reveals a major problem in that the private sector, particularly in the rural areas of developing countries, has shown little interest in investment in ICTs. Such lack of local private investment leads to difficulties for governments of developing countries in fundamental decisions of whether to spend

money on ICTs or, for example, on education and healthcare or food supplies. Malik and Waglé (2002, p. 91) believe that groups of local people should participate in such decisions. Even when those groups may have different interests, their involvement leads to mutual understanding, higher ownership and consequent acceptance of the decisions made. Whilst the decisions may be fundamental in concept, they are not mutually exclusive in practice. Often, a shortage of food and other resources may be heavily dependant upon a lack of focussed IT facilities. Afele (2003, p. 127) points out the following:

In reality, the issue is not a choice between food and IT, but how the two affect each other. ... The two aspects of the food crises of poor communities-quantity and quality-result from a lack of improved farm inputs and processing methods, and both could be addressed in knowledge sharing systems that are facilitated by IT.

With such co-dependencies as exist between the application of technology toward improvements in production of local resources, international agencies supporting ICT projects need to communicate sufficiently and adopt those strategies appropriate to link the co-dependants.

Marker et al. (2002) discusses that the international communities are not sharing their information efficiently enough and that there are many overlapping efforts. Claudia Sarrocco (2002) also stresses the need for international cooperation to share 'best practices' in the use of ICTs. Furthermore Marker et al. (2002) identify a need for wider strategic thinking in development within the international community and to avoid concentrating on the use of specific ICTs.

2.3.3 Strategies for the use of ICT's in development

Mark Malloch Brown (cited in Arunachalam, 2002) believes that the scepticism about whether providing access to ICTs may assist in poverty reduction is due, largely, to the number of unsuccessful ICT projects carried out in developing countries. A high proportion of these, Brown says, have failed to consider important local social and cultural issues. Roger Harris (2002) agrees with this view and adds that, when projects fail, often the technology is blamed and not the people in charge of the projects. He argues that it is critical to have a well-defined development

strategy when using ICTs for development purposes. Furthermore, even though he recognises that the different capabilities of ICTs may be useful to have in mind, he argues that clear development targets must be formed before suggesting any particular type of ICTs.

Gómez and Casadiego (2002) points out the importance of involving local people and organisations from the start in ICT projects. They propose that such involvement enables ICTs to be used as a tool that may assist in creating concrete solutions to the real problems of the poor. The importance of involving the community in projects is also stressed by Rutger Rozendal (2002). Rozendal points out that it is more likely that the projects will be accepted better when the local community is involved.

When undertaking ICTs projects in developing countries Gómez and Casadiego (2002) recommend starting small and maintaining the same pace as the community, even though the pace of the community might be slow. They argue that it is the quality in development process that is important, not the quantity. It is also recommended by several (Gómez & Casadiego, 2002; Harris, 2002; Ellerman, 2002, p.54) to use ICTs to build on something that already exists in the community rather than starting something from the beginning for which the community itself has not expressed a need. Gómez and Casadiego (2002) argue that many ICT projects attempted to start from scratch and then force their solution on the community. They describe that an extreme example of this is the so-called “intelligent containers”, where containers filled with computer equipment have been dumped on communities in developing countries in an attempt to solve development problems. They argue that projects like these would be far more helpful when performed in cooperation with an organisation that already exists in the community, for example a public library or a school.

Another opinion shared by several (Gómez & Casadiego, 2002; Harris, 2002; Sarrocco, 2002) is that it is important to ensure that inequities based on gender, language, religion, ethnic background and social class are considered in projects so as to present all individuals with equal opportunities. Furthermore Gómez and Casadiego (2002) and Batchelor (2002) argue that whilst having access to the Internet offers great opportunities to retrieve vast amounts of information and to collaborate across borders, the information on the Internet often has to be translated so that people in a community may understand it. Claudia Sarrocco (2002) shares

this opinion and argues that the development of local content must be given high priority because it would encourage people to use the Internet and, hence, enhance the application of ICTs for educational purposes. She also points out that development of local content on the Internet is an important part of preserving cultural heritage.

Another issue stressed by Claudia Sarrocco (2002) and Roger Harris (2002) is the importance of providing some education in how to use ICTs. Claudia Sarrocco (2002) argues that providing basic literacy and ICT education should be a part of every information technology strategy because it is important in ensuring that people using ICTs benefit from it.

2.4 The significance of ICT for development in rural Australia

This section will discuss the ways in which ICTs may be used in rural areas in Australia, the critical views and the strategies for the use of ICTs in rural and remote areas in Australia.

2.4.1 The ways in which ICTs may be used in rural areas in Australia

For people within rural communities in Australia, long distances affect their access to information, markets, education and social life (White, Bradbury, & Malafant, 1995). Rosie Simpson (2001) explains that there has for a long period of time been a decline in the traditional trade of agriculture in Australia, which has led to higher unemployment in rural communities. She argues that ICT might help reverse this trend for people living in rural areas in Australia by giving access to new and larger markets, to reach the outside world faster at a lower cost and to present fresh opportunities to work in fast-growing enterprises.

According to the Human Rights and Equal Opportunity Commission (2000b) there were 3.2 million full-time students who attended school in Australia in 1998. Of these, between one-quarter and one-third of students attended school or undertook distance education in rural and remote areas. The report found that there were some Aboriginal children in small communities in the Northern Territory and Queensland

who had no access to primary schooling. The Human Rights and Equal Opportunity Commission (2000a) suggests that ICTs may be used to increase access of information and reduce isolation for rural and remote students. In like manner Hopkins and Ewing (2002) argue that ICT gives opportunities to reduce isolation and increase communication. They note that isolation may be geographic in nature, where long distances separate people who wish to communicate. They also argue that ICTs may be used to for people to communicate with government and elected officials and, additionally, to access online services such as banking. Lepa and Tatnall (2002) also discuss isolation, in particular the isolation of older people living in rural areas in Australia. They explain that over the next 25 years the proportion of older people in Australia will increase dramatically and that numbers of people aged over 65 years of age living in non-metropolitan areas have increased dramatically in the last decade. They suggest that older people living in rural areas may benefit from using ICT for their information needs, since they may not have the same access to services, e.g. transport and general infrastructure, as those living in larger cities.

Parkinson, Hudson and Collins (2002) argue that health services may be extended to people living in rural and remote areas through the use of communication technology known as telehealth. Telehealth may be used to deliver healthcare and to exchange healthcare information over distances. Patient information, for example, x-rays, computer tomography (CT) scans, ultrasound images, patient interviews and examinations may be transferred across computer networks. They explain that due to limited availability of health services in rural and remote areas in Australia, telehealth is in some use, but lack of communication infrastructure and training has limited that use.

2.4.2 Critical views

Steer and Turner (2002) argue that although government at both federal and state levels in Australia have funded programs and initiatives aimed at ensuring that regional Australia benefits from ICTs, it still is unclear whether the impact of ICTs are positive. They argue that impact measurement must include social, community and environmental indicators as well as economic indicators and not rely solely on economic indicators, which often has been the case. Sue Spencer (2002) supports

this view, explaining that evaluation of ICT programs implemented in regional Australia will become more important to decision makers. She argues that it is not enough to measure national quantitative data or increased infrastructure capacity to be informed of whether a region is participating effectively in a global information society.

2.4.3 Strategies for the use of ICTs in rural Australia

Rosie Simpson (2001) identifies key factors to enable communities in rural Australia to benefit from ICTs, including:

- involvement of members of the community when making plans for ICT projects so that the community feels a sense of ownership.
- identification of the needs of the community and the ways in which online tools are going to be used before choosing ICTs. ICTs should be seen as tools that may be used to create concrete solutions.
- planning with realistic goals and descriptions of how they might be achieved.
- ensuring that the plan fits with government policies and other stakeholders to ensure funding is available.

Venkatesan et al. (2002) argue that in order for businesses and communities in regional and rural Australia to benefit from using the Internet, some information available via the Internet needs to be more localised and customised to their needs. They found in their study that the information on the Internet was useful in a general sense but important fundamental and business information was lacking, such as local weather and economic news. They argue that even though technical infrastructure is important, a focus should be placed on the human and community elements.

2.5 Summary of the literature review

This chapter described the term “digital divide” and how the digital divide is perceived to exist between and within countries, including Australia. The significance of ICT for development in developing countries and in rural Australia was then discussed. In addition, some of the ways in which ICTs may be used in developing countries and in rural areas of Australia were presented and also some of the critical views of this issue were described. Finally, some of the strategies for the use of ICTs in development in developing countries and in rural Australia were described.

3 RESEARCH DESIGN

3.1 Method

The study was qualitative and a multiple case study approach was used. Within the case studies, methods of questionnaires and document analysis were used.

The first part of the study was evaluative and the second part comparative. In the first part each case was investigated individually and a case narrative was written for it. In the second part of the study the cases were compared. The target population of this study were the people who are responsible for the four identified ICT projects, project managers or other persons that are involved in the projects or project teams.

The intention was to use interviewing when possible. However, no interviews were conducted due mainly to the geographical location of the project managers and members. Questionnaires were used instead in these cases. The questionnaires that were used are included in Appendix 1 of this document.

3.2 Procedures

The first step was to contact people identified as being involved in the projects to retrieve relevant project documents such as project reports, strategic documents or other relevant documents. Documents were also retrieved from project websites. Step two was to send questionnaires to people involved in the projects. When the evidence from these steps was collected data analysis began.

3.3 Data analysis

Dealing with the research question components of:

1. *What are the aims and outcomes of ICT projects sponsored by Sida in developing countries and what strategies are used?*
2. *What are the aims and outcomes of ICT projects sponsored by the Australian government in rural Australia and what strategies are used?*

Evidence collected from the questionnaires and documents was used to construct case records for each case. A case record is, according to Patton (1987, p.149):

A condensation of the raw case data organising, classifying and editing the raw case data into manageable and accessible package.

Then a case study narrative was written for each case. A case study narrative is, according to Patton (1987, p.149):

The case study is a readable, descriptive picture of a person or a program that makes accessible to the reader all the information necessary to understand that person or program. The case study is presented either chronologically or thematically (sometimes both). The case study presents a holistic portrayal of a person or program.

The cases were then evaluated in terms of whether the projects lead to human development. Gómez and Casadiego (2002) defined human development as:

Promoting democracy with social justice, economic prosperity with equity, and realisation of the full human potential.

Several authors (Harris, 2002; Gómez & Casadiego, 2002; Rozendal, Ellerman, 2002; Sarrocco, 2002; Batchelor, 2002; Simpson, 2001; Venkatesan et al., 2002) outline strategies for the use of ICTs for human development. These ideas were the basis for evaluation in this study. They include, in short:

- To have clear development targets formed before suggesting any particular type of ICTs (Harris, 2002; Simpson, 2001).
- To involve local people and organisations from the start in ICT projects (Gómez & Casadiego, 2002; Rozendal 2002; Simpson, 2001).
- To start small and keeping the same pace as the community (Gómez & Casadiego, 2002).
- To use ICTs to build on something that already exists in the community (Gómez & Casadiego, 2002; Harris, 2002; Ellerman, 2002, p.54).

- To ensure that inequities based on gender, language, religion, ethnic background and social class are considered in projects to make sure that all individuals have equal opportunities (Gómez & Casadiego, 2002; Harris, 2002; Sarrocco, 2002).
- To develop local content on the Internet (Gómez & Casadiego, 2002; Batchelor, 2002; Sarrocco, 2002; Venkatesan et al., 2002).
- To provide education in how to use ICTs (Harris, 2002; Sarrocco, 2002).

Dealing with the research question component of:

3. *How do the strategies used by Sida compare to the approaches taken by the Australian government?*

After the cases were evaluated according to the criteria described above, they were compared on every issue that formed the basis for evaluation and a cross case analysis was written. Finally, when strategies used by the Swedish and the Australian government were identified, they were compared for similarities and differences.

3.4 Summary of the research design

This chapter has described the method, procedure and data analysis used in this study. The method used was a multiple case study approach with sub-methods of questionnaires and document analysis. The steps of how information was retrieved and evidence collected were then described. Finally, how the information was analysed was described and the strategies from literature that were a basis for evaluation were outlined.

4 FINDINGS

This chapter will describe and discuss the findings of this study. In the first part of this chapter the goals and strategies of the Swedish International Cooperation Agency (Sida) are described, followed by narratives of two of the projects that Sida sponsor, the SchoolNet Namibia project and the ICT project for the public universities of Nicaragua. The goals and strategies of Networking the Nation (NTN) will then be described, followed by two of the projects that NTN funds, the Outback Telecentre Network Inc. and the NetWorks For You program. In the second part of this chapter, the evaluation of the projects is presented and followed by a cross case analysis and a comparison of strategies.

4.1 The Swedish International Development Cooperation Agency (Sida)

Sida is the government agency in Sweden that administers most of the Swedish contributions to international development cooperation. It reports to the Swedish Ministry for Foreign Affairs and has 764 employees and offices in 39 of its partner countries (Sida, 2003g). The total amount of the contributions Sida made in 2002 was 19.4 billion Swedish crowns. Sida's overall goal is to improve the standards of living of poor people and, in the long term, eradicate poverty (Sida, 2003g).

4.1.1 Mission and goals

Sida's mission is to give poor people a better life and that includes supporting economic growth, democracy and equality between women and men. Sida has activities in more than 120 partner countries in Africa, Asia, Latin America and Central and Eastern Europe (Sida, 2003h). The contributions are made in several different fields such as education, health care, support for small enterprises, housing, rule of law, research, infrastructure and trade agreements. Support is also given for

emergency assistance for people affected by wars and disasters. Sida's budget and the focus of cooperation are decided by the Swedish Parliament and Government (Sida, 2003h). Sweden, as well as many other countries in the world, supports the concrete goals adopted at the UN Millennium summit meeting. One of these goals is to halve the proportion of extremely poor people in the world by the year 2015. Other goals involve health, education and equality between women and men (Sida, 2003b).

4.1.2 Sida's strategy for IT in development cooperation

Sida believes that ICTs may provide opportunities for the poor people of the developing world and help developing countries to be a part of the global economy (Sida, 2003c). But they also see the risk that the ICT revolution may increase the gaps between the rich and the poor countries and between the rich and the poor people in the same country. Sida argues that developing cooperation agencies may play an important role at this early stage of introducing ICT in developing countries by providing the necessary tools for utilising ICT and they have developed a strategy for IT in development cooperation (Sida, 2003c).

Sida's vision for IT in development cooperation is:

“Sida supports the rapid integration of IT in the recipient countries in order to improve communications and the exchange of information, both within the countries and globally” (Sida, 1999).

Some of the conclusions of the strategy are:

- Sida shall integrate IT as a natural and important part in all its cooperation programmes.
- The development cooperation has the special task to make sure that IT is promoted for the benefit of the poor.
- Sida shall seek to develop IT in development cooperation as a strategic area for Swedish development cooperation.
- Sida will actively participate in international collaboration regarding IT in development cooperation and collaborate with other donors, organisations and companies in Sweden and developing countries (Sida, 2003i).

4.1.3 Relevance for poverty reduction

The central objective of Sida's contributions is poverty reduction, which means that poverty reduction also is the main objective for the contributions made in the area of IT in development cooperation. Sida recognises two ways in which poverty may be reduced and they are with direct or indirect measures (Sida, 1999). With the indirect measures they believe that IT may be used as an instrument, which increases productivity. This means to broadly integrate IT in society. With the direct measures they believe IT may be used to give poor people access to information and communications. They believe that poverty reduction may be achieved this way because of the fact that the lack of information and communication is an obstacle to achieving economic growth and political influence by poor people (Sida, 1999). Increasingly it is becoming simpler and less expensive to build IT infrastructure. Also it is, increasingly, becoming easier to reach remote places through the use of mobile networks and satellite technology. These changes mean that building, for example, Telecentres, where people living in rural areas or in city slums may access information and communications is relatively cheap (Sida, 1999).

4.1.4 Plan of action

Sida's plans of action include:

- Knowledge of IT for development shall be mainstreamed at Sida through training programmes and organisational measures.

- Special funds shall be allocated to stimulate IT for development.

- Sector strategies/analyses shall be made in certain sectors, commencing with an IT strategy for research cooperation and an analysis of the possibility of using IT in Sida's support for democracy and human rights.

- A study shall be made of the possibility of establishing a centre of competence in Sweden.

- A study shall be made of organisational forms for channelling support for the development of Multi-Purpose Community Tele-Centres (MCTs) (Sida, 1999).

4.1.5 Sida funded ICT Projects

Sida sponsors universities in developing countries to access the Internet with approximately 30 million Swedish crowns per year. The projects usually start with providing assistance for making an IT policy and an IT master plan. In addition to technical infrastructure, human resource training, development of IT-based services, distance learning, policy and organisation development are also regarded as being important parts of the projects (Sida, 2003d). So far, Sida sponsors projects in Mozambique, Sri Lanka, Tanzania, Uganda, Zimbabwe, Vietnam, Nicaragua and Namibia. University backbone networks together with local area networks at departmental and or faculty level are being implemented in Mozambique, Sri Lanka, Tanzania, Uganda and Zimbabwe (Sida, 2003d).

The operations funded by Sida include

- Funding operations in international organisations (InfoDev, Bellanet).
- A focus on IT infrastructure for the partners in cooperation of the Department for Research Cooperation (SAREC).
- International training programmes, cultural support and certain isolated contributions.

Research cooperation accounts for the largest part of the support. This support has mainly been provided for connectivity (Internet connections) for partners in cooperation (Sida, 1999).

4.2 SchoolNet Namibia

The SchoolNet Namibia project is one of the projects supported by Sida. This section will describe the background of the project, some of the technology used, the training and support they provide, the partners and sponsors of the project and some of the SchoolNet Namibia's projects.

4.2.1 Background

There are 1545 schools in Namibia, of which 292 offer secondary education. In Namibia there are approximately 600,000 students and over 18,000 teachers. However, only 30 per cent of the schools in Namibia have telephones, electricity and library resource centres (SchoolNet Namibia, 2003c). SchoolNet Namibia is a not-for-profit association that started operations in February 2000. SchoolNet's main objective is to introduce computer technology and Internet access to all schools in Namibia with the help of local and international stakeholders (SchoolNet Namibia, 2003c). Accordingly, its programme involves computer recycling, installation, back-up support and helpdesk services and provision of peer-to-peer training by local volunteers to students and teachers at schools (SchoolNet Namibia, 2002, p.2). Since February, 2000, almost 250 schools have received free hardware, free training on the Linux operating system and subsidised telephone service to enable the schools to connect to the Internet (SchoolNet Namibia, 2003d).

4.2.2 Technology

SchoolNet manages computer network installation projects in schools on the behalf of the Ministries of Education, non-government organisations, donors and private sector companies (SchoolNet Namibia, 2002, p.3). The projects include the provision of freeware operating systems (e.g. Linux) and software applications, using a combination of new and refurbished computers. The installations are done by SchoolNet volunteers and typically include one server and 3-10 workstations, uninterruptable power supply, ethernet hub, cabling and modem per site (SchoolNet Namibia, 2002, p.6). Furthermore, SchoolNet provides subsidised Internet access to

schools using both landline and wireless solutions, powered by solar electricity, where necessary. SchoolNet has established an Internet Service Provider (ISP) with a reduced-cost 0700 national number for dial-up clients, especially for those who endure remoteness and/or poor Telecom infrastructure and a 0800 toll-free number for help-desk and technical support services (SchoolNet Namibia, 2002, p.6).

SchoolNet offers teachers and students a scheme to buy affordable computers, printers, scanners, digital cameras and software through its business partner, NetDay Namibia (SchoolNet Namibia, 2003c). SchoolNet Namibia also serves as an outsourcing agency to disadvantaged schools in Namibia by requesting redundant computer equipment from the donor, public and private sectors, locally and internationally (SchoolNet Namibia, 2002, p.2). SchoolNet found that outsourcing computer equipment for local and international companies and organisations is important because many of these organisations do not have the time, means or capacity to fix up old equipment for schools. In addition, it is often the case that the organisations are unable to provide back-up service or support to these schools (SchoolNet Namibia, 2002, p.2).

4.2.3 Training and Support

SchoolNet offers free support, maintenance and helpdesk services by SchoolNet volunteers (SchoolNet Namibia, 2002, p.6). The volunteer program is called “SchoolNet Namibia’s Kids on the Block” program and is divided into two areas: software and hardware. Volunteers in the software area go through a free training program and are then offered to work as a resident trainer in a school serviced by SchoolNet Namibia (SchoolNet Namibia, 2003a). In order for a school to receive a resident trainer, they must provide the trainer with accommodation and food for the length of the stay, which endures, typically, between eight and twelve weeks (SchoolNet, 2003e). Volunteers in the hardware area may, after the free training program, apply for a full-time, fully paid job in a team that installs networks in schools (SchoolNet Namibia, 2003b).

4.2.4 Partners and sponsors

SchoolNet has been permitted to create alliances with a large number of partners both within and outside government and has received support from individuals, public and private organisations (SchoolNet Namibia, 2003c). Among others, the internet community (ISPs, computer companies, Telecom Namibia, Nampower) have supported SchoolNet with the motivation to expand internet use in Namibia, which may also lead to commercial opportunities in the future for the internet community (SchoolNet Namibia, 2003c). In addition to its work with government and national organisations, SchoolNet has also received international support. In May 2001, a three-year agreement was signed between the Swedish International Development Agency (Sida) and SchoolNet. Sida supports SchoolNet with 17,9 million Swedish Crowns (SchoolNet Namibia, 2002, p.4).

4.2.5 SchoolNet Projects

In addition to connecting Namibian schools to the Internet, SchoolNet also manages other projects (SchoolNet Namibia, 2003c). One example is the Impact of Aids in Katura project, a website project which was developed by a team of SchoolNet web developers. The site is about HIV/AIDS in Katura and is based on research done at different places in Katura. The site includes information on how to prevent being infected by HIV/AIDS, how to take care of people who are infected, and provide treatment. The site won a Global Youth Incubator award at the Global Junior Challenge exhibition in Rome in December 2002 and SchoolNet is now planning to convert its community impact research project into a module that students may use to study and report on the impact of the AIDS epidemic in their own towns and villages (SchoolNet Namibia, 2003c). Another example is the Domestic Violence Advocacy Campaign (DVAC) which is an initiative aimed at raising public awareness of domestic violence issues, particularly among those young people in rural areas (SchoolNet Namibia, 2003c). Part of the campaign consists of radio and video productions in a range of indigenous languages and a mural-painting project involving school children in selected rural locations. The British Government, the British Council and the support from local and international businesses, are financing

these projects. Another important part of the campaign is the web site competition for students at primary and secondary schools (Grade 1 - 12) in Namibia. It aims to involve students actively in thinking about positive and creative solutions and healing processes to deal with the problem of domestic violence in Namibia (SchoolNet Namibia, 2003c). Two of the main objectives of the competition are to encourage students to learn how to use the Internet and to build their own web sites. In the process, the students will come to understand the power of the Internet as a tool for information gathering and dissemination. The prizes in the web site competition are being funded by the Austrian Development Cooperation, NetDay Namibia, FreeCom and local businesses. Prizes include computers, scanners, modems, Internet subscriptions, battery-free wind-up radios and torches (SchoolNet Namibia, 2003c).

4.3 ICT project for the public universities of Nicaragua

The ICT project for the public universities of Nicaragua is another project supported by Sida. This section will describe the background of the project, the objectives of the project, the current situation at the universities, the expected outcomes of the project and the partners and sponsors involved.

4.3.1 Background

In Nicaragua there are four public universities, 27 private universities and 2 higher technical centres. In 1999, the total number of students in the four public universities was 36,339 (Ernberg & Arce, 2002, p.36). The ICT project for the public universities of Nicaragua is funded by Sida and aims to interconnect these four public universities, Universidad Nacional Agraria (UNA) in Managua, Universidad Nacional Autónoma de Nicaragua (UNAN-León) in León, Universidad Nacional Autónoma de Nicaragua (UNAN-Managua) in Managua and Universidad Nacional de Ingeniería (UNI) in Managua through fiber optic cable (Ernberg & Arce, 2002, p.36). The vision of the ICT project is to involve the public universities in a wide, reliable, and stable information and communications network to be used for global communication purposes as well as the improvement of communications and

exchange of information and knowledge between local and international institutions (TIC Nicaragua, 2002e, p.1). The project has three committees with different responsibilities. The first committee is the Rectors' Committee, comprising the rectors of the four universities. It is responsible for discussing, refining and reaching agreement on proposals received from the other two committees (TIC Nicaragua, 2002d, p.1). The second committee is the Inter University Committee, which is composed by the ICT project coordinators of each university and a general coordinator. This committee has administrative power and is able to make executive decisions. The third committee is the Institutional Committee, comprising an ICT project coordinator and assisting personnel in both software and infrastructure (hardware) support. This committee has the executive responsibility of the project in each university (TIC Nicaragua, 2002d, p.2).

4.3.2 Objectives

The ICT Project for the public universities of Nicaragua has the following general objectives:

- To strengthen the national capacity ICT so that the public universities of Nicaragua can become more active members and beneficiaries of the global information network.

- To broaden the level of access of the university community to the national and international information and communications facilities available.

- To promote the use of the global information in higher education and in projects or initiatives of social or productive benefit in Nicaragua through the participation of the public universities (TIC Nicaragua, 2002e, p.2).

4.3.3 Current situation at the four universities

Together the four universities have 36000 students, 2250 academic staff (lecturers and researchers) and 4000 support staff (management and administration, service support centres such as libraries, computing centres, student health centre, sport

facilities, etc). As such, the group represents a major national resource for developing the human potential of Nicaragua (TIC Nicaragua, 2002f, p.6). All of the four universities are connected to Internet through dedicated lines and/or dial-up. The UNI has an ADSL connection with 512 Kbps up-stream. The UNA has only dial-up connections. The UNAN-Managua has a 128 Kbps radio link and dial-up connections. The UNAN-León has a dedicated 128 Kbps line plus dial-up connections (Ernberg & Arce, 2002, p.36). All the four public universities have various computer labs, connected in LANs, except UNA, which has two small LANs for the administrative area and for the central library. The number of PCs for education and research vary between about 100 in the UNA with 2,685 students and some 500 in the UNAN- Managua with 17,800 students (Ernberg & Arce, 2002, p.36). The UNA is physically located on one campus only. The UNI does have two campuses, both in Managua and UNAN-Leon three, all in Leon. The operations of UNAN-Managua are spread over 10 campuses distributed over the whole country (TIC Nicaragua, 2002f, p.6). In the public universities it is mainly the 14 per cent of students, in informatics-related courses, such as system engineering, computer science, etc., who have access to the computer labs (Ernberg & Arce, 2002, p.36).

4.3.3.1 UNA

The UNA is the smallest of the group of 4 universities. At present it serves a community of 2,600 students. The UNA is the only state university of agriculture in Nicaragua. At present internet/e-mail service at UNA are fairly small. The university wants to set up common Internet facilities serving the entire campus (TIC Nicaragua, 2002f, p.10). They believe having access to Internet will improve communication with institutions in the country, the region and abroad and it will also give them access to databases, libraries and education material. The UNA also wants to use the Internet for publishing (articles, thesis documents, but also announcement of seminars and newsletters informing local farmers on prevention of actual agricultural forestall diseases) (TIC Nicaragua, 2002f, p.10). Furthermore, the UNA would like to set up a network that connects all the academic and administrative divisions. The internal network is expected to improve communications between the administrative and academic divisions. It is also expected that improved internal communications supported by an adequate data communication network will result in reduced

processing cycles for administration and decision making (TIC Nicaragua, 2002f, p.10). Additionally the UNA wants to set up an academic register management information system. Currently, they have severe problems with the registration of student and curricula data, which is now implemented through a manual system with long processing cycles. An academic register system is expected to reduce these processing cycles and make information concerning fees and examination results more readily available (TIC Nicaragua, 2002f, p.10).

4.3.3.2 UNAN-Managua

The UNAN-Managua is by far the largest of the four universities with almost 17,800 students spread over 10 campuses over the whole country. The UNAN-Managua is a general university and its academic sector consists of 4 faculties (Health Science, Economy, Education, Sciences), 6 research institutes and 4 regional. UNAN-Managua wants to provide Internet access on a larger scale to all of its 10 campuses (TIC Nicaragua, 2002f, p.11). At present, there are no networking facilities on 9 of the campuses and none between all of the campuses. The UNAN-Managua expects that having access to the Internet will help them to promote the services of the university more easily through publishing on the web. They also expect to improve the overall institutional performance by having Internet/ e-mail facilities available for internal, external and international communication (TIC Nicaragua, 2002f, p.11). Furthermore, giving the students access to the Internet as part of the curricula is felt to be an absolute must. They also want to set up an adequate academic register management information system. Severe problems exist with the procedures and related data processing when students change from one curriculum to another (for instance when students change from one campus to another). There is also a need for a computerised library information system (TIC Nicaragua, 2002f, p.11). At the moment, the lack of such system is holding back further expansion of the library collection and limiting student and staff possibilities for accessing catalogues and materials available at its own but also other external library and documentation centres (TIC Nicaragua, 2002f, p.12).

4.3.3.3 UNAN-León

The UNAN-León University is the third largest of the four universities with 6880 students spread over three campuses in the city of León. The UNAN-Leon offers a wide spectrum of curricula varying from engineering to dentistry. Its academic sector consists of 8 faculties: engineering, mathematics, sciences, law and social science, health science, dentistry, chemistry and educational sciences (TIC Nicaragua, 2002f, p.12). UNAN-León wishes to improve its facilities by providing access to the Internet to students and academic staff. This improvement is considered to be very important in order for ongoing scientific research programs and academic outputs to be delivered. Currently, due to the lack of access to the Internet, the quality of some research programs is decreasing (TIC Nicaragua, 2002f, p.13). Another area that the UNAN-Leon regards as important is the implementation of a computerised financial information system. The current financial system has the problems of duplication of data in various registers and sections and backlogs in processing, all of which means that the information available is not up-to-date and not reliable. UNAN-León also wishes to improve its computerised academic register information system (TIC Nicaragua, 2002f, p.13). The system they are using now has problems in that the path for processing of data is slow and no integration exists between the sub-systems for pre-enrolment and enrolment. Also, difficulties exist with the processing of student data of graduated students. The university needs a more reliable system to control these situations better and to process the academic data more rapidly (TIC Nicaragua, 2002f, p.13).

4.3.3.4 UNI

The UNI is the second largest of the four universities with 9,000 students spread out over two campuses in Managua. The UNI is oriented towards engineering and technology. UNI wishes to provide Internet access on a larger scale to its 2 campuses, by upgrading the existing computer capacity for research and education to 1 PC per 3 teachers and 1 PC per 20 students (TIC Nicaragua, 2002f, p.13). All PC's should be connected to Internet and email. UNI feels that not having high capacity access to Internet is holding them back in terms of becoming a part of the global knowledge community and in bringing its own academic production to levels

matching common quality standards (TIC Nicaragua, 2002f, p.14). They also wish to set up a computerised library information system that will provide access to its own electronic catalogue and databases and to similar resources available at other universities in and outside the country. Another area for development is the implementation of ICT based distant learning programs. At present there is limited education available in cities outside Managua, which leads to a migration of rural population to the capital. UNI wishes to set up distant educational programs about prevention of natural disasters, community development and community projects in dedicated areas outside Managua (TIC Nicaragua, 2002f, p.14).

4.3.4 Expected outcomes

The expected outcomes of the ICT project for the public universities of Nicaragua are:

- Staff and students will be exposed to ICT.
- Cost efficient communication with researchers in other parts of the country and at international level.
- Staff and students will get access to external databases and electronic information resources, hence a greater access to scientific information.
- Availability of distant learning programs.
- Publishing of services and research results on the Internet, as an instrument of promotion.
- Access to databases through the WWW.
- Improve communication with external organisations.
- Improve internal communication.
- Facilitate the exchange between the university authorities (TIC Nicaragua, 2002f, p.9).

4.3.5 Partners and sponsors

Sida has funded the stage of preparation and documentation of policies, master plans on Information and Communication Technology of each public university in Nicaragua, assigning the role of counterpart to the University of Lund, Sweden (TIC Nicaragua, 2002e, p.1). Sida funding also includes support for the setting up of comprehensive data communication infrastructures, as well as providing full Internet connectivity, the setting up of information systems supportive to management, education and research (Library Information Systems, Academic Register Management Information Systems) (TIC Nicaragua, 2002f, p.3). The funding also includes supporting its counterpart in acquiring necessary ICT expertise for implementation, exploring, operating and maintaining comprehensive ICT services and infrastructures. A quick scan survey at the four universities, conducted by the Delft University of Technology (DUT), the Netherlands, was also supported by Sida and by the Dutch MHO program for inter-university cooperation (TIC Nicaragua, 2002f, p.3).

4.4 Networking the Nation (Australia)

The Commonwealth Government launched the NTN program in 1997 with the objective that all Australians would be able to access and enjoy the benefits of new and existing telecommunications facilities and services (DCITA, 2002b). In the beginning, the NTN program was funded with \$250 million from the sale of the first set of shares in Telstra. The funding was called the General program and was divided between the States and Territories in Australia. The different States and Territories were given funding in proportion to the State's population living outside the capital cities (DCITA, 2002a).

The funding was divided in the following way:

- New South Wales - \$37.4 million
- Victoria- \$28.5 million
- Queensland - \$53.1 million

- Western Australia - \$26.5 million
- South Australia - \$26.5 million
- Tasmania - \$58 million
- Australian Capital Territory - \$4 million (DCITA, 2002b).

In 1999, the NTN program received another \$214 million from the Social Bonus when a further 16 per cent of Telstra was sold. Of this:

- \$70 million was allocated to the Building Additional Rural Networks (BARN) initiative;
- \$45 million was allocated to the Local Government Program to assist local government authorities in regional Australia to provide online access to information and services including the Internet;
- \$36 million was allocated to the Internet Access Program to stimulate Internet service delivery in regional and rural Australia;
- \$20 million was allocated to the Remote and Isolated Island Program to improve telecommunications access for these communities;
- \$25 million was allocated for continuous mobile phone coverage on national highways;
- \$3 million was allocated for extended mobile telephone coverage – \$1 million each in WA, SA and Tasmania; and
- \$15 million was allocated for Connecting Tasmanian Schools (DCITA, 2002b).

Initially three of the programs, the General Fund Program, the Internet Access Program and the Remote and Isolated Islands Program had funding periods that concluded on June 30th, 2003. However, the funding period of the General Fund Program was extended for 12 months (DCITA, 2002a).

4.4.1 The NTN Program Objectives

The aim of the NTN program was to:

ensure that all Australians enjoy the benefits of new and existing telecommunications facilities and services and to assist the economic and social development of regional, rural and remote Australia. (Collins & Eccles, 2003).

This was to be achieved by funding projects that:

- enhance telecommunications infrastructure and services in those areas;

- increase access to, and promote use of, services available through telecommunications networks and;

- reduce disparities in access to such services and facilities. (Collins & Eccles, 2003).

4.4.2 Outputs of the NTN program

The NTN program has in total supported projects with around \$180 million. Of these the projects spent around \$55 million on equipment such as videoconferencing equipment, computers and for points of presence (Collins & Eccles, 2003). More than 111 websites have been established and contributions have been made to the development of around 220 software packages. Furthermore training was offered by 220 projects and more than 171 700 people were trained (Collins & Eccles, 2003). Videoconferencing equipment has been installed in around 390 locations. Public access facilities for the Internet were provided by 150 projects in around 1400 locations and around 40 projects established online services like billing, purchasing and information services. 730 full time employment positions and 830 part time positions have also been created (Collins & Eccles, 2003).

4.5 Outback Telecentre Network Inc.

The Outback Telecentre Network (OTN) project is one of the projects funded by NTN. This section will describe the background, vision and objectives, funding and outcomes of the project.

4.5.1 Background

The Outback Telecentre Network (OTN) project started in April 2000 (ORDO, 2003a). The main objective of the project was to build a network of telecentres in eleven towns across the Outback region of far west NSW, far northeast South Australia and far southwest Queensland. The purpose of the telecentres was to offer a range of technology services to residents, businesses and visitors (ORDO, 1999, p.2). The area is much larger than the whole of Europe and has a predominately Aboriginal population of over 50,000. Communities in the area are generally isolated with long distances from each other. The population of the communities in the area is declining and most areas have a high unemployment rate (ORDO, 2003d).

The project was at first managed by the Outback Regional Development Organisation Inc. (ORDO), which was established in 1996 under the then Federal Government's Regional Development Program (ORDO, 2003a). ORDO has several members, the Local Government (Central Darling, Wentworth, Balranald), NSW Dept. of Land and Water Conservation (Unincorporated NSW), Outback Areas Community Development Trust (Unincorporated SA), Water Management Boards, Progress Associations, Tourism bodies, Mining representatives (PASMINGO, etc.) and Aboriginal community representatives (ORDO, 2003a). After ORDO was established a regional strategy was developed, of which the highest priority was to enhance telecommunications and to address perceived pressing problems of lack of local education, training, and employment opportunities. Consequently ORDO applied and got its first funding from NTN in 1997 to conduct a study into telecommunications need and options for the region (ORDO, 2003a). In December 1999 ORDO received \$2 million from NTN to start the Outback Telecentre Network

project. After approval of the Implementation Plan in April 2000, ORDO created the Outback Telecentre Network Inc. (OTNI) to manage the project from then on (ORDO, 2003a).

4.5.2 Vision and objectives

The vision for the project was, according to the Outback region Telecentre Network Business Plan of 1999:

Outback region residents (and visitors) obtain, and take full advantage of effective, equitable and economical access to the increasing range of services and benefits offered by communication and information technology thus invigorating and extending the region's competitive advantages and enhancing the quality of life for all involved. (ORDO, 1999, p.5)

The goal was to build telecentres in strategic locations to offer services such as Internet access, training and support, videoconferencing, photocopying, faxing, scanning and other business services on a user pays basis (ORDO, 1999, p.7). The telecentres would also provide access to educational and telework opportunities. In addition, regional and local websites were to be developed to promote the region's attractions and products to the wider world, and to stimulate greater networking within the region (ORDO, 1999, p.7).

4.5.3 NTN funding

ORDO received \$12,000 NTN funding in 1997 to conduct a study into telecommunications need and options for the region. In September 1999 ORDO applied for more substantial funding from NTN and was approved \$2 million in December 1999 (ORDO, 2003c). In November 2000, ORDO received \$325,000 NTN funding for telecentres in Oodnadatta and Mintabie and \$120,000 for video conferencing units in ten NSW centres. Later \$24,000 was received for video conferencing units for Mintabie and Oodnadatta, \$12,000 for one in Yunta and \$130,000 for telecentre and video conferencing facility in Marree (ORDO, 2003c).

4.5.4 Outcomes

Telecentres were built in Balranald, Cockburn, Ivanhoe, Pooncarie, Tibooburra, Wanaaring, Wentworth, White Cliffs, Wilcannia and Yunta. Each centre installed at least 10 computers to meet the terms of TAFE course requirements (ORDO, 2003b, p.5). Maintenance of project equipment has been carried out by OTNI either directly through the technical officer or local contractors. All of the telecentres have surveyed their communities and have received positive responses about the value of the centres (ORDO, 2003b, p.5).

The Balranald centre opened in August 2000. The centre has a coordinator and a team of 5 or 6 volunteers working there (ORDO, 2003b, p.6). The centre offers technology, training and business services. The training involves one-on-one training in Internet and other applications. Much of this training has been conducted free of charge although the centre has also provided a lot of paid, formal training for groups and individuals in a range of IT and non-IT fields (ORDO, 2003b, p.7). Since the centre opened, users of the centre's services have increased and all services are still in demand but the centre does not provide income to guarantee self-sufficiency in its own right. However, recently, the centre has merged with other local businesses, which has lowered the operational costs of the centre (ORDO, 2003b, p.8).

The Cockburn centre opened in November 2000. The centre has a coordinator and 3 volunteers working there. The centre offers technology, training and business services (ORDO, 2003b, p.9). The centre has incorporated non-IT based training courses to complement IT based courses eg. welding, firearms etc. During the last 6 months of 2003, there has been no training programs due to impact the drought has had on Cockburn (ORDO, 2003b, p.11). However the centre has organised a major regional project – Rod Esam's "Bringing communities together back outback tour" that visited all of the communities that are a part of the Outback Telecentre Network project. Since the centre opened, numbers of users of the centre's services have increased and all services are still in demand. However, the centre does not provide any income guarantee for self-sufficiency in its own right (ORDO, 2003b, p.11).

The Ivanhoe centre opened in September 2001. The centre offers technology, training and business services (ORDO, 2003b, p.13). The centre had a slow start but numbers of users of the centre's services are increasing. However, the centre does not provide income to guarantee self-sufficiency in its own right. The former coordinator of the centre believes that new services that are relevant to the community needs to be identified and that the services needs to be better marketed in order for the centre to progress (ORDO, 2003b, p.15).

The Pooncarie centre opened in August 2000. The centre offers technology, training and business services. Since the centre opened users of the centres services have increased and all services are still in demand but the centre does not provide income to guarantee self-sufficiency in its own right (ORDO, 2003b, p.17). However, the Pooncarie telecentre has managed to secure a number of contracts, which will ensure long-term service delivery to the community. For example, when the post office in Pooncarie was due to close, the centre integrated it into the telecentre (ORDO, 2003b, p.19).

The Tibooburra centre opened in November 2000. The centre offers technology, training and business services. It does not provide income to guarantee self-sufficiency in its own right (ORDO, 2003b, p.21). However the users of the centre's services have increased and the centre is an agent for Centrelink and various other local and Government bodies (ORDO, 2003b, p.23).

The Wanaaring centre opened in May 2001. Wanaaring is one of the most isolated communities in Australia. The centre had problems from the beginning. There is a lack of available buildings in the township, which resulted in that the centre first had to temporarily rent a part of the library from the local school (ORDO, 2003b, p.24). But within a few weeks of the opening of the telecentre, the school's need for the library increased and the telecentre was reduced to three and a half days (ORDO, 2003b, p.24). The Wanaaring telecentre applied for funding under Rural Transaction Centre and Regional Solutions programme to erect 2 buildings one for the telecentre/TRC and one to address accommodation shortages in the community. This application has been declined for the fourth time in June 2003. The Wanaaring centre closed in May 2002 when the Department of Education requested its closure

after undesirable persons entered the school grounds. The centre cannot open again until a new building has been built (ORDO, 2003b, p.26).

The Wentworth centre opened in September 2000. The Wentworth telecentre has been established on a different basis to the others. Mildura and District Education Centre Inc. (MADEC) had a presence in Wentworth and the centre was integrated into MADEC's overall services (ORDO, 2003b, p.27). The centre offers technology, training and business services. During the past six months, the centre has gained more support from the community after it delivered a number of indigenous training programs (ORDO, 2003b, p.28).

The White Cliffs centre opened in August 2000. During the time that the centre was opened it was financially viable, however, the centre had to close in June 2002 due to local political issues.

The Wilcannia centre opened in May 2001. The centre offers technology, training and business services. The population of Wilcannia consists of high number of Aboriginal people (70 per cent of the population) and there is a high unemployment level (70 per cent among Aboriginal people) (ORDO, 2003b, p.33). The first two coordinators failed to win the trust of the aboriginal community who would not use the services of the telecentre. However, the current coordinator has made remarkable achievements in initiating training programs and increasing the number of local residents using the services of the telecentre (ORDO, 2003b, p.34).

The Yunta centre opened in December 2000. The centre offers technology, training and business services and it also took over the management of the Yunta Post Office in May 2002. The telecentre employs four people on a part time basis and also has a group of volunteers working there (ORDO, 2003b, p.37).

As mentioned earlier, ORDO received additional funding to establish telecentres in Mintabie, Oodnadatta and Maree. The Mintabie centre opened in November 2001. The Oodnadatta centre and the Maree centre both opened in March 2003 (ORDO, 2003a).

4.6 Networks For You

The Networks For You project is another project funded by NTN. This section will describe the background, the goals and objectives, partners and sponsors, structure, operation and outcomes of the project.

4.6.1 Background

The NetWorks For You project started in February 2000 and aims to give people living in rural communities in South Australia a chance to participate and take advantage of the new information economy by offering a community focussed Internet awareness-raising program and community Internet access centres (SA Government, 2003). NetWorks For You is a collaborative project between Federal, State and Local Government agencies, in partnership with local communities. It is managed by IEPO (the Information Economy Policy Office) with a range of partner agencies including Regional Development SA (SARDA), the Local Government Association of SA, Councils, the Council of Library Administrators of SA, PLAIN, Transport SA, the Office of Regional Development, Youth Initiatives (Youth SA), the Department of Education, Training and Employment (schools, TAFEs, Employment SA and Adult Community Education) and Department of Human Services. The Information Economy Policy Office (IEPO) was established by the Government of South Australia to ensure that South Australians become active participants in the information economy (SA Government, 2003).

4.6.2 Goals and objectives

The NetWorks For You project is meant to be complementary to other telecommunication initiatives within rural and regional South Australia. Its strategy is to encourage South Australians to take advantage of the telecommunication infrastructure that are already in place through raising the level of Internet awareness amongst regional businesses and communities (SA Government, 2003). The goal of

NetWorks For You is, according to Wendy Golder, project manager, northern regions:

To introduce the benefits and opportunities of the information economy and specifically the Internet to all people living in rural and regional South Australia as part of their leisure, private and business lives. (SA Government, 2003).

The objectives of NetWorks For You are:

1. To facilitate a self-sustaining information economy culture within rural and regional communities of South Australia
2. To support and accommodate future information economy developments.
3. To provide the opportunity for all rural and regional South Australians to understand and participate in the information economy.
4. To provide communities in rural, regional and remote South Australia with the opportunity, skills and knowledge to connect to and use the Internet as part of their business, community and personal lives.
5. To establish sustainable community facilities that provide equitable public access to the Internet.
6. To empower rural and regional businesses with the capability to assess the impact of the information economy and identify its opportunities and threats.
7. To encourage regional communities to take ownership of Internet awareness programs, developing programs catering to the specific needs of each community, through initiatives at local centres and the training of local “Internet explainer” volunteers.
8. To cooperate with, complement and assist other South Australian NTN initiatives (SA Government, 2003).

4.6.3 Partners and sponsors

Initial funding of \$342,000 was approved by Networking the Nation (NTN) in April 2000 and \$1633,000 was additionally supplied by the State Government (SA

Government, 2003). In 2001 NetWorks For You received \$3800,000 from NTN to expand the project to focus on specific community sectors, including small business, people from diverse cultural backgrounds, and indigenous communities. NetWorks For You has since 2003 been working with the AccessABLE project to provide Internet awareness for people with disability (SA Government, 2003).

4.6.4 Structure

The Networks For You project is structured around three key initiatives. The first initiative involves locally driven awareness programs. The awareness programs include basic understanding and familiarity of the Internet (SA Government, 2003). The second initiative involves the establishment of a grid of Network Centres in rural and regional communities, using existing public infrastructure, such as libraries, schools, telecentres etc. Network centres establish a service delivery point in regional communities for a range of activities that involve access to a computer and the Internet. The third initiative involves recruiting government trainees, volunteers and ‘work for the dole’ participants to provide one on one support sessions for regional citizens at the Network centres (SA Government, 2003).

The state is divided into six operational regions. Each region has a regional coordinator, project officers and trainees. Staff members are recruited locally and are hosted by local organisations, such as local councils, libraries, schools, telecentres etc. (SA Government, 2003).

4.6.5 Operation

NetWorks For You offers free community-based awareness programs in the six regional areas of South Australia through group presentations, hands-on sessions, one to one individual assistance at Network centers and flexible delivery and locations (SA Government, 2003). Its staff is responsible for arranging the training programs, community activities and key events. Some of the resources that are used are The National Australian Training award winning *More Insite, Complete and Easy Guide to the Internet*, multi-media resource kit was developed by Interact New Media in conjunction with the State Government ACE programs and is available at a

subsidised rate through the NetWorks For You program (SA Government, 2003). NetWorks For You also supported the development of the companion kit, *the Complete and Easy Guide to Internet Business*, and offers a third kit, *the Complete and Easy Guide to Computer Technology*, all at the same subsidised rate to people living in rural areas who access the NetWorks For You program (SA Government, 2003).

4.6.6 Outcomes

The project started in February 2000 and was scheduled to cease operating in its present format in December 2003. During the first two years of the project the number of Internet users in rural South Australia increased from 16 per cent to over 42 per cent (SA Government, 2003). 255 Networks centres have been established and around 25000 participants have attended awareness raising sessions. Furthermore 15000 one-on-one sessions have been conducted and around 66500 people in rural South Australia have had direct contact with the NetWorks For You program. 92 per cent of participants rated the program as useful and interesting (SA Government, 2003).

4.7 Evaluation of the projects

This section contains the evaluation of the two projects sponsored by Sida, the SchoolNet Namibia project and the ICT project for the public universities of Nicaragua and the evaluation of the two projects funded by NTN, the Outback Telecentre Network Inc. and the Networks For You project. The evaluation is based on the strategies for the use of ICTs for human development outlined by several authors (Harris, 2002; Gómez & Casadiego, 2002; Rozendal, Ellerman, 2002; Sarrocco, 2002; Batchelor, 2002; Simpson, 2001; Venkatesan et al., 2002). The evidence is collected from the questionnaires that were sent to the projects and from project documents.

4.7.1 The SchoolNet Namibia project

1. Strategy: - To have clear development targets formed before suggesting any particular type of ICTs (Harris, 2002; Simpson, 2001).

Only 30 per cent of the schools in Namibia have telephones, electricity and library resource centres (SchoolNet Namibia, 2003c). SchoolNet's main objective is to introduce computer technology and Internet access to all schools in Namibia with the help of local and international stakeholders (SchoolNet Namibia, 2003c). Their programme involves computer recycling, installation, back-up support and helpdesk services and provision of peer-to-peer training by local volunteers to students and teachers at schools (SchoolNet Namibia, 2002, p.2).

Extract from SchoolNet's Constitution,

- to explore and implement creative ways of ensuring the sustainability of school networking activities, low-cost and appropriate solutions that extend the democratisation of access, especially to rural areas.
- to develop local applications and educational content, and encourage the critical role of ICT champions and mechanisms to ensure sustainability.
- to monitor and evaluate the impact of the use of ICTs on education, increase awareness and understanding of the potential of ICTs in education, share information on best practices in school networking and in developing partnerships, and to encourage relationships and build trust among the key players that enable such networking (Hesselmark & Miller, 2003).

The findings suggest that development targets were developed before suggesting any particular type of ICTs. The objective of SchoolNet Namibia was not solely to provide the technology but also to provide training, develop local educational content and increase awareness and understanding of the potential of ICTs in education and to explore and implement creative ways of ensuring the sustainability of school networking activities.

2. Strategy: - To involve local people and organisations from the start in ICT projects. (Gómez & Casadiego, 2002; Rozendal 2002; Simpson, 2001)

SchoolNet has been permitted to create alliances with a large number of partners both within and outside of government and has received support from individuals, public and private organisations (SchoolNet Namibia, 2003c). Among others, the Internet community (ISPs, computer companies, Telecom Namibia, Nampower) have supported SchoolNet with the motivation to expand internet use in Namibia, which may also lead to commercial opportunities in the future for the internet community (SchoolNet Namibia, 2003c). Besides working with government and national organisations, SchoolNet has also received international support. In May 2001, a three-year agreement was signed between the Swedish International Development Agency (Sida) and SchoolNet. Sida supports SchoolNet with 17.9 million Swedish crowns (SchoolNet Namibia, 2002, p.4).

The findings suggest that SchoolNet has created alliances with a large number of partners. However, the findings do not reveal that any local people or organisations have been involved in the project from the start.

3. Strategy: - To start small and keeping the same pace as the community (Gómez & Casadiego, 2002).

The projects include the provision of freeware operating systems (e.g. Linux) and software applications, using a combination of new and refurbished computers. The installations are done by SchoolNet volunteers (SchoolNet Namibia, 2002, p.6).

SchoolNet provides subsidised Internet access to schools using both landline and wireless solutions, powered by solar electricity, where necessary. SchoolNet has established an Internet Service Provider (ISP) with a reduced-cost 0700 national number for dial-up clients, especially for those with remote and poor Telecom infrastructure and a 0800 toll-free number for help-desk and technical support services (SchoolNet Namibia, 2002, p.6).

SchoolNet Namibia also serves as an outsourcing agency to disadvantaged schools in Namibia by requesting redundant computer equipment from the donor, public and private sectors, locally and internationally (SchoolNet Namibia, 2002, p.2).

SchoolNet offers free support, maintenance and helpdesk services by SchoolNet volunteers (SchoolNet Namibia, 2002, p.6). The schools may also receive a resident trainer who stays at the school between eight and twelve weeks (SchoolNet, 2003e).

In addition to connecting Namibian schools to the Internet, SchoolNet also manages other projects (SchoolNet Namibia, 2003c). One example is the Domestic Violence Advocacy Campaign (DVAC) which is an initiative aimed at raising public awareness of domestic violence issues, particularly among those young people in rural areas (SchoolNet Namibia, 2003c). Part of the campaign consists of radio and video productions in a range of indigenous languages and a mural-painting project involving school children in selected rural locations. Another important part of the campaign is the web site competition for students at primary and secondary schools (Grade 1 - 12) in Namibia. It aims to get students actively involved in thinking about positive and creative solutions and healing processes to deal with the problem of domestic violence in Namibia (SchoolNet Namibia, 2003c). One of the main objectives of the competition is to encourage students to learn how to use the Internet, and to build their own web sites. In the process, the students will come to understand the power of the Internet as a tool for information gathering and dissemination (SchoolNet Namibia, 2003c).

The findings suggest that SchoolNet Namibia does several things to make sure that the schools benefit from the new technology they are provided with and thereby keep the same pace as the community. In addition to installing the technology, they also provide the schools with subsidised Internet access, training, free support, maintenance and helpdesk services. They also manage several projects, which actively involve the students at the schools.

4. Strategy: - To use ICTs to build on something that already exists in the community (Gómez & Casadiego, 2002; Harris, 2002; Ellerman, 2002, p.54)

SchoolNet's main objective is to introduce computer technology and Internet access to all schools in Namibia with the help of local and international stakeholders (SchoolNet Namibia, 2003c).

The findings suggest that SchoolNet Namibia is building on something that already exists, schools.

5. Strategy: - To ensure that inequities based on gender, language, religion, ethnic background and social class are considered in projects to make sure that all individuals have equal opportunities. (Gómez & Casadiego, 2002; Harris, 2002; Sarrocco, 2002)

SchoolNet Namibia's objective is to provide appropriate computer technology and Internet access to all, especially previously disadvantaged schools in Namibia (Hesselmark & Miller, 2003). Joris Komen, the Executive Director of SchoolNet Namibia states in the Third Annual General Report-2002 (SchoolNet Namibia, 2002) that SchoolNet will continue to priorities disadvantaged schools, with schools with secondary grades at the top of their list.

One of the projects that SchoolNet manages is the Domestic Violence Advocacy Campaign (DVAC), which was described earlier. Part of the campaign consists of radio and video productions in a range of indigenous languages and a mural-painting project involving school children in selected rural locations (SchoolNet Namibia, 2003c).

The findings suggest that SchoolNet Namibia does consider inequities based on social class in the project to make sure that all individuals have equal opportunities through prioritising the most disadvantaged schools. The findings also suggest that SchoolNet considers inequities based on language in their projects, of which one of their projects, the Domestic Violence Advocacy Campaign (DVAC) is an example.

6. Strategy: - To develop local content on the Internet. (Gómez & Casadiego, 2002; Batchelor, 2002; Sarrocco, 2002; Venkatesan et al., 2002)

The findings suggest that local content has been developed on the Internet as a part of the SchoolNet Namibia project. The Impact of Aids in Katura project and the Domestic Violence Advocacy Campaign (DVAC), which are described previously, are examples of this.

7. Strategy: - To provide education in how to use ICTs. (Harris, 2002; Sarrocco, 2002)

SchoolNet offers free support, maintenance and helpdesk services by SchoolNet volunteers (SchoolNet Namibia, 2002, p.6). The volunteer program is called “SchoolNet Namibia’s Kids on the Block” program and is divided into two areas: software and hardware. Volunteers in the software area go through a free training program and are then offered to work as a resident trainer in a school serviced by SchoolNet Namibia (SchoolNet Namibia, 2003a). In order for a school to receive a resident trainer, they must provide the trainer with accommodation and food for the length of the stay, which endures, typically, between eight and twelve weeks (SchoolNet, 2003e).

The findings suggest that SchoolNet Namibia does provide education in how to use ICTs. The training program is conducted by volunteers.

4.7.2 The ICT Project for the Public Universities of Nicaragua

1. Strategy: - To have clear development targets formed before suggesting any particular type of ICTs (Harris, 2002; Simpson, 2001).

The vision of the ICT project is to involve the public universities in a wide, reliable, and stable information and communications network to be used for global communication purposes as well as the improvement of communications and exchange of information and knowledge between local and international institutions (TIC Nicaragua, 2002e, p.1).

The ICT Project for the public universities of Nicaragua has the following general objectives:

- To strengthen the national capacity ICT so that the public universities of Nicaragua can become more active members and beneficiaries of the global information network.
- To broaden the level of access of the university community to the national and international information and communications facilities available.
- To promote the use of the global information in higher education and in projects or initiatives of social or productive benefit in Nicaragua through the participation of the public universities (TIC Nicaragua, 2002e, p.2).

The findings suggest that development targets were formed before suggesting any particular ICTs. In addition to the general objectives of the project described above, the universities also developed individual development targets for their university.

2. Strategy: - To involve local people and organisations from the start in ICT projects. (Gómez & Casadiego, 2002; Rozendal 2002; Simpson, 2001)

The ICT Project in Nicaragua has the following specific objectives for the preparatory phase:

- To define guidelines and priorities (policies) that promote the development of ICT in each university taking into account their particular circumstances.
- To plan the goals, components, activities, resources and administration structure for the implementation of the guidelines and priorities (policies) for the development of the ICT project in each university.
- To set the organization, administration, and resources necessary for the implementation of a communication node with an INTERNET interface for the four universities.
- To concretize the objectives expressed in the above paragraphs, II General Objectives of the overall ICT Project (TIC Nicaragua, 2002f, p.2).

To implement this first project phase ICT it is established a working team comprised of members by the four national universities of Nicaragua and the Lund University, Sweden (TIC Nicaragua, 2002e, p. 7).

The findings suggest that staff from the four universities were involved in the project from the start. However there has been no evidence that suggests that the students at the universities were involved.

3. Strategy: - To start small and keeping the same pace as the community (Gómez & Casadiego, 2002).

The UNA believes having access to Internet will improve communication with institutions in the country, the region and abroad and it will also give them access to databases, libraries and education material. The UNA also wants to use the Internet for publishing (articles, thesis documents, but also announcement of seminars and

newsletters informing local farmers on prevention of actual agricultural of forestall diseases etc) (TIC Nicaragua, 2002f, p.10).

The UNAN-Managua expects that having access to the Internet will help it to promote the services of the university more easily through publishing on the web. It also expects to improve the overall institutional performance by having Internet/ e-mail facilities available for internal, external and international communication (TIC Nicaragua, 2002f, p.11). Furthermore, giving the students access to the Internet as part of the curricula is felt to be an absolute must. The university also wants to set up an adequate academic register management information system. Severe problems exist with the procedures and related data processing when students change from one curriculum to another or from one campus to another. There is also a need for a computerised library information system (TIC Nicaragua, 2002f, p.11).

UNAN-León wishes to improve its facilities by providing access to the Internet to students and academic staff. This improvement is considered to be very important in order for ongoing scientific research programs and academic outputs to be delivered. Currently due to the lack of access to the Internet, the quality of some research programs is decreasing (TIC Nicaragua, 2002f, p.13). Another area that the UNAN-Leon regards as important is the implementation of a computerised financial information system.

UNI feels that not having high capacity access to Internet is holding it back in terms of becoming a part of the global knowledge community and to bring its own academic production to levels matching common quality standards (TIC Nicaragua, 2002f, p.14). It also wishes to set up a computerised library information system that will provide access to its own electronic catalogue and databases and to similar resources available at other universities in and outside the country. Another area for development is the implementation of ICT based distant learning programs. At present there is limited education available in cities outside Managua, which leads to a migration of rural population to the capital. UNI wishes to set up distant educational programs about prevention of natural disasters, community development

and community projects in dedicated areas outside Managua (TIC Nicaragua, 2002f, p.14).

The findings suggest that the universities are very aware of what they want to achieve and of the benefits that the project will bring to them, which suggests that the project is not forcing its solution on the universities but keeping the same pace.

4. Strategy: - To use ICTs to build on something that already exists in the community (Gómez & Casadiego, 2002; Harris, 2002; Ellerman, 2002, p.54)

All of the four universities are connected to Internet through dedicated lines and/or dial-up (Ernberg & Arce, 2002, p.36). All the four public universities have various computer labs, connected in LANs, except UNA, which only has two small LANs for the administrative area and for the central library. The number of PCs for education and research vary between about 100 in the UNA with 2,685 students and some 500 in the UNAN-Managua with 17,800 students (Ernberg & Arce, 2002, p.36).

The findings suggest that the project is building on something that already exists. The project involves improving the technology at the four public universities.

5. Strategy: - To ensure that inequities based on gender, language, religion, ethnic background and social class are considered in projects to make sure that all individuals have equal opportunities. (Gómez & Casadiego, 2002; Harris, 2002; Sarrocco, 2002)

There has not been any evidence in the findings that suggest that any measures have been taken in the project to ensure that inequities based on gender, language, religion, ethnic background and social class are considered to make sure that all individuals have equal opportunities.

6. Strategy: - To develop local content on the Internet. (Gómez & Casadiego, 2002; Batchelor, 2002; Sarrocco, 2002; Venkatesan et al., 2002)

The UNA wants to use the Internet for publishing articles, thesis documents, but also announcement of seminars and newsletters informing local farmers on prevention of actual agricultural of forestall diseases etc. (TIC Nicaragua, 2002f, p.10).

The UNAN-Managua expects that having access to the Internet will help it to promote the services of the university more easily through publishing on the web. It also expects to improve the overall institutional performance by having Internet/ e-mail facilities available for internal, external and international communication (TIC Nicaragua, 2002f, p.11).

The findings suggest that the universities have plans to develop content on the Internet as a part of the project.

7. Strategy: - To provide education in how to use ICTs. (Harris, 2002; Sarrocco, 2002)

There follows an extract from UNAN Leon's master-plan:

Each unit of Campus is responsible for identifying the abilities and necessities of training of the personnel and students related with the technologies of information and communications.

Each Unit of Campus is responsible for planning the appropriate programs of training and knowledge for its personnel and students.

Each Unit of Campus can decide to use its own personnel as trainers, to send its personnel and students to courses offered by other Units of the University or to organize training programs with external institutes (TIC Nicaragua, 2002b).

Extract from UNAN-Managua's Masterplan:

- One administrator of each campus will be scheduled to training as a Certified Microsoft Engineer. Each of the variants of Microsoft's Operation systems have to be part of the complete training plan, which can be complemented by other courses.
- All administrators and operators of the university receive a training which enables them as operators of Linux and Sun's Solaris operating system.
- At least two of the administrators of each network centre receive a complete training program as system and network administrators for Linux.
- To guarantee continuous education, the training department of CORC has to be consolidated, equipped with educational material and funds to generate own training programs at least up to operators level on the Unix systems and Network configuration on Microsoft systems, as well as to catch up with national acquirable courses and training opportunities (TIC Nicaragua, 2002a).

OTIC will conform the training department of CORC contracting at least one person half time. The funds for salary and working material for the first three years shall be acquired via the ICT project. The task is then either taken over by other university institutions (Faculty of computer science, for example), or the department is consolidated and financing taken over by the University. Care will be taken to make the training material and experiences available to the whole University community in the form of educational material, programs and accompanying reports and evaluation. The training department is responsible for the selection and scheduling of the training program of the operators and administrators of the network and the public computer facilities (TIC Nicaragua, 2002a).

The findings suggest that providing education in how to use ICTs is a part of the project.

4.7.3 The Outback Telecentre Network project

1. Strategy: - To have clear development targets formed before suggesting any particular type of ICTs (Harris, 2002; Simpson, 2001).

A regional strategy was developed early in the project of which the highest priority was to enhance telecommunications, to address perceived pressing problems of lack of local education, training, and employment opportunities (ORDO, 2003a). The goal was to build telecentres in strategic locations that offer services such as Internet access, training and support, videoconferencing, photocopying, faxing, scanning and other business services on a user pays basis. The telecentres would also provide access to educational and telework opportunities (ORDO, 1999, p.7).

Statements by a project member from questionnaire 7.1.3 in the Appendix:

The target population for the Network is basically those communities that were disadvantaged socially and economically. Most communities have an average population of 100 people. The market is so small that the telecommunications companies are not interested in meeting the needs of these people. These communities, however, are the social centres for export orientated industries (mining, pastoral etc) and are important in providing emergency services and general services to locals and visitors (noting the high growth of tourism in Outback areas).

Each community is treated as a specific needs community. That is we work with communities to determine their needs and tailor the telecentre to meet that specific need. In some cases, particularly in indigenous communities, the relevance is on developing cultural needs - i.e. documenting language; story telling; using IT to promote their art and crafts to the international market place etc.

All telecentres are increasing the services to the communities i.e. Australian Taxation Office information; Centrelink access points (for unemployed people); post office; Government information etc; retail outlets for mobile phones, local produce etc. They are also tourist information offices; edit and produce local newspapers; organise conferences (some State and national); provide offices for visiting professionals. They are also developing specific projects (funded) i.e. environmental projects - facilitating landcare projects etc. Many have youth clubs so that the young people can have a place to socialise. We

are now in the process of using telecentres as facilitators for research and development of crops etc. in partnership with universities and industries. There is no golden rule. Ensuring that the telecentre remains the catalyst in meeting changing community needs is the primary development target. Flexibility is the key ingredient to remaining relevant.

The findings suggest that development targets were formed before suggesting any particular type of ICTs. A regional strategy was developed with the specific targets of solving the problems of lack of local education, training, and employment opportunities. Communities that were disadvantaged socially and economically were especially targeted and the telecentres were customised according to their community's specific needs.

2. Strategy: - To involve local people and organisations from the start in ICT projects. (Gómez & Casadiego, 2002; Rozendal 2002; Simpson, 2001)

Statements by a project member from questionnaire 7.1.3 in the Appendix:

The project was initiated after 2 years of continual consultations with the communities. This was important because telecentres had a notorious reputation of being shortlived. Because of the size of the communities, it was considered that our project had the highest risk of failure. Thus for 2 years we looked at all the things that could go wrong and developed a model that had the best chance of success. All the telecentres were represented on the new Outback Telecentre Network Inc. board so that they not only managed their own local affairs but also had input into making regional decisions. In the initial stages, I managed all the telecentres in consultations with the local committees. As their experience and confidence in management increased, I "let go" of direct management until we reach the stage today where my role is marketing, lobbying, setting regional agendas and the locals manage their own affairs totally.

One of the telecentres that were built is the Wilcannia centre, which opened in May 2001. The population of Wilcannia consists of high number of aboriginal people (70% of the population) and there is a high unemployment level (70% among aboriginal people) (ORDO, 2003b, p.33). The first two coordinators failed to win the

trust of the Aboriginal community who would not use the services of the telecentre. However, the current coordinator has made remarkable achievements in initiating training programs and increasing the number of local residents using the services of the telecentre (ORDO, 2003b, p.34).

The findings suggest that some local people were involved from the start in the project. The communities were consulted before the project started and the board had representatives from the communities. However, the findings also suggest that in some cases the communications with local people were not successful. This is evident for example in Wilcannia, where the community at first would not use the services of the telecentre.

3. Strategy: - To start small and keeping the same pace as the community (Gómez & Casadiego, 2002).

Statements by a project member from questionnaire 7.1.3 in the Appendix:

Telecentres **MUST BE RELEVANT** to their communities. There is no golden rule and quite frankly the regimented "models" developed by previous Networks do not work. We are fortunate that the timing of our project is in line with Federal Government acceptance that funding support to assist these structures become financially viable needs to be extended over a 5 year period, rather than the 3 year funding provided. Telecentres need to also make alliances with a number of groups to benefit from value adding. To belong to one Network is not enough, alliances and memberships to as many Networks and opportunities is vital for success. Telecentres should not be IT focused but community focussed. In many cases, the role of telecentres as IT centres is the least likely to succeed. They need to be diversified and concentrate on meeting community needs.

In most of the telecentres, since they opened, the users of the centre's services have increased and all services that they offer are still in demand. Many have also merged with other local businesses or taken over services that were no longer available.

However, some telecentres have had problems. The Ivanhoe centre had a slow start but users of the centre's services are increasing. The former coordinator of the centre believes that new services that are relevant to the community need to be identified

and that the services need to be better marketed in order for the centre to progress (ORDO, 2003b, p.15). The Wanaaring centre had problems from the beginning. There is a lack of available buildings in the township, which resulted in that the centre first had to temporarily rent a part of the library from the local school (ORDO, 2003b, p.24). The Wanaaring centre closed in May 2002 when the Department of Education requested its closure after undesirable persons entered the school grounds. The centre cannot open again until a new building has been built (ORDO, 2003b, p.26).

These findings suggests that in some of the communities involved in the project, the idea of starting small and keeping the same pace as the community worked well and in others not so well. Examples of where the project seems to have kept a faster pace than the community are in Ivanhoe and Wanaaring.

4. Strategy: - To use ICTs to build on something that already exists in the community (Gómez & Casadiego, 2002; Harris, 2002; Ellerman, 2002, p.54)

As mentioned earlier some of the telecentres have merged with other local businesses or taken over services that were no longer available. Examples of these are the Pooncarie centre, the Tibooburra centre and the Yunta centre. The Pooncarie centre has managed to secure a number of contracts, which will ensure long-term service delivery to the community. For example, when the post office in Pooncarie was to close, the centre integrated it into the telecentre (ORDO, 2003b, p.19). The Tibooburra centre is an agent for Centrelink and various other local and Government bodies (ORDO, 2003b, p.23). The Yunta centre took over the management of the Yunta Post Office in May 2002 (ORDO, 2003b, p.37).

Statements by a project member from questionnaire 7.1.3 in the Appendix:

The members of the Network in New South Wales also belong to the State Community Technology Centre Network (a State Government funded and promoted program). The South Australian members of our Network are in the process of joining the new South Australian Community Services Network. This adds value to the telecentres by

integrating State programs into the community. We actually played a major role in the creation of both those bodies. All members are also members of the national body - Community Tele-Services Australia. I am encouraging telecentres in each Local Government area to integrate with the Local Government bodies. They also have strong relationships with State regional development boards. All the telecentres are Telstra agents (the monopoly telco in Outback areas). We are in the process of developing arrangements with the private sector companies i.e. banks, energy providers etc. to act as agents. The opportunity for private sector involvement will increase now that the Federal Government has endorsed its responsibility to ensure the long term viability of telecentres - an assurance the private sector needs to become involved.

The findings suggest that the project did not build on something that already existed. However, many of the telecentres have, since opening, merged with other local businesses or taken over services that were no longer available, which the examples of the Pooncarie centre, the Tibooburra centre and the Yunta centre demonstrate. The telecentres also work together with the local governments and arrangements with the private sector companies are in the process.

5. Strategy: - To ensure that inequities based on gender, language, religion, ethnic background and social class are considered in projects to make sure that all individuals have equal opportunities. (Gómez & Casadiego, 2002; Harris, 2002; Sarrocco, 2002)

Statements by a project member from questionnaire 7.1.3 in the Appendix:

I have applied for funding to conduct a comprehensive skills audit and needs analysis in each community. This will identify the individual dreams and aspirations of people and enable those dreams and aspirations to be attended to by the telecentres. At the moment, Codes of Conduct are integrated into the telecentres so that equal opportunities are enshrined into the operations of the telecentres.

The findings suggest that there have not been any specific measures taken to ensure that inequities based on gender, language, religion, ethnic background and social class are considered to make sure that all individuals have equal opportunities in this project. However Codes of Conduct are integrated into the telecentres.

6. Strategy: - To develop local content on the Internet. (Gómez & Casadiego, 2002; Batchelor, 2002; Sarrocco, 2002; Venkatesan et al., 2002)

One of the goals according to the Outback region Telecentre Network Business Plan from 1999 was that regional and local websites were to be developed to promote the region's attractions and products to the wider world, and to stimulate greater networking within the region (ORDO, 1999, p.7).

From the Outback Telecentres Inc. website (www.outback.net.au) there are several links to regional and local websites developed by the project.

These findings suggest that local content was developed on the Internet.

7. Strategy: - To provide education in how to use ICTs (Harris, 2002; Sarrocco, 2002)

Statements by a project member from questionnaire 7.1.3 in the Appendix:

Some centres have integrated this into the telecentres. The Skills Audit will identify needs in this area. In Western Australia, projects of this kind have been very successfully provided.

The findings suggest that the project has provided education in how to use ICTs. All of the telecentres offer training in different forms, both IT based and non-IT based training and both one-on-one training and group training.

4.7.4 The Networks For You project

1. Strategy: - To have clear development targets formed before suggesting any particular type of ICTs (Harris, 2002; Simpson, 2001).

The objectives of NetWorks For You are:

- To facilitate a self-sustaining information economy culture within rural and regional communities of South Australia

- To support and accommodate future information economy developments.
- To provide the opportunity for all rural and regional South Australians to understand and participate in the information economy.
- To provide communities in rural, regional and remote South Australia with the opportunity, skills and knowledge to connect to and use the Internet as part of their business, community and personal lives.
- To establish sustainable community facilities that provide equitable public access to the Internet.
- To empower rural and regional businesses with the capability to assess the impact of the information economy and identify its opportunities and threats.
- To encourage regional communities to take ownership of Internet awareness programs, developing programs catering to the specific needs of each community, through initiatives at local centres and the training of local “Internet explainer” volunteers.
- To cooperate with, compliment and assist other South Australian NTN initiatives (SA Government, 2003).

Statements by a project member from questionnaire 7.1.4 in the Appendix:

The original aim of NWFY was to have the majority of people living in rural areas of South Australia connected to the Internet and using it as part of their daily lives within the three year time frame of the project. However, more appropriately, it was a community development project to generate enthusiasm for and understanding of the opportunities of the Information Economy and to stimulate local solutions to digital divide issues. We aimed to add value to local organisations and facilities in order to assist them to redress the imbalance in the use of the Internet in rural areas of the State.

NWFY had a particular focus on community sectors considered to be at a disadvantage in accessing ICT opportunities, including indigenous communities, people with a disability and people from multicultural backgrounds. We also targeted organisations and agencies and developed partnerships with them in order to facilitate the sustainability of the project.

The findings suggest that development targets were formed before suggesting any particular type of ICTs. The objectives of the project include provision for opportunities for all rural and regional South Australians to understand and participate in the information economy with a particular focus on community sectors considered to be at a disadvantage in accessing ICT opportunities, including indigenous communities, people with a disability and people from multicultural backgrounds.

2. Strategy: - To involve local people and organisations from the start in ICT projects (Gómez & Casadiego, 2002; Rozendal 2002; Simpson, 2001)

Statements by a project member from questionnaire 7.1.4 in the Appendix:

NWFY was always focused on local people and communities. The program developed strategic partnerships with local stakeholders, including local councils, Regional Development Boards, Community welfare organisations, regional government offices, employment agencies, hospitals and other health organisations such as Divisions of General Practice, regional education facilities including universities, TAFES, schools, Chambers of Commerce.

It was a major requirement that all staff were recruited from local areas and were based there with local host organisations. The mobility of staff was a key requirement and all had a geographic region to cover. In the almost four years of operation, staff drove about 1 million kilometres to ensure that all communities had access to this program.

17 local Community Reference Groups were established, drawn from local stakeholders and enthusiasts. These groups met regularly to provide input to the project and they became an important information source about the needs of their community and as local champions.

As part of the sustainability strategy for the project, local volunteers were recruited and trained to continue to provide support for community after the end of the project.

The findings suggest that local people and organisations were involved from the start in the project.

3. Strategy: - To start small and keeping the same pace as the community (Gómez & Casadiego, 2002).

Statements by a project member from questionnaire 7.1.4 in the Appendix:

The key strategy was to support, value add and stimulate local organisations and initiatives to develop the use and relevance of the Information Economy for rural communities.

This was achieved by

Developing the project brief through a task force comprised of key state-wide stakeholders, who were successful in gaining Federal pilot funding and a substantial input from the State government to enable a statewide implementation rather than a pilot study

Forming partnerships with local organisations to promote the Information Economy message to them and to undertake joint programs with them.

Badging a variety of local facilities as *NetWorks Centres*, and providing NWFY programs through and in conjunction with them.

Undertaking a variety of promotional activities, including print and electronic media programs, mobile Internet cafes providing introductory training in Internet use, development of publications.

Subsidising the development and purchase costs of self help training multimedia kits and making them widely available through the project.

Promoting and demonstrating relevant web sites.

Providing free awareness sessions and 1:1 support for people.

Forming collaborative partnerships with other projects, training, infrastructure and provider organisations to develop the impact and effectiveness of their programs.

The project formed partnerships with local organisations and other projects, training, infrastructure and provider organisations to develop the impact and effectiveness of their programs, which suggests that the NetWorks For You program did keep the same pace as the community.

4. Strategy: - To use ICTs to build on something that already exists in the community (Gómez & Casadiego, 2002; Harris, 2002; Ellerman, 2002, p.54)

The NetWorks For You project is meant to be complementary to other telecommunication initiatives within rural and regional South Australia. Their combined strategy is to encourage South Australians to take advantage of the telecommunication infrastructure that are already in place through raising the level of Internet awareness amongst regional businesses and communities (SA Government, 2003). The goal of NetWorks For You is, according to Wendy Golder, project manager, northern regions:

To introduce the benefits and opportunities of the information economy and specifically the Internet to all people living in rural and regional South Australia as part of their leisure, private and business lives (SA Government, 2003).

The findings suggest that this project does build on something that already exists in the community. The project is complementary to other telecommunication initiatives within rural and regional South Australia and their strategy is to encourage South Australians to take advantage of the telecommunication infrastructure that is already in place through raising the level of Internet awareness amongst regional businesses and communities.

5. Strategy: - To ensure that inequities based on gender, language, religion, ethnic background and social class are considered in projects to make sure that all individuals have equal opportunities (Gómez & Casadiego, 2002; Harris, 2002; Sarrocco, 2002).

Statements by a project member from questionnaire 7.1.4 in the Appendix:

NWFY was an inclusive program and staff were expected to seek every opportunity to reach all sectors of the community. We offered the program through all local community organisations, at local fairs and shows, in shopping centres, at festivals, at libraries and schools. In addition, NWFY took the initiative to develop targeted programs for groups particularly at risk of marginalisation. EG the accesABLE program was developed and additional funding obtained to provide suites of adaptive technologies which were demonstrated in organisations providing services for people with a disability – Carers Associations, Disability organisations, Employment agencies, hospitals, day care centres, aged care homes.

NWFY trainees provide 1:1 assistance to local people at *NetWorks Centres* and were in demand from people who lacked confidence and required individual support.

The findings suggest that the Networks For You program did take steps to make sure that all individuals have equal opportunities by offering the program through all local community organisations and they also developed targeted programs for groups particularly at risk of marginalisation.

6. Strategy: - To develop local content on the Internet (Gómez & Casadiego, 2002; Batchelor, 2002; Sarrocco, 2002; Venkatesan et al., 2002).

Statements by a project member from questionnaire 7.1.4 in the Appendix:

NWFY researched and demonstrated local web content as part of the familiarisation process.

The NWFY website (www.networksforyou.sa.gov.au) included on-line copies of the help sheets the project developed.

There was an extensive program of Information and “how to” radio spots and newspaper columns in local media throughout the state.

NWFY had development input to the Eddy Gordon Complete and Easy Guides to the Internet and to Internet Business, self-paced multimedia learning tools which were produced commercially, and the project provided these at a highly subsidised rate to regional people

who accessed the program and to NetWorks Centres.

The findings suggest that local web contents were used but not developed by the project.

7. Strategy: - To provide education in how to use ICTs (Harris, 2002; Sarrocco, 2002).

Statements by a project member from questionnaire 7.1.4 in the Appendix:

In the first year of the program, regional South Australia went from being one of the worst performers in Internet use, to one of the best comparative to other states and the Adelaide metropolitan area. (Morgan statistical data).

NWFY delivered the program to 80,000 people in regional South Australia and of those 18,500 received individual Internet assistance.

Over 300 NetWorks Centres were badged and at least 238 of these are still providing access to the Internet and to Internet awareness programs to their community today, after the closure and de-badging of the project.

397 people were trained as Internet explainers and 214 local volunteers continue to provide 1:1 assistance for people in community organisations around the state.

65 young people commenced NWFY traineeships in IT, 83% successfully completed a Certificate at levels 2, 3, or 4 and many of them are now employed in IT related fields in regional SA.

The findings suggest that the Networks For You program was successful with providing education in how to use ICTs.

4.8 Cross Case Analysis

This section contains a cross case analysis of the four projects that have been evaluated and a comparison of the strategies of the Swedish and Australian governments.

4.8.1 Development targets

Roger Harris (2002) argues that it is critical to have a well-defined development strategy when using ICTs for development purposes. Furthermore, even though he recognises that the different capabilities of ICTs may be useful to have in mind, he argues that clear development targets must be formed before suggesting any particular type of ICTs.

Strategy: - To have clear development targets formed before suggesting any particular type of ICTs (Harris, 2002; Simpson, 2001).

The findings suggest that all four projects developed specific development targets before suggesting any particular type of ICTs. SchoolNet Namibia's development targets include in addition to providing technology and training to schools, to develop local educational content and increase awareness and understanding of the potential of ICTs in education and to explore and implement creative ways of ensuring the sustainability of school networking activities. The ICT project for the public universities of Nicaragua's development targets includes strategies to strengthen the national capacity so that the public universities of Nicaragua can become more active members and beneficiaries of the global information network, to broaden the level of access of the university community to the national and international information and communications facilities available and to promote the use of the global information in higher education and in projects or initiatives of social or productive benefit in Nicaragua. The Outback Telecentre Network project developed a regional strategy with the specific targets of solving the problems of lack of education, training, and employment opportunities. Communities that were disadvantaged socially and economically were especially targeted. The Networks For

You program's development targets include provision for opportunities for all rural and regional South Australians to understand and participate in the information economy with a particular focus on community sectors considered to be at a disadvantage in accessing ICT opportunities, including indigenous communities, people with a disability and people from multicultural backgrounds.

4.8.2 Local involvement

Gómez and Casadiego (2002) point out the importance of involving local people and organisations from the start in ICT projects. They propose that such involvement enables ICTs to be used as a tool that may assist in creating concrete solutions to the real problems of the poor. The importance of involving the community in projects is also stressed by Rutger Rozendal (2002). Rozendal points out that it is more likely that the projects will be accepted better when the local community is involved.

Strategy: - To involve local people and organisations from the start in ICT projects
(Gómez & Casadiego, 2002; Rozendal 2002; Simpson, 2001).

The findings suggest that all projects except the SchoolNet Namibia project did involve local people and organisations from the start in the projects. SchoolNet Namibia created alliances with a large number of partners. However, the findings do not reveal that any local people or organisations have been involved from the start.

The ICT project for the public universities of Nicaragua did involve staff from the four universities from the start. However there has been no evidence that suggests that the students at the universities were involved. The Outback Telecentre Network project did consult the communities before the project started. However, the findings also suggest that in some cases the communications with local people were not successful. This is evident, for example, in Wilcannia where, initially, the community would not use the services of the telecentre. The Network For You program developed strategic partnerships with local stakeholders, including local councils, Regional Development Boards, Community welfare organisations, regional

government offices, employment agencies, hospitals and other health organisations such as Divisions of General Practice, regional education facilities including universities, TAFES, schools, Chambers of Commerce. They also established 17 local Community Reference Groups, drawn from local stakeholders and enthusiasts. These groups met regularly to provide input to the project and they became an important information source about the needs of their community and as local champions.

4.8.3 Starting small

When undertaking ICTs projects in developing countries, Gómez and Casadiego (2002) recommend starting small and maintaining the same pace as the community, even though that pace might be slow. They argue that it is the quality in development process that is important, not the quantity.

Strategy: - To start small and keeping the same pace as the community (Gómez & Casadiego, 2002).

The findings suggest that all four projects for the most part keep the same pace as the communities. SchoolNet Namibia does several things to make sure that the schools benefit from the new technology and keep the same pace as the community. In addition to installing the technology, they also provide the schools with subsidised Internet access, training, free support, maintenance and helpdesk services. They also manage several projects that actively involve the students at the schools. The findings of the ICT project for the public universities of Nicaragua reveals that the universities are very aware of what they want to achieve and of the benefits that the project will bring to them, which suggests that the project is not forcing its solution on the universities but keeping the same pace. The findings suggest that in most communities involved in the Outback Telecentre Network project, the idea of starting small and keeping the same pace as the community worked well. However there were some communities that had problems. Examples of where the project seems to have kept a faster pace than the community are in Ivanhoe and Wanaaring.

The Networks For You program formed partnerships with local organisations and other projects, training, infrastructure and provider organisations to develop the impact and effectiveness of their programs, which suggests that the program did keep the same pace as the community.

4.8.4 Building on the existing

Several (Gómez & Casadiego, 2002; Harris, 2002; Ellerman, 2002, p.54) recommend to use ICTs to build on something that already exists in the community rather than initiating something that the community itself has not expressed a need for. Gómez and Casadiego (2002) argue that many ICT projects are tempted to start from scratch and then force their solution on the community. They describe that an extreme example of this is the so-called “intelligent containers”, where containers filled with computer equipment have been dumped on communities in developing countries in an attempt to solve development problems. They argue that projects like these would be far more helpful when performed in cooperation with an organisation that already exists in the community, for example a public library or a school.

Strategy: - To use ICTs to build on something that already exists in the community (Gómez & Casadiego, 2002; Harris, 2002; Ellerman, 2002, p.54).

The findings suggest that all projects except the Outback Telecentre Network project build on something that already exists in the community. The SchoolNet Namibia project is introducing computer technology and Internet access to schools in Namibia. The ICT project for the public universities of Nicaragua involves improving the technology at the four public universities in Nicaragua. The Networks For You program is complementary to other telecommunication initiatives within rural and regional South Australia and their strategy is to encourage South Australians to take advantage of the telecommunication infrastructure that are already in place through raising the level of Internet awareness amongst regional businesses and communities. The Outback Telecentre Network project did not originally build on something that already existed. However, many of the telecentres

have, since opening, merged with other local businesses or taken over services that were no longer available. The telecentres also work together with the local governments and arrangements with the private sector companies are part of the process of cooperation.

4.8.5 Promoting equal opportunities

An opinion shared by several (Gómez & Casadiego, 2002; Harris, 2002; Sarrocco, 2002) is that it is important to ensure that inequities based on gender, language, religion, ethnic background and social class are considered in projects so as to present all individuals with equal opportunities.

Strategy: - To ensure that inequities based on gender, language, religion, ethnic background and social class are considered in projects to make sure that all individuals have equal opportunities (Gómez & Casadiego, 2002; Harris, 2002; Sarrocco, 2002).

The findings suggest that two of the projects, the SchoolNet Namibia project and the Networks For You project did take steps make sure that all individuals have equal opportunities. SchoolNet Namibia does consider inequities based on social class in the project to make sure that all individuals have equal opportunities through prioritising the most disadvantaged schools. SchoolNet also considers inequities based on language in, for example, the Domestic Violence Advocacy Campaign (DVAC) that they manage to make sure that all individuals have equal opportunities. The Networks For You program did take steps to make sure that all individuals have equal opportunities by offering the program through all local community organisations and they also developed targeted programs for groups particularly at risk of marginalisation. There is no evidence to suggest that the ICT project for the public universities of Nicaragua or the Outback Telecentre Network project has considered these issues.

4.8.6 Localised content

Gómez and Casadiego (2002) and Batchelor (2002) argue that whilst having access to the Internet offers great opportunities to retrieve vast amounts of information and to collaborate across borders, the information on the Internet often has to be translated so that people in a community may understand it. Claudia Sarrocco (2002) shares this opinion and argues that the development of local content must be given high priority because it would encourage people to use the Internet and, hence, enhance the application of ICTs for educational purposes. She also points out that development of local content on the Internet is an important part of preserving cultural heritage.

Strategy: - To develop local content on the Internet (Gómez & Casadiego, 2002; Batchelor, 2002; Sarrocco, 2002; Venkatesan et al., 2002).

The findings suggest that all projects except the Networks For You program have developed local content on the Internet. The SchoolNet Namibia project has developed websites as a part of their project, the Impact of Aids in Katura project and the Domestic Violence Advocacy Campaign (DVAC). The ICT project for the public universities of Nicaragua has plans to develop content on the Internet as a part of the project. The Outback Telecentre Network project has developed several regional and local websites. The Networks For You program used local web content in their training program but did not develop any content.

4.8.7 Providing education

Claudia Sarrocco (2002) and Roger Harris (2002) emphasise the importance of providing some education in how to use ICTs. Claudia Sarrocco (2002) argues that providing basic literacy and ICT education should be a part of every information technology strategy because it is important in ensuring that people using ICTs benefit from it.

Strategy: - To provide education in how to use ICTs (Harris, 2002; Sarrocco, 2002).

The findings suggest that all four of the projects provide education in how to use ICTs as a part of their projects. SchoolNet Namibia provides training conducted by SchoolNet volunteers. All universities that are involved in the ICT project for the public universities of Nicaragua have strategies for providing education in how to use ICTs. All of the telecenters involved in the Outback Telecentre Network project offer training. The Networks For You program provides awareness programs that include basic understanding and familiarity of the Internet.

4.8.8 Comparison of strategies

The Swedish International Development Cooperation Agency (Sida) and the Australian government program, Networking the Nation (NTN) have several similar strategies concerning IT development. One similarity is that they both support economic growth, democracy and reducing disparities. Sida's mission is to give poor people a better life and that includes supporting economic growth, democracy and equality between women and men (Sida, 2003h). The central objective of Sida's contributions is poverty reduction, which means that poverty reduction also is the main objective for the contributions made in the area of IT in development cooperation (Sida, 1999). The aim of the NTN program was to:

ensure that all Australians enjoy the benefits of new and existing telecommunications facilities and services and to assist the economic and social development of regional, rural and remote Australia (Collins & Eccles, 2003).

Another similarity is that they both regard providing training as important in addition to building infrastructure and providing services. Sida considers human resource training, development of IT-based services, distance learning, policy and organisation development as being important parts of the projects besides technical infrastructure (Sida, 2003d). The NTN want to achieve their aims through funding projects that:

- enhance telecommunications infrastructure and services in those areas;

- increase access to, and promote use of, services available through telecommunications networks and;
- reduce disparities in access to such services and facilities (Collins & Eccles, 2003).

One of the differences between the strategies of Sida and NTN is that Sida focus its support on research cooperation. The operations funded by Sida include:

- Funding operations in international organisations (InfoDev, Bellanet)
- A focus on IT infrastructure for the partners in cooperation of the Department for Research Cooperation (SAREC)
- International training programmes, cultural support and certain isolated contributions.

Research cooperation accounts for the largest part of the support. This support has mainly been provided for connectivity (Internet connections) for partners in cooperation (Sida, 1999).

4.9 Summary of findings

This chapter has described and discussed the findings of this study. In the first part of this chapter the goals and strategies of Sida were described, followed by narratives of the SchoolNet Namibia project and the ICT project for the public universities of Nicaragua. Then the goals and strategies of the Australian government program Networking the Nation were described, followed by narratives of the Outback Telecentre Network Inc. and the NetWorks For You project. In the second part of this chapter, the projects were evaluated. The evaluation was based on the strategies for the use of ICTs for human development outlined by several authors (Harris, 2002; Gómez & Casadiego, 2002; Rozendal, Ellerman, 2002; Sarrocco, 2002; Batchelor, 2002; Simpson, 2001; Venkatesan et al., 2002). The evidence was collected from the questionnaires that were sent to the projects and from project documents. Finally, a cross case analysis of the four evaluated projects and a comparison of the Swedish and Australian strategies were presented.

5 CONCLUSION

In the last 20 years, the application of Information and Communication Technologies (ICTs) have impacted on the economies of the industrialised world. In today's "information society", information and knowledge are essential to social and economic development. However, not everyone has access to ICTs and the information they may provide. There is concern that existing inequalities of income, knowledge, skills and measures of social development will increase as a result of a growing "digital divide" both between and within countries. There is an ongoing discussion within the international community about whether ICT may play a significant role in human development. The Swedish and the Australian government ICT initiatives aim to contribute to human development and overcome the effects of distances with the use of ICTs. The research question of this study is:

Do the ICT projects in developing countries sponsored by the Swedish International Development Cooperation Agency (Sida) and those sponsored by the Australian government in rural Australia contribute to human development and how do the strategies of the Swedish and Australian governments compare?

The question may be seen as comprising the following sub-questions:

1. What are the aims and outcomes of ICT projects sponsored by Sida in developing countries and what strategies are used?
2. What are the aims and outcomes of ICT projects sponsored by the Australian government in rural Australia and what strategies are used?
3. How do the strategies used by Sida compare to the approaches taken by the Australian government?

Several authors (Harris, 2002; Gómez & Casadiego, 2002; Rozendal, Ellerman, 2002; Sarrocco, 2002; Batchelor, 2002; Simpson, 2001; Venkatesan et al., 2002) outline strategies for the use of ICTs for human development. These ideas were the basis for evaluation in this study. They include, in short:

- To have clear development targets formed before suggesting any particular type of ICTs (Harris, 2002; Simpson, 2001).

- To involve local people and organisations from the start in ICT projects. (Gómez & Casadiego, 2002; Rozendal 2002; Simpson, 2001)
- To start small and keep the same pace as the community (Gómez & Casadiego, 2002).
- To use ICTs to build on something that already exists in the community (Gómez & Casadiego, 2002; Harris, 2002; Ellerman, 2002, p.54)
- To ensure that inequities based on gender, language, religion, ethnic background and social class are considered in projects to make sure that all individuals have equal opportunities (Gómez & Casadiego, 2002; Harris, 2002; Sarrocco, 2002)
- To develop local content on the Internet (Gómez & Casadiego, 2002; Batchelor, 2002; Sarrocco, 2002; Venkatesan et al., 2002).
- To provide education in how to use ICTs. (Harris, 2002; Sarrocco, 2002)

The findings of the research question component:

1. What are the aims and outcomes of ICT projects sponsored by Sida in developing countries and what strategies are used?

Sida believes that ICTs may provide opportunities for the poor people of the developing world and help developing countries to be a part of the global economy (Sida, 2003c). Research cooperation accounts for the largest part of the support. This support has mainly been provided for connectivity (Internet connections) for partners in cooperation (Sida, 1999). Sida sponsors universities in developing countries to get access to the Internet with about 30 million Swedish Crowns a year. The projects usually start with providing assistance for making an IT policy and an IT master plan. Besides technical infrastructure, human resource training, development of IT-based services, distance learning, policy and organisation development is also regarded as being important parts of the projects (Sida, 2003d). Both the SchoolNet Namibia project and the ICT project for the four public universities of Nicaragua involve providing connectivity. The SchoolNet Namibia project involves introducing computer technology and Internet access to all schools in Namibia with the help of local and international stakeholders (SchoolNet Namibia, 2003c). The ICT project

for the four public universities of Nicaragua involves connecting the public universities in a wide, reliable, and stable information and communications network to be used for global communication purposes as well as the improvement of communications and exchange of information and knowledge between local and international institutions (TIC Nicaragua, 2002e, p.1). Both of the projects were evaluated. The findings suggest that the SchoolNet Namibia project did follow most of the strategies. SchoolNet Namibia did:

- have clear development targets formed before suggesting any particular type of ICTs,
- start small and kept the same pace as the community,
- use ICTs to build on something that already exists in the community,
- ensure that inequities based on gender, language, religion, ethnic background and social class were considered in their projects to make sure that all individuals have equal opportunities,
- develop local content on the Internet and
- provide education in how to use ICTs.

SchoolNet Namibia did not:

- involve local people and organisations from the start in ICT projects.

The ICT project for the four public universities of Nicaragua did also follow most of the strategies. The ICT project for the four public universities of Nicaragua did:

- have clear development targets formed before suggesting any particular type of ICTs,
- start small and kept the same pace as the community,
- use ICTs to build on something that already exists in the community,
- develop local content on the Internet and
- provide education in how to use ICTs.

The ICT project for the four public universities of Nicaragua did not:

- involve local people and organisations from the start in ICT projects or

- ensure that inequities based on gender, language, religion, ethnic background and social class were considered in the project to make sure that all individuals have equal opportunities.

The findings of the research question component:

2. What are the aims and outcomes of ICT projects sponsored by the Australian government in rural Australia and what strategies are used?

The Commonwealth Government launched the NTN program in 1997 with the objective that all Australians would be able to access and enjoy the benefits of new and existing telecommunications facilities and services (DCITA, 2002b). The aim of the NTN program was to:

ensure that all Australians enjoy the benefits of new and existing telecommunications facilities and services and to assist the economic and social development of regional, rural and remote Australia (Collins & Eccles, 2003).

This was to be achieved by funding projects that:

- enhance telecommunications infrastructure and services in those areas;
- increase access to, and promote use of, services available through telecommunications networks and;
- reduce disparities in access to such services and facilities (Collins & Eccles, 2003).

The two projects that were evaluated were the Outback Telecentre Network project and the Networks For You program. The Outback Telecentre Network project involved building a network of telecentres in eleven towns across the Outback region of far west NSW, far northeast South Australia and far southwest Queensland. The purpose of the telecentres was to offer a range of technology services to residents, businesses and visitors (ORDO, 1999, p.2). The Networks For You program involved giving people living in rural communities in South Australia a chance to participate and take advantage of the new information economy by offering a community focussed Internet awareness-raising program and community Internet access centres (SA Government, 2003). The findings suggest that the Outback

Telecentre Network project followed most of the strategies. The Outback Telecentre Network project did:

- have clear development targets formed before suggesting any particular type of ICTs,
- involve some local people and organisations from the start in ICT projects,
- start small and kept the same pace as the community,
- develop local content on the Internet and
- provide education in how to use ICTs.

The Outback Telecentre Network project did not:

- use ICTs to build on something that already exists in the community or
- ensure that inequities based on gender, language, religion, ethnic background and social class were considered in the project to make sure that all individuals have equal opportunities.

The Networks For You program did also follow most of the strategies. The Networks For You program did:

- have clear development targets formed before suggesting any particular type of ICTs,
- involve local people and organisations from the start in ICT projects,
- start small and kept the same pace as the community,
- use ICTs to build on something that already exists in the community,
- ensure that inequities based on gender, language, religion, ethnic background and social class were considered in the project to make sure that all individuals have equal opportunities and
- provide education in how to use ICTs.

The Networks For You program did not:

- develop local content on the Internet.

The findings of the research question component:

3. How do the strategies used by Sida compare to the approaches taken by the Australian government?

The findings suggest that the Swedish International Development Cooperation Agency (Sida) and the Australian government program, Networking the Nation (NTN) have several similar strategies concerning IT for development. The similarities include supporting economic growth, democracy, reducing disparities and regarding the provision of training as important in addition to building infrastructure and providing services. One of the differences between the strategies of Sida and NTN is that Sida focus their support on research cooperation. Sida's support has mainly been provided for connectivity (Internet connections) for partners in cooperation (Sida, 1999). The cross case analysis of the four evaluated projects showed that all four of the evaluated projects did follow most of the strategies for the use of ICTs for human development that the evaluation was based on. The strategies for the use of ICTs for human development that all of the projects followed were:

- To have clear development targets formed before suggesting any particular type of ICTs (Harris, 2002; Simpson, 2001).
- To start small and keeping the same pace as the community (Gómez & Casadiego, 2002).
- To provide education in how to use ICTs (Harris, 2002; Sarrocco, 2002).

The two strategies that were least considered by the projects was

- To involve local people and organisations from the start in ICT projects (Gómez & Casadiego, 2002; Rozendal 2002; Simpson, 2001).
- To ensure that inequities based on gender, language, religion, ethnic background and social class are considered in projects to make sure that all individuals have equal opportunities (Gómez & Casadiego, 2002; Harris, 2002; Sarrocco, 2002).

Do the ICT projects in developing countries sponsored by the Swedish International Development Cooperation Agency (Sida) and those sponsored by the Australian government in rural Australia contribute to human development and how do the strategies of the Swedish and Australian governments compare?

The findings of this study suggest that the two ICT projects included in this study in developing countries sponsored by the Swedish International Development Cooperation Agency (Sida) and the two projects sponsored by the Australian government in rural Australia do contribute to human development and that the strategies of the Swedish and Australian governments are similar in several ways. However, the study identified that the two strategies that were least considered by the projects were: to involve local people and organisations from the start in ICT projects and to ensure that inequities based on gender, language, religion, ethnic background and social class are considered in projects to make sure that all individuals have equal opportunities. Both of these strategies are important to consider if the existing inequalities of income, knowledge, skills and measures of social development are going to increase as a result of a growing “digital divide” both between and within countries. This study has focused on the strategies used by governments and by the projects that they sponsor. It is still unknown to what extent the lives of the target population of these kinds of projects really have changed. This is an area where future work/studies may be accomplished.

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7 APPENDIX

7.1 Questionnaires used

7.1.1 SchoolNet Namibia

1. What are the aims of SchoolNet Namibia?
2. What are the expected outcomes of SchoolNet Namibia?
3. What is the target population of SchoolNet Namibia?
4. Does SchoolNet Namibia have any specific development targets, if so what are they?
5. Were any local people and/or organisations involved in the SchoolNet Namibia project from the start, if so how were they involved?
6. What strategies and methods were used during the planning of SchoolNet Namibia?
7. Were the strategies and methods used during the planning of SchoolNet Namibia based on any previous experiences, if so what were they?

<p>8. Are there any cooperation with existing national organisations or businesses, if so what are they?</p>
<p>9. Are there any steps taken to ensure that all individuals in the communities have equal opportunities, if so what are they?</p>
<p>10. Have any local content been developed on for example the Internet as a part of the project, if so what kind?</p>
<p>11. Are any forms of basic literacy and ICT education provided to people in the communities as a part of the project, if so what are they?</p>
<p>12. So far, what are the outcomes of SchoolNet Namibia?</p>
<p>13. Have the SchoolNet Namibia project been followed up in any way, if so how?</p>
<p>14. Is the SchoolNet Namibia project successful? If so, in what ways? If not, in what ways?</p>
<p>15. Are there any lessons learnt so far, if so what are they?</p>
<p>16. Has there been any specific feedback received from the targeted communities, if so what is it?</p>

7.1.2 ICT Project for the Public Universities of Nicaragua

1. What are the aims of the ICT project for the public universities of Nicaragua?
2. What are the expected outcomes of the ICT project for the public universities of Nicaragua?
3. What is the target population of the ICT project for the public universities of Nicaragua?
4. Does the ICT project for the public universities of Nicaragua have any specific development targets, if so what are they?
5. Were any local people and/or organisations involved in the ICT project for the public universities of Nicaragua from the start, if so how were they involved?
6. What strategies and methods were used during the planning of the ICT project for the public universities of Nicaragua?
7. Were the strategies and methods used during the planning of the ICT project for the public universities of Nicaragua based on any previous experiences, if so what were they?

<p>8. Are there any cooperation with existing national organisations or businesses, if so what are they?</p>
<p>9. Are there any steps taken to ensure that all individuals (the target population) have equal opportunities, if so what are they?</p>
<p>10. Have any local content been developed on for example the Internet as a part of the project, if so what kind?</p>
<p>11. Are any forms of basic literacy and ICT education provided to the target population as a part of the project, if so what are they?</p>
<p>12. So far, what are the outcomes of the ICT project for the public universities of Nicaragua?</p>
<p>13. Are there any lessons learnt so far, if so what are they?</p>
<p>14. Has there been any specific feedback received from the target population, if so what is it?</p>

7.1.3 Outback Telecentre Network Inc.

<p>1. What are the aims of the Outback Telecentre Network Inc.?</p>

2. What are the expected outcomes of the Outback Telecentre Network Inc.?
3. What is the target population of the Outback Telecentre Network Inc.?
4. Does the Outback Telecentre Network Inc. have any specific development targets, if so what are they?
5. Were any local people and/or organisations involved in the Outback Telecentre Network Inc. project from the start, if so how were they involved?
6. What strategies and methods were used during the planning of the Outback Telecentre Network Inc. project?
7. Were the strategies and methods used during the planning of the Outback Telecentre Network Inc. based on any previous experiences, if so what were they?
8. Are there any cooperation with existing national organisations or businesses, if so what are they?
9. Are there any steps taken to ensure that all individuals in the communities have equal opportunities, if so what are they?

10. Have any local content been developed on for example the Internet as a part of the project, if so what kind?

11. Are any forms of basic literacy and ICT education provided to people in the communities as a part of the project, if so what are they?

12. So far, what are the outcomes of Outback Telecentre Network Inc.?

13. Have the Outback Telecentre Network Inc. project been followed up in any way, if so how?

14. Is the Outback Telecentre Network Inc. project successful? If so, in what ways? If not, in what ways?

15. Are there any lessons learnt so far, if so what are they?

16. Has there been any specific feedback received from the targeted communities, if so what is it?

7.1.4 Networks For You

1. What are the aims of NetWorks For You?

2. What are the expected outcomes of NetWorks For You?
3. What is the target population of NetWorks For You?
4. Does NetWorks For You have any specific development targets, if so what are they?
5. Were any local people and/or organisations involved in the NetWorks For You project from the start, if so how were they involved?
6. What strategies and methods were used during the planning of the NetWorks For You project?
7. Were the strategies and methods used during the planning of NetWorks For You based on any previous experiences, if so what were they?
8. Are there any cooperation with existing national organisations or businesses, if so what are they?
9. Are there any steps taken to ensure that all individuals in the communities have equal opportunities, if so what are they?
10. Have any local content been developed on for example the Internet as a part of the project, if so what kind?

11. So far, what are the outcomes of NetWorks For You?
12. Have the NetWorks For You project been followed up in any way, if so how?
13. Is the NetWorks For You project successful? If so, in what ways? If not, in what ways?
14. Are there any lessons learnt so far, if so what are they?
15. Has there been any specific feedback received from the targeted communities, if so what is it?