Institute of Social Studies

GRADUATE SCHOOL OF DEVELOPMENT STUDIES

Information Provision to Small-Scale Farmers in Zambia; Does the Draft National Information Communication Technology (ICT) Policy Provide Solutions?

A RESEARCH PAPER PRESENTED BY

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(Zambia)

In partial fulfillment of the requirements for obtaining the degree of

MASTER OF ARTS IN DEVELOPMENT STUDIES
SPECIALIZATION: RURAL LIVELIHOODS AND GLOBAL CHANGE

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THE HAGUE, DECEMBER 2004

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DEDICATION

In loving memory of my young brother, who passed away during the course of my writing this paper. May his soul rest in peace.

ACKNOWLEDGEMENTS

My M.A studies at the Institute of Social Studies were made possible through a fellowship provided by the Netherlands government under its development cooperation program and I am greatly grateful for this assistance.

I would also like to thank the following without whose help my studies would have been very difficulty to accomplish: all Zambian students at ISS in 2003/2004; all the friends I made during the course of my studies; all my classmates in RLGC; the Programme Administrator, Antonella, as well as all the members of staff.

In particular I thank my supervisor, Prof. Ashwani Saith and my second examiner, Dr. Bridget O'Laughlin for the inexorable assistance they gave me during the research-writing period.

My acknowledgements are incomplete without thanking my husband, Lee Habasonda, whose criticisms and editing of my paper I greatly appreciate. Lastly, I thank my mum, dad and the whole family back home in Zambia for their support, love and prayers during my stay away from home; I LOVE YOU ALL and God bless.

Marjorie Chola Chonya

ABSTRACT

Information provision to small-scale farmers in Zambia has been problematic for a long time now. The government therefore hopes that a policy framework will help smooth information provision to all sectors of the economy, including agriculture. This study therefore endeavoured to find out to what extent the draft ICT policy currently under formulation will answer to the small-scale farmers' information needs and access problems.

This research paper contains six chapters. Chapter One introduces the study and highlights the problem statement, relevance, objective, questions, methodologies/data sources and limitations of the study. Chapter Two gives the theories and analytical frameworks as well as general arguments on the role of ICTs in development and poverty reduction.

In Chapter Three, information needs and access problems for small-scale farmers are highlighted. This is after giving an overview of agriculture in Zambia, small-scale farming and extension/information services. Chapter Four provides an overview of the Zambian ICT status after which some highlights from the draft ICT policy are presented. In particular, highlights on what the draft policy states on infrastructure, agriculture and implementation are indicated.

Chapter Five basically discusses whether the draft policy provides a solution to small-scale farmers' information needs and access problems and assesses whether access and use is guaranteed for all, including the poor farmers in the countryside. Chapter Six concludes that in its current form the draft policy will satisfy the small-scale farmers' information needs but does not indicate clearly how it will answer to the information access problems that the farmers are currently facing. It also concludes that the draft policy does not adequately outline how the indigenous knowledge, local needs, feedback and priorities of the farmers will be integrated in the use of ICTs in agricultural production and productivity in Zambia.

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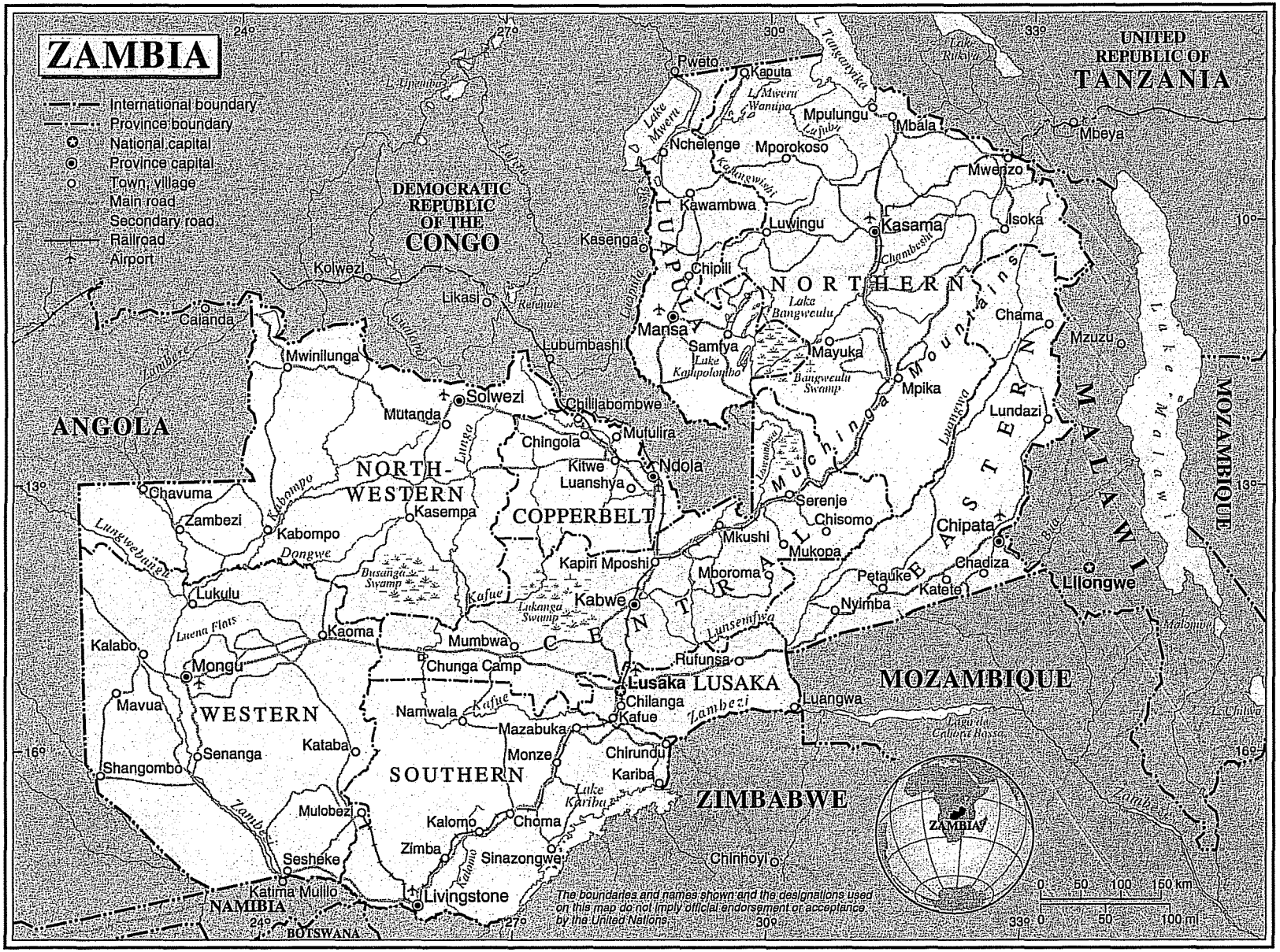
ACRONYMS

AMAG	AGRICULTURAL MARKETING ADVISORY GROUP
CSO	CENTRAL STATISTICAL OFFICE
GDP	GROSS DOMESTIC PRODUCT
ICT	INFORMATION COMMUNICATION TECHNOLOGY
IMF	INTERNATIONAL MONETARY FUND
LCMS	LIVING CONDITIONS MONITORING SURVEY
MACO	MINISTRY OF AGRICULTURE AND COOPERATIVES
MAFF	MINISTRY OF AGRICULTURE, FOOD AND FISHERIES
MCT	MINISTRY OF COMMUNICATIONS AND TRANSPORT
MFNP	MINISTRY OF FINANCE AND NATIONAL PLANNING
NAIS	NATIONAL AGRICULTURAL INFORMATION SERVICES
PTC	POSTS AND TELECOMMUNICATIONS COMPANY
TNDP	TRANSITIONAL NATIONAL DEVELOPMENT PLAN
WB	WORLD BANK
WDR	WORLD DEVELOPMENT REPORT
VAC	VULNERABILITY ASSESSMENT COMMITTEE
ZAMTEL	ZAMBIA TELECOMMUNICATIONS CORPORATION
ZAMPOST	ZAMBIA POSTAL SERVICES CORPORATION
ZNBC	ZAMBIA NATIONAL BROADCASTING CORPORATION



Map No. 3731 Rev. 4 UNITED NATIONS
January 2004

Department of Peacekeeping Operations
Cartographic Section

CHAPTER 1. INTRODUCTION

1.0. Background to the study

While the debate on the role of information communication technologies (ICTs) in development rages on, many developing countries have continued formulating and implementing ICT policies. Zambia is no exception and the government with support from the international community is currently collecting views and comments from the public on the draft policy that was launched in November 2003.

Prior to the launch of draft policy, symposia and seminars were held where stakeholders agreed that if the country has to join and avoid being left behind the super highway, a policy framework had to be put in place. The policy framework, it was asserted, is necessary as "the extent to which Zambia can benefit" from the information revolution "largely depends on the strategies and actions for development of its information infrastructure required for the efficient collection, processing, storage and transmission of information, together with the legal and institutional framework" (MCT, 2003: 1). Additionally the integration and use of ICTs "in a holistic manner" is believed to require "a sound national policy framework" (ibid: 2).

In particular to rural and agricultural development, the lack of a policy is understood to be the reason the expansion of ICT infrastructure to the rural areas is stalled and "the opportunities offered by effective, cheap and simple ICTs" not been availed to the rural poor (Barkworth (2003) in Gerster and Zimmermann, October 2003: 45; Mwanza, 2003). Conversely, it is argued that "the internet-based information systems" which may significantly allow "diversification of livelihood strategies, providing early warning systems, facilitating the sourcing of inputs, marketing produce and assisting in planning for poverty reduction" are currently impossible in rural Zambia due to the lack of a policy (ibid).

Against this background, this study set out to assess to what extent the draft ICT policy hopes to facilitate the smooth flow of information in the agricultural sector and among small-scale farmers. This is in view of the small-scale farmer's information access problems currently being faced. The study therefore gave a general overview of the

small-scale farmers' various activities to ascertain their information needs and assess whether the draft policy provides solutions. It also highlighted the information access problems so as to examine whether the draft ICT policy will help counter these problems. The study also evaluated the draft policy to ascertain whether it adequately ensures that ICTs will be accessed, used and controlled by all stakeholders in the agricultural sector, especially the small-scale farmers who constitute the largest percentage of the rural poor. Some recommendations were therefore made, based on the findings, and will be availed to the Ministry of Communications and Transport (MCT) as a contribution to the policy formulation process.

1.1. Problem statement

The Zambian government has, since the 1960s, been using mass media such as radio, television and publications to supplement the person-to-person agricultural extension method in delivering agro-information to farmers. But the relatively poor communication network, infrastructure, low literacy levels and government budgetary constraints have hindered the smallholder farmers' effective access to information, especially the poor peasants in outlying areas (NAIS, June 2002).

On the other hand the draft policy promises that the Zambian developmental agenda should "incorporate the use of information communication technologies to form the crucial link between agriculture and trade" (MCT, 2003: 34). The government hopes that ICTs' access and use by various stakeholders in the agricultural sector will considerably change the flow of information among farmers, buyers and other stakeholders, and lead to an efficient agro-business environment by increasing farmers' competitiveness in production, marketing and utilisation of agro-products (ibid).

This study therefore raised questions on whether the draft policy adequately outlines how it will;

- Satisfy the information needs of the farmers
- Ease the current information access problems and;
- Ensure all stakeholders in the agricultural sector, especially the small-scale farmers, benefit from the use of ICTs

These issues need clarifying because firstly, farmers are engaged in diverse activities that give rise to various information needs. But their information access is hampered by limited infrastructure and high access costs, among others. Therefore for information through ICTs to effectively reach the farmers, investment in infrastructure should be assured, while also bearing in mind the associated high costs and the Zambian government's overwhelming domestic and foreign debt of US$5.8 as of 2002 (Hesselmark and Esselaar, November 2002). Additionally the uses of ICTs in agricultural development will likely lead to changes in research, extension systems and farmers' attitude and behaviour. As Hunter asserts, "a new technique may call forth a new institution and a new institution makes possible a new technique" which may alter peoples' livelihoods, create uncertainty or lead to more financial investment (1996: 3).

Secondly, farmers in Zambia are a large heterogeneous group with variations in resource endowment and it is a bone of contention if this draft policy does not disaggregate farmers in a bid to ensure access and use of ICTs by all. Similarly, while farmers have different characteristics across groups, there are also intra-group variations that relate to age and gender. These variations need recognition as they play a big role in determining allocation and may lead to unequal access and control of resources (WDR 2000/2001). If not addressed at policy formulation stage, these differences may limit the access and usage of ICTs by the disadvantaged groups, the poorest, women and youths.

Women are particularly susceptible to being left out in benefiting from ICTs due to their lower levels of literacy, education and economic security in relation to men (CSO, 1999; Hafkin and Taggart, 2003). This is despite their significant contribution in agricultural production. Women do not only sustain local livelihoods but also contribute substantially to the national economy through production labour of non-traditional exports such as flowers and vegetables (FAO, 1999; IP/FAO, 2003; MAFF, 2001; Odame, 2002).

Therefore for any meaningful benefit to be accrued from ICTs the draft policy should incorporate the issues and concerns that currently hinder effective information access. If not recognised now, these issues and concerns may lead to the exclusion of the small-scale farmers as well as increase the gap between the rich and poor as opposed to the increased agricultural productivity and poverty reduction envisaged in the draft ICT policy (Haq, 1988; MCT, 2003; Saith, 2001).

1.2. Relevance/Justification of the study

Agricultural production is considered the mainstay of the Zambian economy. Apart from the sector's 18-24% contribution to the Gross Domestic Product, over 80% of the rural population directly depend on it for food and income (MFNP, May 2002; WDR 2000/2001). However concerns are raised that despite its potential, the agricultural sector has performed below expectations[1].

Small-scale farmers are particularly affected by the agricultural sector's low performance due to their low socio-economic status (Ashworth, 1999; MACO, April 2004; MFNP, 2002). They have also been targets of numerous agricultural programmes. Since the advent of the structural adjustment programme (SAP) imposed by the World Bank (WB) and the International Monetary Fund (IMF) in the 1990s, the government, the private sector and the donor community, have with little success implemented various programmes aimed at alleviating poverty and stimulating agricultural growth among the small-scale farmers (MFNP, May 2002).

In particular and recognising the important role that agricultural extension/information plays in agricultural development, the government has since independence in 1964 provided extension and information services to the farmers. However, the extension/information system currently faces various challenges mostly related to human and financial resources that have limited its capacity to effectively and efficiently provide information to small-scale farmers. These challenges have mostly been attributed to the changes in the socio-economic situation, technology and the HIV/AIDS pandemic (NAIS, September 2002).

[1] More details on low performance of the agricultural sector given in Chapter 3

Consequently these challenges have led to various debates on the role of ICTs, especially the modern ones like the Internet, in supplementing the current extension–information system. There is also a realisation that the use of mass media in supplementing the work of extension officers needs serious revisiting and reinforcing in view of the high potential the media have as a cost effective means of rapidly diffusing a wide range of topical information to remote communities (NAIS, June 2002).

It is therefore envisaged that the formulation and eventual implementation of an ICT Policy in Zambia will facilitate increased access to information by farmers so they can make informed decisions on production, marketing and investment which may ultimately enhance their agricultural productivity. This is based on the assumption that information is "one of the major drivers of the evolving global economy, a factor of production alongside land, labour and capital" (MCT, 2003: 1). Additionally, though ICTs' long-term impact on developing countries remains speculative, information is indisputably believed to play a role in any country's development (Roche and Blaine, 1996).

This study therefore adds to the general knowledge on the small-scale farmers' information provision in Zambia. It also provided an opportunity for the researcher to effectively contribute to the National ICT Policy formulation currently underway.

1.3. Objectives and Questions

The **objectives** of the study were:-

i) Highlighting the information needs, current sources and the information access problems of small-scale farmers;

ii) Evaluating the draft National ICT policy to ascertain whether:
   a) It provides a solution to the information needs and access problems of small-scale farmers;
   b) It ensures access, use and diffusion of ICTs by all stakeholders, especially the small-scale farmers;

iii) Providing policy recommendations.

The **main questions** were;

Does the draft National ICT Policy provide a solution to the small-scale farmers' information needs and access problems? Does it ensure access and use of ICTs by all, especially the small-scale farmers in Zambia?

The **specific questions** were;

i) What are the small-scale farmers' information needs and access problems? Does the ICT draft policy provide the solution?

ii) Does the draft policy ensure access, use and diffusion of ICTs by all, especially the small-scale farmers?

iii) What policy recommendations can be drawn from the study?

1.4. Methodology and Data sources

This study was based on desk research. It involved a brief comparative analysis of the categories of farmers, the commercial, medium and small-scale. The characteristics of small-scale farmers where highlighted in terms of their location, technology used, poverty levels, land cultivated and agricultural activities, which led to determining of their information needs. The study also highlighted the current information sources and problems being faced by small-scale farmers in accessing information. This was done with the aim of determining whether the draft policy provides solutions.

The study also gave a brief Zambian ICT status as well as an overview of the draft policy's objectives and strategies on Infrastructure, Agriculture and Implementation so as to assess whether the ICT draft policy provides solutions to the small-scale farmers information access problems. The study also evaluated whether the draft policy will ensure access and use of ICTs by all farmers, especially the poor small-scale farmers in outlying areas.

Three analytical frameworks were used. These include the *Information-theoretical perspective, Structural approach* and the Gerster and Zimmermann's (2003) *Pro-poor elements for National ICT Policies*. The *information theoretical perspective* was used

to explain the difficulties associated with limited access to information. The *Structural theory* and *Pro-poor elements for National ICT Policies* were used to evaluate and ascertain whether the draft policy provides a solution to farmers' information access problems and ensures access and benefit of information provided through ICTs by all, especially the small-scale farmers in outlying areas.

Data sources included various books, published and unpublished reports. More specifically the books, research papers, World Bank and Human Development Reports provided general data on ICTs and rural development. Government reports, policy and statistical documents provided data on the poverty situation, general agriculture and small-scale farming in Zambia. The ICT situation in the country was based on data from the draft ICT policy, research survey and workshop reports.

Research papers, government documents and reports were reviewed for data on the current sources and problems being faced by farmers in accessing information. The draft National ICT policy document provided data on the objectives and strategies that were evaluated to determine whether it provides an answer to the information access problems being faced by the farmers.

1.5. Limitations of the study

The limitations of the study were mostly related to data collection. More specifically, the study was too reliant on secondary data and research findings that resulted from surveys done on other topics. This could have led to using documents that may not be related specifically to the study but information therein could have been used and interpreted to fit into the area under investigation. The survey reports quoted in the study were also based on studies that did not target the whole country. However the findings of the study still remain valid as the data collected proved what the study set out to achieve.

CHAPTER 2. REVIEW OF LITERATURE/ANALYTICAL FRAMEWORK

2.0 Introduction

The role of ICTs in development in general and poverty reduction in particular is understood in the context that information access through these technologies can help the poor gain the knowledge necessary for influencing change and possibly coming out of poverty. However this role and importance is debatable with some people arguing that information plays a very important role in all spheres of development, with these technologies facilitating "information creation and handling" (Gerster and Zimmermann, March 2003: 7). While others, though not necessarily denying the importance of information, arguing that the importance of these technologies is highly exaggerated and to borrow words from Start, access and use of these technologies "mimic existing patterns of power, wealth, gender, class and race" (Start, 2001: 496).

2.1. Conceptual framework

The Department for International Development (DFID) defines ICTs as "technologies that facilitate communication, processing and transmission of information by electronic means" (Ferguson and Ballantyne, 2002: 3). The Zambian draft ICT policy uses the term in its generic sense to "express the convergence of telecommunications, computer science, broadcasting, postal and information services in the delivery of social and economic services and products" (MCT, 2003: 1). Even though the term ICT is associated with the modern ICTs like the Internet and the web, they "still refer to any artefact, technique or knowledge used to create, store, manage and disseminate information" (Gerster and Zimmermann, March 2003: 7). The term ICT is simply "lending old technologies new relevance" (ibid). Therefore ICTs include radio, video cameras, still cameras, television, telephones and the publications among others. On the other hand, knowledge whose transfer is facilitated through ICTs, is defined as "awareness or familiarity gained by experience or a person's range of information or specific information, facts or intelligence about something" (Oxford Reference Dictionary, 1996)

ICTs are therefore supposed to facilitate the flow of timely and relevant information, which may make a difference in the lives of the poor, especially the rural poor

(Arunachalam, August 2002). The poor in this case are those who live in poverty. Poverty on the other hand is a multifaceted concept with different entry points to its understanding. Agreeably, it is associated with being deprived of necessities such as food, water, shelter and clothing that make human living possible. However poverty is more than the physical human requirements and is also associated with lack of dignity, being marginalised, vulnerable to climatic conditions and market price shocks, having limited access to markets and other basic infrastructure. Poor people are also "often treated badly by the institutions of state and society and excluded from voice and power in those institutions", (WDR 2000/2001:15). These broad dimensions of vulnerability, risk exposure, voicelessness and powerlessness severely deprive and restrict what Sen calls, "capabilities that a person has, that is, the substantive freedoms he or she enjoys to lead the kind of life he or she values", (op cit, 2000/2001:15).

Hence ICTs are believed to facilitate knowledge gain that gives the poor power to change things around them. Power on the other hand means different things and any definition depends on the theoretical understanding one has. In its general sense it "denotes ability to produce a certain occurrence or influence" or "a potential quality of a social relationship and as such rests on actors' access to power resources" (Dictionary of the Social Sciences, 1964; Dictionary of Sociology, 1994).

These definitions of power and poverty do not mean that the poor just sit and wait for the powerful to give them what they need but to admit that the poor are vulnerable and their vulnerability limits their capacity to overcome difficulties. Admittedly, the poor have their own political and power structures that define the way their societies are hierarchically constructed, and these power relations explain why "poverty and deprivation are functions of polarisation, of power and powerlessness," (Chambers, 1995: 6). Hence poverty, though not the same as inequality, can be closely associated with inequality and power relations.

2.2. Theoretical/Analytical framework

The analytical framework involved the analysis of the *Information theoretical perspective, Structural theory* and the Gerster and Zimmermann's (2003) *Pro-poor elements for National ICT Policies*. The *Information-theoretical* perspective was used to explain and understand why information access is important for the small-scale farmers and whether the draft policy will provide a solution to the farmers' information needs. The *Structural approach* and the *Pro-poor elements for National ICTs policies* were used to evaluate whether the draft policy provides a solution to the information access problems and ensures access and use of ICTs by small-scale farmers.

2.2.1. The Information-theoretical perspective

Through analytical works on the standard neo-classical theory's assumption of free exchange market transactions, investigations on the "causes and consequences of transaction costs, uncertainty, incomplete markets and incomplete information" have led to the information-theoretical perspective (Bedi, 1999: 7). The central tenets of this perspective are that information acquisition especially in developing countries is very costly while the information provided is "poor, scarce, maldistributed, inefficiently communicated, and intensely valued" (Ibid (1)). Therefore information access problems "reduce the extent of mutually beneficial exchanges and lead to economy-wide Pareto inefficiencies ... and behaviour that differs markedly from what it would have been if more information had been available" (Ibid (2)). Additionally, limited access to information leads to market and other uncertainties that have serious effects on efficiency and productivity as without information "decisions are untimely, irrational and misdirected" (Bedi, 1999; MCT, 2003: 1).

Thus it is argued that developing countries have k*nowledge/information ga*ps due to limited technical knowledge on farming, birth control etc and knowledge about attributes like "quality of a product, the diligence of a worker, or the creditworthiness of a firm..." (WDR1998/99, 1999: 1). The "unequal distribution" of knowledge "across and within countries" and the "difficulties posed by incomplete" knowledge lead to *knowledge gaps* and *information problems* (ibid). Therefore, there is need to fill in the *knowledge/information gaps* and solve the *information problems* that have

constrained development through the use of ICTs (Bedi, 1999:3). This is with the belief that "*information problems* and the resulting market failures especially hurt the poor" (WDR 1998/99, 1999: 1).

Hence, a country may be poor because it "lacks objects, which are valuable in production" and "does not have access to ideas that are used .... to generate economic value" (Pohjola, 2002: 3). Ideas are necessary and important because "they are instructions that are needed to combine physical resources to produce economically valuable commodities" (ibid). Thus the potential of ICTs can only be fully appreciated by recognising the importance of "ideas, knowledge and information in the development process" (Bedi, 1999:7).

It is however not easy to fill *knowledge/information gaps*, and developing countries are advised not to necessarily invent their own technologies but rather acquire and adopt the available technologies from developed countries (WDR 1998/99, 1999). The crucial question for developing countries is therefore not "whether to adopt information technology, but how to harness it for the betterment of their vast numbers of poor people" (Haq 1999: 3).

Addressing information problems is therefore important because "without knowledge.....markets can not function properly" and institutions broadly including public and private organisations, laws and social norms, need strengthening as they make transactions possible "that would otherwise not occur" (WDR 1998/99, 1999: 1).

2.2.2. Structural Perspective

Under this view, concerns are raised on "who uses the technology, how the technology is used, and to what end it is used" (ROAPE, 2004). These concerns also give rise to the realisation that ICTs have a big impact on social relations as those resource or capacity endowed are most likely to benefit from technology use than those that are not (ROAPE, 2004; Rogers quoted in Bedi, 1999). In particular to rural development and agricultural production in Africa, a 'wired' continent may not necessarily lead to equal

benefit by all, but rather may lead to even more alienation of the rural poor (ROAPE, 2004).

In fact, for any meaningful benefit to be accrued from ICTs, access should be assured coupled with the ability to use the information accessed (Ashwani, 2001; Gerster and Zimmermann, March 2003). Accessibility is thus necessary and a starting point but it is determined by factors of connectivity, affordability and capability (ibid). These factors ensure information services are available, affordable and the potential users have the necessary skills to access and use ICTs.

However, farmers in rural areas of developing countries are constrained by almost all the abovementioned factors in accessing information. Specifically the rural poor may fail to access information through ICTs due to problems related to limited communication infrastructure in rural areas. Communication infrastructure impediments range "from inadequate and/or unreliable electric power supplies to insufficient institutional mechanisms and procedures to manage and provide service" (Haq, 1988: 6). In Zambia, for example, some rural areas are partially or completely cut off from any radio, television, telephone, Internet and electricity connectivity (MCT, 2003).

Furthermore as argued by Rodgers, "access to information is largely a function of the existing education, income and wealth distributions" (Bedi, 1999: 4). This is because societies consist of different groups of people, which are not homogenous (Rahman, 1986). The Zambian farmers, for example, consist of various groups including the poor small-scale farmers. Conversely, even if ICTs were given free to this group of farmers, their low literacy levels and high poverty levels may hinder technical maintenance or sustenance of the technologies.

The differences in resource endowments also generally lead to diversity in activities, information needs, access and use of information sources. As such inequalities and conflict of interests arise. In particular to agricultural rural development and technological change, Rahman notes, "technological progress is faster in the capitalist

farms compared to peasant farms" (1986: 68-69). Additionally, peasants and the poor are at a disadvantage "because the state acts in the interest of capitalist farmers" and the rich (Ibid). Hence, the group with the necessary human and financial resources is able to access and use ICTs. In short, ICTs are in themselves prohibitive for the poor, who lack finances to purchase and maintain the technologies, as well as the skills to operate and extract information from them.

It is hard enough for the poor to access information through ICTs but women with their "lower levels of literacy and education relative to men" and "lower degree of economic security ..... and gender-related constraints on their time and mobility" encounter even worse problems (Hafkin and Taggart, 2003: 3).

Additionally, inequalities across countries may also be perpetuated through ICT adoption and use. Most Sub-Saharan African countries and Zambia in particular, do not have the research and development capacity to produce or reproduce the technologies such as computer software. Complete reliance on imported technologies may therefore lead to the "well-trodden path of dependency" which is obviously not to the poor countries' advantage as it continues to widen the inequality gap between the rich and poor countries (Haq, 1988: 118). This is also complicated by the fact that technicians and the users of ICTs may need training, further escalating the costs associated with ICTs acquisition and adoption.

2.2.3. Pro-poor elements for ICT policies

As the Zambian government hopes for a knowledge-based population facilitated by ICTs, it is imperative to evaluate how the policy framework will achieve this goal especially in view of the high poverty levels in the country (MCT, 2003). Therefore the *Pro-poor elements for national ICTs policies* by Gerster and Zimmermann (March, 2003) were used in this study to evaluate how the draft policy will ensure that the poor small-scale farmers benefit from ICT use. Therefore pro-poor ICT policies should;

- Have a development goal focus but linked and integrated with the Poverty Reduction Strategy Paper and other poverty reduction programmes in the country;

- Potentially be better suited to local needs with a framework to stimulate local language and content, low cost devices suitable for users with low educational background
- Have strategies and instruments well defined for the implementation of the objectives
- Have specific guidelines, which can be verified by indicators
- Indicate ICT infrastructure for special provision for remote regions to ensure supply goes to the rural districts and to the poor
- Create a pro-poor environment in ICT application
- Promote equal opportunities for men and women
- Have an implementation plan, to show that though policy is vital and recommendations are countless, implementation is necessary

2.3. General arguments-ICTs for rural development and poverty reduction

As a strategy for poverty reduction and development, ICTs are assumed to enable access to information, which cumulates into knowledge gain, which in turn enables the poor make a difference in their every day life. Emphasis on information flow to the poor is aimed at, for example, facilitating food security, increasing their voice and enhancing their capacity to participate in advocacy campaigns on all issues including the provision of social services such as health and education, (WDR 2000/2001). Therefore, information access may give the poor the necessary knowledge and power to choose their destiny, as "access to information is access to power" (HIVOS/IICD/Oneworld Nederland 2003: 21).

For rural development and agricultural production in particular, Richardson notes that, though no panacea for rural development, information technologies, more especially the Internet, "bring new information resources and can open new communication channels for rural communities" (1996: 1). Richardson argues that the Internet "offers a means of bridging the gaps between development professionals and rural people through initiating interaction and dialogue, new alliances, interpersonal networks, and cross sectoral links between organisations" (ibid). In this way, ICTs create an enabling environment that allows for sharing of information and knowledge among the

poor themselves, development workers and policy makers. This two-way communication system ensures "voices of all people - poor .....women and children as well as men – are heard when decisions are made that affect their livelihoods" (Ferguson and Ballantyne, 2002). It also facilitates the dissemination of indigenous knowledge. Therefore the sustainability and success in ICT projects rely on recognising the real needs of local users (Richardson 1996). The local communities, depending on their capability in terms of cost and skills should therefore determine the type of ICT and how it should be used for their benefit. The ICT type communities identify may ensure information provision for their social change and convey the knowledge/skills required for the improvement of their lives as well as "help overcome the barriers of illiteracy, language, intercultural differences and physical isolation" (Richardson, 1996: 2).

This in turn entails vigorous capacity building activities for information providers and local people so as to create and enhance locally managed use, tools and resources as well as link new ICTs with old ones and other local communication channels that easily reflect the characteristics of the indigenous people (Richardson, 1996). Beneficiaries should therefore define their own information needs, while the information provided "should be in the local language and even better originate from local sources", the technologies provided should be "embedded in a broader effort for self help" and their successful applications should "depend on individuals and their enthusiasms, competence and motivation" (Gerster and Zimmermann, March 2003: 4). On the whole, ICTs help conventional communication channels and media organisations "handle, process and act upon the information" because they facilitate radical changes in "the ways of gathering and transmitting information" (Webster 1995: 135).

Therefore ICTs may enhance agricultural productivity because they facilitate the collection, compilation and dissemination of timely agricultural information on new technologies, weather forecasts and credit facilities, among others. More importantly in agricultural information provision is timely and effective transmission. As resources are scarce, ICTs enable timely information flow to the farmers to facilitate informed decision-making on efficient resource allocation and use (Parikh, 1990). This

is ultimately meant to ensure household and national food security as well as secure people's livelihoods in terms of the ability to pay for necessary social welfare and economic/commercial services.

ICTs also facilitate the provision of domestic and international market information, which is assumed important, based on the neo liberal belief that "markets are central to the lives of poor people" (WDR 2000/2001, 2001: 38). Market information empowers, especially small-scale farmers, with opportunities to expand their economic potential and know where to sell their products, at what price, who else is selling what, where and at what price.

Yet the role of ICTs in development is not as straight forward. Firstly questions are raised on whether information/knowledge is the missing link in poverty alleviation in the world's poor countries (Ashwani, 2001; Bedi, 1999). In fact developing countries lack more than information and have "other, more pressing investment priorities" than investing in ICTs whose returns there is very little evidence on (Bedi, 1999: 4). As ICTs are just avenues and not development instruments in themselves, it is also difficult to generalise their importance as their impact on people differ depending on socio-economic and political situations (Ashwani 2001).

Secondly some ICTs rarely carry local content. For example some information found on the Internet is mostly foreign, barely touching on developing countries' local community needs, with a language unknown and the ICT application alien to rural communities (MCT, 2003). Furthermore, it is doubtful as to whether information access by the poor can actually lead to poverty reduction as the link between knowledge and poverty reduction is not automatic and is highly debatable. The fact that one has the knowledge does not automatically lead to action as some people may decide to do nothing about what they know. Similarly the poor may not utilise the knowledge because they are faced with other limitations unrelated to information acquisition. These limitations may be due to lack of other necessary resources to translate the acquired knowledge into what Sen calls "certain basic functionings" (1992: 109). It may therefore be necessary to avail people with other resources to

supplement what the people know. Otherwise what is the use of knowledge on new agricultural technologies, if one cannot afford to buy them? Or knowledge about markets, if one does not have anything to sell?

CHAPTER 3. SMALL SCALE FARMERS' INFORMATION PROVISION

3.0. An overview of agriculture in Zambia

For a better understanding of information provision to small-scale farmers, it is important to place the discussion in the larger context of the Zambian agricultural sector. Accordingly agriculture plays a very important role in poverty alleviation and more especially as a source of livelihood in terms of food, employment and income for 97.8% Zambian rural population (MACO, April 2004). Hence, it is primarily, though not exclusively, targeted "as the engine of income expansion for the poor and is thus perceived to possess the best opportunities of enhancing the poor's livelihoods" including women who constitute 65% of the total rural population (MAFF, 2002; MFNP, 2002: 39). In addition, the country's endowment with "abundant arable land, labour and plenty of water" creates potential growth in agricultural production (MFNP, 2002: 54).

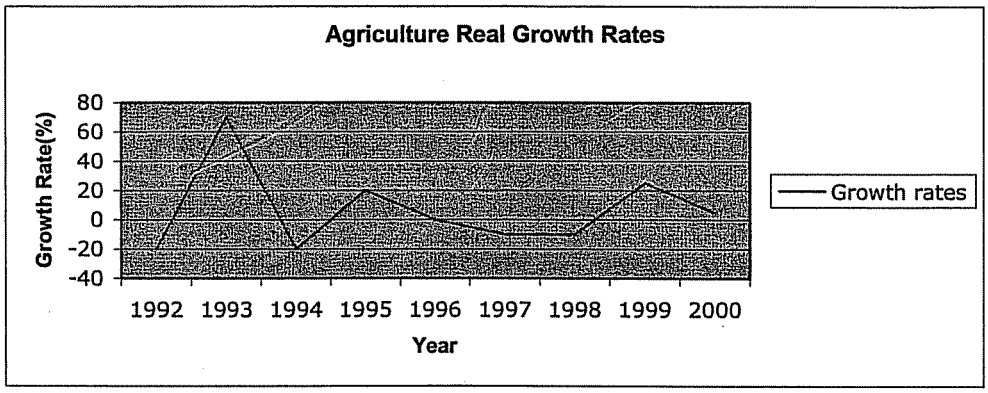
However, despite its importance and potential, the agricultural sector contributes between 18-24% to the Gross Domestic Product (GDP) and inadequately caters for over 80% of the rural population in terms of food and employment (MACO, April 2004; MFNP, 2002). For instance, only 14% of the arable land is currently under use while despite Zambia having the "best surface and underground water resources in Africa" which offer "excellent prospects for irrigation programmes" these waters remain largely unexploited (MACO, April 2004: 1; MFNP, 2002). Reasons for the sector's extreme low performance resulting in low growth include the following[2]:-

1. Predominant dependence on rain fed agriculture
2. Dependence on single crop-maize,
3. Little investment and utilisation of technologies
4. Inadequate extension information delivery system
5. Poor rural infrastructure
6. Underdeveloped financial markets/limited credit markets
7. HIV/AIDS epidemic
8. Discrimination against women

2 Sources: MFNP, 2002; MACO, April 2004; NAIS, September 2002

9. Adverse climatic conditions (leading to droughts and floods)
10. High production costs
11. Inadequate post harvest technologies

Figure 1: Trends in Agriculture Real Growth Rates, 1992-2001



Source: PRSP 2002-2004(MFNP, 2002)

The Zambian government however believes that for increased agricultural production and poverty reduction, small-scale farming "represents a large potential resource" especially if "an enabling and conducive policy environment" is assured (MACO, April 2004: 1). Therefore agricultural policy[3] will aim at, increasing production and productivity of food and horticultural crops/non-traditional exports, more small-scale farmers integrated into contract farming/outgrower schemes and cultivation of major cash crops including cotton, tobacco and paprika (ibid).

Other agricultural policy aims include controlling livestock diseases that have ravaged the livestock industry especially in the last 15 years, promoting community-based resource management of fishery resources and strengthening the link between stakeholders through an increased private sector involvement in service delivery (MACO, April 2004). The government also hopes to "strengthen research-extension-farmer linkages through timely information collection and dissemination ... to reach all stakeholders in the sector" using person-to-person contact and mass media (Ibid: 12-13).

[3] The Agricultural Policy is still under formulation and the final draft was released in April 2004

3.1. Small-scale farmers in Zambia

The agricultural sector consists of three main categories of farmers, namely small-scale, medium-scale and large/commercial farmers. (See figure 2. below) Small-scale farmers comprise the largest group and their number has been increasing over the years while those of the other two categories remain almost unchanged (MAFF, 2002).

Figure 2: Characteristics of farmers in Zambia

Characteristics	Small Scale	Medium	Large scale
Number	800,000	50,000	1,000
Average Hectares cultivated	0-5	5-20	Above 20
Crops grown	Food crops	Food/cash crops	Cash crops
Livestock produced	Less than 5 exotic diary cows Any number of traditional (non-hybrid) cattle No beef cattle No exotic pigs	5-20 exotic diary cows Up to 50 beef cattle Up to 10 exotic pigs	Over 20 exotic diary cows Over 50 beef cattle Over 10 exotic pigs
Poultry produced	No Broilers No layers Own local (village) chickens	Up to 6000 broilers Up to 1000 layers	Over 6000 broilers. Over 1000 layers. Any number of parent stock of poultry
Production Focus	Subsistence	Commercial/Subsistence	Commercial

Source: Wichern et al (1999); PRSP (MFNP, 2002); LCMS 1996 & 1998 (CSO, 1997; 1999)

3.1.1. Activities engaged in

Small-scale farmers' agricultural activities are aimed at obtaining the "minimum subsistence" with "occasional surplus for sale" for income necessary for purchasing basic requirements not produced locally such as cooking oil, school fees, and sugar among others (MCT, 2003; MFNP, 2002: 55; Rahman, 1986:25). They mostly produce food crops such as maize, cassava, millet, beans, groundnuts, sunflower and sorghum (Ericsson, 2001; MACO, April 2004). Maize growing has overly dominated small-scale farming for decades until recently when extension/information messages shifted to the need to grow other food crops such as beans, groundnuts, and sweet potatoes which do not require too much external inputs (MAFF, 2002). This shift has also been necessitated by frequent flood and drought experiences, inadequate and late input

delivery, and low and unstable maize prices/markets (ibid). Yet small and medium-scale farmers account for approximately 70% of the staple food crop-maize consumed in the country (Ericsson, 2001; MAFF, 2002).

Small-scale farmers also grow cash crops such as pineapples, sugarcane, tobacco and cotton and non-traditional exports like paprika, fresh vegetables like green beans and broccoli and coffee (MAFF, 2002). However these crops are mostly produced under the expanding contract farming/out grower schemes where agricultural services such as extension, credit and marketing are provided (ibid). Unfortunately these schemes are exclusionary as they mostly benefit the farmers who live near water sources, main cities and towns (MAFF, 2002). On the other hand some small-scale farmers do not live near towns and other public infrastructure such as health centres and schools and also have unequal access to other facilities such as credit worsened by poor road networks (MFNP, 2002; MAFF, 2002).

Under livestock, small-scale farmers raise cows, goats, village chickens and other small ruminants, which they mostly sell for household income, though this sector has been hampered by frequent livestock disease occurrences (CSO, 1997; MACO, April 2004; MAFF, 2002). On the fisheries front, small-scale farmers are involved in fishing from the natural waters (dams, rivers, lakes etc) and fish ponds, whose construction is being encouraged in extension messages (MACO, April 2004).

In terms of labour, small-scale farmers mostly use family labour in agricultural production but also sell some in areas where labour markets exist (CSO, 1997; NAIS, June 2002). There has also been an increase in emphasis on rural activity diversification both on-farm (growing variety of crops not just maize) and non-farm (e.g. making artefacts) in the hope of ensuring food security and helping earn the much-needed foreign exchange (MFNP, 2002; MAFF, 2002; Start, 2001).

3.1.2. Other characteristics –Poverty levels, Literacy and other issues etc

Small-scale farmers constitute the largest group of the rural population (CSO, 1997). They also comprise the largest group of the rural income poor, 84% below the national

poverty line and 72.1% living below the extreme poverty with female-headed households more afflicted than the male headed (Ashworth, 1999; MFNP, 2002). In general, poverty levels of female-headed households in Zambia are higher than the male-headed households as shown below:

Figure 3: Incidence of Poverty in Male vs. Female headed households

Household	Non-Poor	Moderately Poor	Extremely Poor
Male Headed	31.8%	16.8%	51.5%
Female Headed	26.8%	12.9%	60.4%

Source: PRSP 2002-2004 (MFNP, 2002 *quoted from NGO Shadow Report 1999*)

Similarly in comparison to other categories of farmers, the poverty levels of small-scale farmers are by far the highest and their reduction has been very insignificant over the years as indicated in Figure 4 below.

Figure 4: Poverty Incidence of farmers in Zambia

Stratum	Overall Poverty 1996	Overall Poverty 1998	% Change 1996-98	Extreme Poverty 1996	Extreme Poverty 1998	% Change 1996-98
Small Scale Farmers	84.4	84.0	-0.4	70.5	72.1	1.6
Medium Scale Farmers	65.1	71.9	6.8	49.7	56.4	6.7
Large Scale Farmers	34.9	15.6	-19.3	15.0	13.3	-1.7

Source: PRSP 2002-2004 (MFNP, 2002, quoted from LCMS, 1998)

The low utilisation and performance of the agricultural sector is said to be the major cause of the high rural poverty levels recorded especially among the small-scale farmers (MAFF, 2002; MFNP, 2002). More specific reasons include:

a) Unequal access to services and resources including credit leading to high levels of rural-urban inequalities
b) Insufficient investment in economic and social infrastructure necessary for rapid growth
c) Adverse climatic conditions

d) Inadequate/late agricultural input delivery

In terms of technology, small-scale farmers mostly use low and simple technologies such as hoes and animal draft power for tiling the land, hybrid seeds (mostly maize seeds) and fertilizers (Wichern et al, 2002). Additionally due to frequent drought occurrences and the deterioration of the soils, and with advice from extension-information messages, farmers in some parts of the country are implementing conservation methods of production (Ericsson, 2001; MACO, April 2004). These methods, which are being implemented in parts of Lusaka, Central, Eastern and Southern Provinces, involve a "systematic planning, organisation and implementation" in "land preparation, input acquisition, fertilization, planting, weed control and harvesting" (NAIS, October-December 2002: 5). In achieving this, crop rotations, green manuring, livestock manuring, late weeding and agroforestry are encouraged, while soil turning and burning residues are strongly discouraged (ibid).

The small-scale farmers also comprise part of the majority of the rural population characterised by the low literacy level of between 30-50% in 1996 (Ashworth, 1999; MACO, April 2004; MFNP, 2002). The high prevalence of HIV/AIDS in the country has also adversely affected the farmers by significantly reducing productive labour in terms of technical skills and human labour. Recent studies done show that households directly affected by the HIV/AIDS pandemic are more likely to experience labour shortages and ultimately food insecurity (VAC, June 2003; IP/FAO, 2003).

3.2. Information provision to Small-Scale Farmers in Zambia

3.2.1. Small-scale farmers' information needs

Based on the agricultural and non-agricultural activities and challenges such as the HIV/AIDS pandemic and adverse climatic conditions abovementioned there seems to be many farmers' information needs in general and small-scale farmers in particular. Besides, the general policy that the country needs to liberalise to revitalise the agricultural sector, poses its own challenges, which may alter farmers' information needs (MFNP, 2002; MACO, April 2004). Therefore the small-scale farmers' information needs include the following:

Figure 5: Farmer's information needs

Market information/Specific marketing arrangement, likely buyers and minimum prices offered
Conservation farming/sustainable agriculture/land management
Livestock management/Livestock disease control
HIV/AIDS information
Control of crop pests
Technical information for horticulture/vegetable production
Small scale irrigation opportunities
Agribusiness opportunities/Credit/loan services
Agricultural/non-agricultural diversification

Sources: AMAG, May 2004; NAIS, June 2002

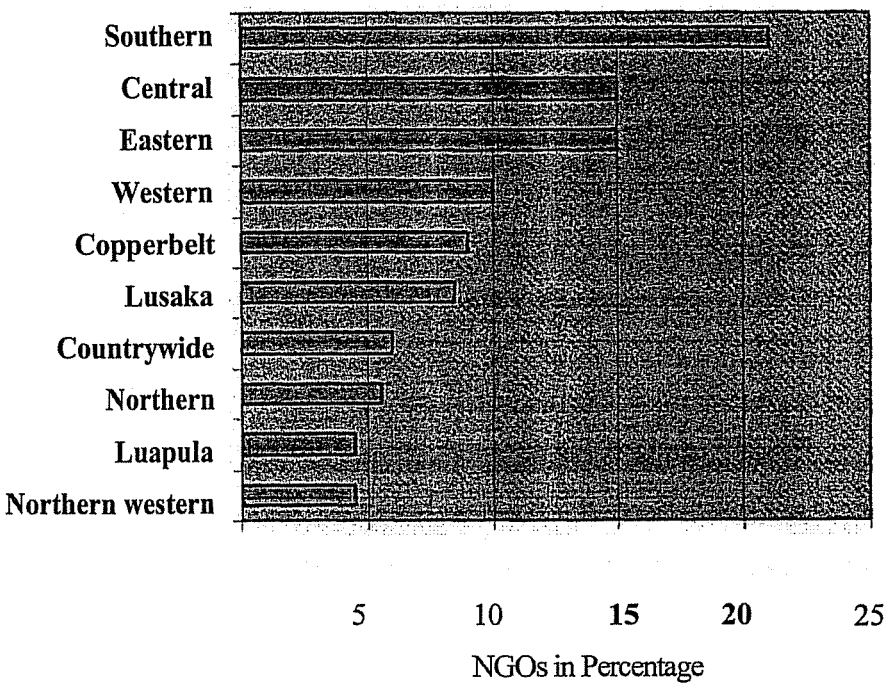
3.2.2. Agricultural Extension and Information System

Similarly, small-scale farmers' information sources/channels are diverse. Perhaps the most obvious and common source of information is the government extension and information system through the agricultural ministry, which has been in existence for a long time now. The overall objective of this system has been to provide information to enable farmers, especially the small-scale farmers, acquire knowledge and skills in agricultural production systems, technologies, prices and markets (MAFF, February 2001). Government considers this information necessary as it provides a "basis for respective farmers to make an informed decision on the kind of agricultural production they will be engaged in from season to season" and ensures they "obtain a desired return on their investment as well as deliver produce to the appropriate market" (MAFF, February 2001: 11-12; NAIS, June 2002).

This extension system relies upon the extension officers who disseminate information on a person-to-person basis and are spread according to camps, blocks, and districts across the country. At the camp level, there is a camp extension officer, at the block, there is a block extension officer and a district extension officer at the district. Supplementing the person-to-person extension system is the agricultural information wing, whose officers are located in all districts and provincial offices of the country. The information officers collect and submit radio/articles recordings for broadcasts and dissemination through electronic and print media, such as the national and community radio, television, magazines, newspapers, newsletters, leaflets, journals and audio-visual teaching aids.

Additionally, there has been significant increase in private sector extension/information provision in the past decade (NAIS, 2002). Its penetration is however rather slow than envisaged though success has been recorded with a few complaints of the 'dependency syndrome' by some farmers due to the legacy of the government sponsored extension services, especially with regards to marketing and credit (Ashworth, 1999). Furthermore, most private sector involvement is on project basis and hence short term. Examples of organisations involved in extension provision include Care International, CLUSA Zambia, Agricultural Support Programme (SIDA funded), ZNFU, Dunavant Cotton and various outgrower schemes across the country. See Figure 6 below for NGO geographical extension provision coverage.

Figure 6: Provincial coverage of agricultural based NGO's extension services



Source: ACF, 2002

3.2.2.1. Agricultural Extension System

Before independence in 1964, extension services were mostly directed towards large-scale farming, which was predominantly practised by the European settler farmers (1,500) who lived near the main roads and the line of rail[4] and were convenient to reach (Wood et al, 1990). The African farmers who were reached by the services also lived in the more accessible areas of Southern, Central and Eastern provinces of the country and were "closely connected with the various schemes introduced from the late 1940s to improve African farming" (Wood et al, 1990: 345).

After independence the extension system shifted towards the African farmers, though concentrated its efforts not on the "bulk of the rural population" classified as 'villagers' but on "a relatively small elite of already "emergent" or semi-commercialised producers, termed *farmers"* (ibid). This legacy of excluding the so called 'villagers' in the provision of extension services continued until the 1970s when it was realised that the majority of the rural population needed to be incorporated in the agricultural sector if the much needed foreign exchange had to be realised (Wood et al, 1990). This was coupled with the recognition that the copper mines that had been subsidising the agricultural sector in the past were not performing as well as they used to (ibid).

However the provision of extension services to the majority of the rural population came with its own challenges such as increasing the targeted total-farming households from 50,000 at inception to the current 600,000 (NAIS, September 2002; Wood et al 1990). This expansion led to the increase in the number of extension camps as shown in the figure below:

Figure 7: Extension Camps, 1954-1984

Year	Camps
1954	140
1964	320
1974	660
1984	1100

Source: Wood et al (1990)

[4] The line of rail passes through the Southern, Lusaka, Central and Copperbelt provinces

Another challenge was that the form/channels and range of information had to expand to satisfy the information needs of diverse farmers (Wood et al, 1990). Other challenges included the expansion in staff recruitment and training as well as extension institutional and organisational restructuring. These challenges are still being felt today and most problems that are being faced in the extension delivery system are related to the abovementioned.

Similarly a number of extension methodology programmes have been implemented in the past. The most notable ones include the *Training and Visit System,* the *Lima Extension Training and Research programme* and *Participatory Extension Approach*, which is under implementation (Wood et al, 1990; NAIS, April-June 2003). See figure 8 below.

Figure 8: Extension Service delivery methodologies implemented in Zambia

Year	Methodology	Main characteristics
1978	Training and Visit System	Regular training and visits of farmer groups by extension officers. Training and advice given to farmers on research-generated new technologies
1979	Lima Extension Training and Research Programme	Advice given to farmers to at least cultivate even just a small portion of land (0.25 hectares) of commercial/cash crops. Promotion of use of hybrid seeds and fertilizers. The purpose was to generate foreign exchange
1982	Modified Training and Visit	Regular training and visits of farmer groups by extension officers to train the farmers and advice them on new technologies generated from research. Collection of farmers experiences so that researchers and scientists are advised to generate technology addressing farmers' priorities
1990s	Village Extension Groups	Continuation of the Training and Visit Approach
In the late 1990s to date	Participatory Extension Approach	Extension services that are based on the priorities identified by the farmers themselves The participatory sessions lead to the identification of the 'farmer promoters' that are trained to train their fellow farmers

Sources: Wood et al, 1990; Saasa, 2003; NAIS, 2003

Though not many changes in the structure of the extension system (number of extension camps, training needs of extension officers etc) have been made, the extension methodology is currently heading towards a participatory approach system. This is in

response to the calls to allow the farmers take responsibility of their own destiny rather than providing a top-down approach as done in the previous methodologies (NAIS, April-June 2003). Through the Participatory Extension Approach (PEA), the government, with external financial aid, is facilitating a demand-based and community-led rural development programme through empowering farmers "to identify their agricultural service priorities, as well as monitor and coordinate the performance of their community action plans" (NAIS, April-June 2003: 5). This is being done with the view of reducing government involvement in the extension system while also facilitating farmer-led extension. Under this approach, participatory sessions are held with the farmers to facilitate the selection of "exemplary farmers who are active and dedicated to hard work with the view of sharing their knowledge and experience with other farmers" (NAIS, January- March 2003: 5).

These exemplary farmers or 'farmer Promoters' as they are called, are supposed to be sufficiently trained to adequately equip them with knowledge and skills, which are to be imparted to other farmers in their respective localities. This approach, it is asserted, ensures "regular access to extension services in the absence of extension officers" and effective use of indigenous knowledge in looking at issues that affect farmers' livelihoods (ibid). The use of farmer promoters to represent the farmers is also advantageous because the promoters fully understand the problems and needs of their colleagues, as they are farmers themselves and members of those communities (NAIS, June-April 2003). The approach has been initiated in about five provinces out of the nine provinces of the country and there are calls for more funding to start up the process in the remaining four provinces. The provinces where the Participatory approach is being implemented include Lusaka, Southern, Central, Eastern and Copperbelt provinces.

However the participatory approach has been criticised for its possibility of perpetuating inequality because the elite and better off farmers obviously get to be promoters. Its reliance on farmers may also backfire as technical messages may be distorted and experts may be required for better clarity. Therefore, the approach may require regular supplementation from government and other providers for expertise and supervision as well as financial resources for capacity building and training. Initial investment in the

approach may also be too costly for the government to implement in all the districts of the country. Additionally, as it is based on voluntary service, experience from the few districts has shown that some farmer promoters seek payment for the services rendered. Another problem is that, in some communities, farmers may not regard the farmer promoters as leaders because they know them and do not consider them any different from any other farmers.

3.2.2.2. Agricultural Information System

To supplement the person-to-person extension provision, government has also been providing the farmers with agricultural information through the National Agricultural Information Services (NAIS). NAIS, which has been in existence since the 1960s is a specialised information wing of the Ministry of Agriculture whose main role is to support person-to-person extension services through the dissemination of agricultural information to all players in the agricultural sector, particularly, the rural communities using mass media (NAIS, September 2002). It also provides information to all the other technical departments in the Ministry, acts as a link between research and extension as well as provides "a channel for farmers to have feedback to extension and research workers, thereby encouraging two-way communication" (Wood et al, 1990). NAIS also produces training material for the extension officers in the field (ibid).

Over the years it has "broadened its mandate to include agricultural related development priorities such as environment, gender, sustainable agricultural, HIV/AIDS, general reproductive health, nutrition and other issues that affect agriculture in the country" (NAIS, 1999: 1). However, NAIS faces problems that relate to limited finances, human resources, rural infrastructure, low literacy levels of farmers and communication equipment.

3.2.3. Small-Scale Farmers' Information sources

As the extension officers are an important source of person-to-person information for farmers, it is important to note from the onset that out of the over 800,000 small-scale farmers, the Ministry of Agriculture only targets 600,000 (NAIS, September 2002). Even this number has proven difficult to reach, as it is currently estimated that 20-50% of

600,000 small-scale farmers are reached by the government extension services (Ashworth, 1999; NAIS, September 2002; June 2002). However extension officers are remain important information sources to small-scale farmers. Extension officers therefore get information as shown in Figure 9.

Figure 9: Information sources for extension officers

Information Source/Channel	Rank
Farmers/Villagers	1
Radio broadcasts	2
Other extension officers	3
Regular meeting with supervisors	4
Traders/Business persons	5
Magazines/Printed materials	6
NGO Programmes	7
Newspapers	8
TV Broadcasts	9
Others	10

Source: NAIS, June 2002

Similarly extension officers prefer the following information methods:

Figure 10: Preferred information method delivery by extension officers

Communication method/channel/source	Rank
Demonstrations	1
Group meeting/discussion	2
Field days/Farm visits	3
Training in the Fields	4
Individual talk	5
Seminar/Workshop	6
Agricultural Show	7
Radio Broadcasting	8
Audio-visual aids	9
Magazine/Printed materials	10
Others	11

Source: NAIS, June 2002

On the other hand small-scale farmers' current sources of information include farmers among themselves, extension officers, other providers and mass media. The importance of information sources as perceived by farmers varies and they view extension officers as the most important source of information, followed by the radio and their fellow farmers

(NAIS, June 2002). Printed material, newspapers and television programmes are not regarded as being important as the radio "because of their low availability in rural areas" (2002: I).

The radio is regarded as an important source of agricultural information especially in remote areas where the extension service has failed to adequately reach "due to lack of reliable transport and inadequate staff" (AMAG, May 2004: 17). The increase in the establishment of community radio stations has also enhanced radio listenership in rural areas (MCT, 2003; PANOS Southern Africa, May 2002). Other development officers, who are mostly from NGOs and other private organisations involved in extension service delivery, also add to the list of information sources for farmers. Therefore farmers rank the information sources as shown in figure 11.

Figure 11: Small-scale farmers ranking of Information sources

Information Source/Channel	Rank
Extension Staff	1
Radio broadcasts	2
Neighbours/friends	3
NGO Staff	4
Printed materials	5
Seminar/workshop	6
Training in the field	7
Demonstrations	8
Newspapers	9
Traders/Business persons Others	10
TV Broadcasts	11
Agricultural Show	12
Other	13

Source: NAIS, June 2002

The information provided is predominantly agricultural technical/production and marketing on the best farming, production techniques and product prices. Most radio or

television programmes or publications contain interviews or articles featuring farmers highlighting their experiences and agricultural experts explaining the research results and technology discovered or solutions to farmers' identified problems (NAIS, June 2002).

3.3. Information access problems for small-scale farmers

In general, feedback and any information from farmers are low as there is great reliance on the postal communication whose services are slow and unreliable. The situation is worsened by the remoteness of the areas where the farmers live and the lack of an effective and efficient communication means through which feedback can be channelled to the appropriate actors. This has led to infrequent feedback being received, which has in turn affected information dissemination that is dependant on farmers' needs.

More specifically however, farmer's information access problems include the following[5];

3.3.1. Radio

- Inconsistent radio listenership in rural areas due to reception problems attributed to short-wave band and disturbances in transmission especially in bad weather conditions
- Inappropriate radio programme airing timings. This is particularly problematic for farmers that listen to programmes in listening groups. Some agricultural radio programmes are aired after 20:00hours (8 pm), which is too late and dark for farmers to meet and effectively discuss agricultural issues. Similarly during the busy farming period between November-May some farmers rarely meet with friends to listen to radio programmes as they leave their homesteads for their fields.
- Topics aired are sometimes not well researched. In addition some already aired radio programmes are repeated thereby boring the listeners and wasting their time
- Supply-led radio programming instead of radio programming that addresses the farmers' information needs due to limited farmers' involvement in choosing the topics that should be aired on radio

[5] Sources: AMAG, May 31, 2004; NAIS, June 2003; NAIS, June 2002; Ericsson, 2001; Ashworth, 1999; NAIS, September 2002

- Radio sets, like wind up/solar radios are expensive to purchase while the battery run ones' continuous supply of batteries lead to more expenses
- The audience has difficulty in mastering the topics after listening to them once as one lady stated; "as old people we fail to grasp lessons right there and then. We need to play a tape several times in order to learn effectively. We easily forget" (AMAG, May 2004: 19). Most cheap radios do not have recording systems.
- Rural communities listen to only one of the many agricultural programmes that are aired on radio mainly due to unawareness of which and when the other agricultural programmes are aired.

3.3.2. Television:

- Viewership is limited to mostly urban areas, along the line of rail and main roads that have access to the national television grid. Majority of small-scale farmers reside in rural areas, away from the line of rail and main roads
- Television sets are too expensive for the farmers especially if they have to buy batteries, as there is very low electricity connectivity in rural areas.

3.3.3. Agricultural literature

- Low levels of accessibility to agricultural literature and newspapers by the farming community due to limited availability of such materials. On average only 20% of farmers have access to agricultural literature
- The printing of such materials is at a relatively low rate due to the lack of capacity by the government to produce literature in bulk to satisfy the farming community. The distribution of the limited printed literature is also problematic as it is dependent on agricultural staff from the Ministry of Agriculture headquarters, provincial and district officers physically carrying/transporting such publications; if no travelling takes place, then no dissemination will take place
- As the printed material is inadequate to satisfy the farmers' requests, publications are often only made available to the extension officers who in turn have to relay that information to the farmers
- Low literacy levels also hamper the usefulness and importance of agricultural literature to small-scale farmers.

3.3.4. Extension officers

- Need training, especially in new technologies, as the agricultural colleges take long to update syllabuses to include new technologies
- They are few as well as over stretched. It is estimated that less than 50 percent of the 600, 000 farmers in Zambia are covered by extension officers at an average of 1 officer in about 1,000 farmers
- The HIV/AIDS pandemic has further led to the loss of trained manpower and substantial time being spent by officers on nursing themselves or ailing family members or friends
- Extension officers are also de-motivated due to inadequate financial resources for undertaking day-to-day activities
- There is limited access to information by the extension officers due to limited access to information sources, including direct supervision and technical backstopping by senior staff. This has in turn adversely affected information flow between agricultural experts, extension and the farmers.

3.3.5. NGO/Private sector

- Mostly operate along the line of rail and main roads, which leaves out the majority of the farmers in outlying areas. The services currently provided are inadequate to effectively cater for farmers in the remotest areas of the country
- Penetration is also slow and most of its participation is not on a long term but on project basis
- Farmers show signs of the 'dependency syndrome' legacy of the free government sponsored extension service, especially with regards to marketing and credit facilities.

CHAPTER 4. ICTS AND DRAFT ICT POLICY IN ZAMBIA

4.1. Brief ICT status In Zambia

Information provision to small-scale farmers or lack of it is dependent on the larger national ICT framework. This chapter therefore starts with an overview of Zambia's ICT status. It is imperative to mention that the advent, in the 1990s, of the Internet, digital satellite television and mobile phones in the country accelerated the growth of an information society as well as led to changes in the ICT sector (Hesselmark and Esselaar, November 2002; MCT, 2003). (See Figure 12 below) The changes include the separation into ZAMPOST and ZAMTEL respectively from a single PTC, liberalising of the telecommunication and broadcasting industries allowing the emergence and participation of private telephone and media institutions and converting ZNBC into a public broadcaster (MCT, 2003).

Figure 12: Zambia's fixed/cellular phones and Internet users (per 1000 people)

	1990	2001
Telephone mainlines	8	8
Cellular subscribers	0	11
Internet Users	..	2.4

Source: Human Development Indicators 2003

.. Indicate non-availability of official data

4.1.1. Telecommunications Sector

This sector is monopolised by the government owned ZAMTEL whose activities are overseen by the Ministry of Communications and Transport, MCT (MCT, 2003). At the moment ZAMTEL is the only operator licensed to provide fixed telephone services to the whole country. The telephone network, though covering almost all the districts except Kaputa in Northern Province and Sesheke in Western Province, still leaves much to be desired, as there are constant experiences of low quality services and disconnections (Ibid). Moreover, the telephone line coverage is mostly up to district level excluding the outlying areas where the small-scale farmers live (MCT, 2003). Additionally, "access and availability of ICTs remain poor, especially in the rural areas" due to the high "costs of telecommunication technology, infrastructure and access" and limited users because of

the poverty situation in the country (Gerster and Zimmermann, October 2003: 28-29). Investment in this field has also been limited to "upgrading and replacing" old equipment rather than purchasing new ones due to the non-availability of funds (Hesselmark and Esselaar, 2002: 12).

On the other hand, there are currently three mobile cellular licensed operators, Telecel, Celtel and ZAMTEL (MCT, 2003; Hesselmark and Esselaar, 2002). Initially their service provision was concentrated in the cities; Lusaka, Ndola and Kitwe, but over the years have expanded coverage to include all the towns along the line of rail and others like Chipata, Kasama, Mansa, Chirundu, Siavonga and Kafue Gorge (MCT, 2003).

Additionally there are plans to set up a Rural Development Fund to "provide seed funding" (MCT, 2003: 66). The seed funding, which will be collected from a "percentage of operating fees paid annually by service providers", will be used to facilitate ICT provision to rural areas (ibid).

4.1.2. Broadcasting

Since 1941 when the colonial government opened the first radio station in Lusaka (the Capital of Zambia) and up until the early 1990s when the airwaves were liberalised to allow establishing private media organisations, broadcasting was a prerogative of the state (MCT, 2003). Even now with active private participation, the Zambia National Broadcasting Corporation (ZNBC), created under an Act of Parliament as a public broadcaster, has remained the leading player with free-to-air television services and three radio channels (ibid). However its radio and television reception is poor, in some rural areas almost non-existent (NAIS, June 2002). In fact television service is mostly concentrated in urban areas leaving out the rural areas where most of the farmers live (ibid).

To improve radio reception in most parts of the country, new short-wave transmitters where installed in major administrative centres under a project called Radio Transmitter Project in 1996 while 14 FM transmitters where installed with assistance from the Chinese government at seven stations in July 2000 (ZNBC, 1997; NAIS, 2002).

There are currently four other television service providers, Trinity broadcasting Network, CASAT, pay-television provider – MultiChoice Limited and several other radio services providers most of which are community and religious run (MCT, 2003).

4.1.3. Print, Internet and computer industry

There are three daily newspapers, *the Post*, *Daily Mail* and *Times of Zambia* and a weekly the *Mirror* (MCT, 2003). Their dissemination is however limited up to district level and not the outlying areas where small-scale farmers reside (NAIS, 2002). On the Internet side, Zambia has since 1994 been using Internet services and was "one of the pioneers" in Sub-Saharan Africa but penetration has been rather slow in comparison to other African countries (Hesselmark and Esselaar, November 2002; MCT, 2003: 7). Though a number of Internet providers have entered the scene and acquired licences, only five are currently in business (MCT, 2003). There is however a proliferation of Internet cafes especially in the provincial headquarters of the country. Computer technology is also gaining ground with a number of companies providing ICT products though almost all the equipment related to computers are imported despite the Copper mines' successful launch of an ICT programme in the mid eighties (ibid). The limited trained personnel in this field also worsen the situation.

4.2. Draft ICT Policy highlights

Against this background the government is hoping that a policy framework will accelerate the growth of an ICT industry and lead to easy information access by all, especially the rural population. Though realising the crosscutting nature of ICTs in all sectors of the economy, the draft ICT policy "for practical reasons" has targeted priority areas so as to achieve "maximum impact in the shortest possible time using as minimum resources as is possible in the implementation process" (MCT, 2003; 2). The priority areas identified include agriculture, education, health, tourism, environment and natural resources, youth, gender, human resources and ICT infrastructure (MCT, 2003; 2004). These priority areas were arrived at after analysing the national frameworks such as the PRSP and the TNDP (MCT, 2003).

The overall vision of the draft policy is "a *Zambia, which is a knowledge based economy by 2020*" while the overall mission is that of enhancing and accelerating *"sustainable economic growth and social development through the provision of affordable and universally accessible ICTs"* [6].

4.2.1. Infrastructure

As infrastructure is very important in the provision of information to small-scale farmers, this section provides an overview of what the draft policy has set out to do in this area. In its preamble on infrastructure development, the document states that the "deployment of a high capacity and reliable ICT infrastructure of national coverage, capable of supporting telecommunications, broadcasting, computing and other needs is a core requirement if Zambia is to benefit from developments in ICTs such as the Internet, mobile Cellular connections, digital television broadcasting, telemedicine and distance learning" (MCT, 2003: 25). It further asserts that the Zambian people and businesses risk being excluded from fully participating in the global economy if "connections to information and knowledge network, both externally and internally" remain inadequate and unreliable (ibid).

In particular to rural areas, the draft policy indicates that Zambia must focus its attention on "creating conditions that will foster the development of ICT infrastructure" especially for the "citizens and businesses operating in rural and remote communities" who need connectivity to the communication infrastructure (ibid). Therefore the overall infrastructure sector **goal** is to:[7]

"Increase equitable, affordable and cost-effective universal access to ICT products and services to all stakeholders"

While the **objectives** are to:

1. Deploy a national ICT infrastructure backbone of high capacity and reliability, capable of supporting multimedia information distribution

[6] The vision and the mission are excerpts from the Draft Policy (MCT, 2003:18)
[7] Goal, objectives, strategies, challenges and threats on Infrastructure directly quoted from draft policy and Abridged version (MCT, 2003: 25-26; January 2004: 9-10)

2. Provide easily accessible and affordable service to all users and stakeholders

The **strategies** include;

- Facilitating the planning, designing and development of a scalable ICT infrastructure backbone of national coverage based on optic fibre and other supporting technologies through public-private investment
- Adopting the open standards approach in selecting appropriate, easy to use and scalable technology for building ICT infrastructure over a long period
- Promoting public-private partnerships in resource mobilisation and implementation of the national Infrastructure backbone
- Creating a National ICT agency to oversee deployment of ICT infrastructure and projects
- Developing incentives for attracting public private investment in the deployment of the ICT backbone
- Developing special incentives for rollout and provision of affordable services in under served areas
- Ensuring that reliable and scalable ICT infrastructure is extended to all government ministries and provincial administration centres to support establishment of public access centres for development planning, agriculture information, media information, e-government etc

Realising the "huge investments for equipment and construction ... especially for rural and remote communities" required, the draft document states that government will have to offer "incentives for operators in rural and remote areas" (MCT, 2003: 27). Other challenges and threats noted include;

- Inequalities and disparities in access to Internet, PCs, phones and other accessories, especially because telephones are still limited to the line of rail while other services are still too expensive and inadequate for most individuals in the country

- High costs and disparities in content development and other services due to lack of local language support websites and high fixed costs for content creation and development

4.2.2. Agriculture

On agriculture, the draft policy hopes to:[8]

- Support the physical and socio-economic planning process in the agricultural system;
- Increase the competitiveness of farmers in production, marketing and utilisation of agro-products; and
- Monitor the sustainable utilisation of natural resources in agricultural production

To achieve these objectives, government through the Ministry of Agriculture and in conjunction with Ministries responsible for Lands, Meteorology, Environment and Natural Resources as well as the Zambia National Remote Sensing Centre and the private sector will:

- Create an integrated agricultural information system to provide strategic information for farmers, government authorities, and other stakeholders at national, provincial and district levels
- Create ICT awareness for all types of farmers at all levels
- Integrate ICTs in the provision of extension services to farmers
- Develop countrywide agro-meteorological databases and early warning systems
- Establish online information on agro-technologies and techniques, pricing and market information for all agro products at national, provincial and district level
- Develop incentives for deployment of affordable ICT solutions to support rural connectivity of farmers in all Farm Training Centres

[8] Excerpts, including the strategies, challenges and threats quoted directly from the Draft policy (MCT, November 2003: 34-36)

- Develop and promote ICTs skills development for extension workers and farmers
- Build spatial databases and development of nation-wide geographical information systems to monitor agricultural land use and manage resources at national, provincial and district levels
- Establish a coordination mechanism within the natural resources sector to develop a multi-sectoral natural resources information system

The challenges and threats are;

- Stakeholder involvement in decision making, because successful integration of ICTs in the agricultural sector not only requires accurate and timely information flow but also an efficient communication system that enables effective collaboration and exchange
- ICT infrastructure and access costs may restrict widespread adoption of ICTs in rural areas
- Limited ICT skills, as efficient information management is key but also requires significant information processing, analysis and communication skills that may not easily be available in the existing skills base
- Scepticism about the benefits of adopting ICTs as farmers and other key players need convincing to make necessary investment in ICT tools, personnel and training along with other corresponding adjustments to their existing operations. The fact that returns on investments is not immediately apparent also makes this a difficult proposition to sell
- Fear factor among potential users as the level of education and functional literacy levels are low especially with respect to science and technology knowledge base. ICT is considered very high technology, therefore there is a fear factor among many potential users and this could present a barrier to the widespread adoption of ICTs among farmers

4.2.3. Implementation Framework

Under the implementation framework, the draft document outlines the institutional arrangements including the legal/regulatory framework that will facilitate implementation, resource mobilisation and mechanisms for monitoring and evaluating the performance of the process. For successful implementation, the draft policy states that the government will[9];

- Establish an independent and autonomous converged ICT regulator
- Establish the National ICT agency representing various stakeholders to coordinate implementation of ICT activities

On resource mobilisation, the draft policy indicates that government will;

- Facilitate the mobilisation of internal and external financial and other resources for the realisation of the ICT vision
- Establish a National ICT development Fund through which all resources for ICT development will be channelled
- Establish a National ICT Agency which will be responsible for the collection, disbursement, management and accounting of the National ICT development fund
- Ensure that all public sector funding to the ICT sector will be channelled through the National ICT fund
- Provide seed funding to the National ICT Agency of not less than 1% of the GDP on a yearly basis
- Introduce an ICT levy in order to jumpstart the funding for the ICT policy implementation

On monitoring and evaluation, the planned National ICT Agency will;

- Focus on delivering defined objectives with measurable benefits within specified time scales
- Provide strong leadership, continuity, clear accountability and improved project management in all implementing sector ministries/agencies

[9] Directly quoted from the Draft policy (MCT, November 2003: 61-67)

- Provide a shared awareness of the extra effort that is required from both the public and private sectors in order to successfully implement the ICT policy
- Measure the leveraging effect of ICT in achieving national development objectives, clear and simple benchmarks shall be established within a monitoring and evaluation framework

CHAPTER 5. INFORMATION PROVISION AND DRAFT ICT POLICY

5.0. Information and small-scale farmers in Zambia

It is important to mention from the outset that clearly small-scale farmers in Zambia have more complicated problems that contribute to their poverty situation than informational ones. However, though admittedly no panacea to poverty reduction and rural development, information flow to and among farmers is necessary to initiate any change.

In this view, technological, environmental, climatic and market changes as well as opportunities in the agricultural industry entail constant transformation in small-scale farmers' information needs. Despite these frequent changes, however, the response in terms of information provision has not evolved at the same pace. In fact extension/information provision to the farmers has deteriorated especially during the years of SAP in the 1990s. Even the once equipped agricultural colleges are now dilapidated with outdated curricula to competently and efficiently train extension officers, especially in the new technologies (NAIS, June 2002). The agricultural information system has also deteriorated with a lot of complaints of radio/television agricultural programme repeats, and literature being unavailable when needed (AMAG, May 2004; Ericsson, 2001; NAIS, 2002).

In fact, a lot remains to be done in reaching the poor small-scale farmers in the outlying areas who are not only denied technical knowledge, but are also far less resource endowed in comparison to other categories of farmers (CSO, 1997; MFNP, 2002; NAIS, June 2002). The low number of extension officers has also worsened the situation and further led to poor flow of information on new technologies, markets, prices (of inputs and products) and climatic conditions, among others (AMAG, May 2004; NAIS, June 2002). The limited market information access, for example, has provided an opportunity for the rise and operation of unscrupulous sellers/buyers of inputs and agricultural produce in several rural communities (NAIS, April-June 2003).

Limited access to information has also led to distortions in the way information is received, interpreted and adopted by farmers. As revealed in the survey on information

about "Conservation Farming" partially disseminated and received information lead to misinterpretations of agricultural messages as well as distortions in technology adoption and use. Specifically, on the meaning of conservation farming, a survey found that only an average of 20% farmers, from all the districts where the study was done (11 districts), could accurately explain what the concept means though almost all the farmers indicated that they were aware of the terminology and actually practised it (NAIS, June 2002).

Furthermore, adequate timely information provision on climatic conditions, for example, is important in ensuring that the farmers are well aware of the rainfall amounts so they can better plan on the type of crops to plant. Limited information in this area leads to the growing of crops that may not survive in adverse climatic conditions, which will ultimately lead to food shortages and famines in the areas concerned. This is clearly evidenced by the food shortages and famines experienced during the 2002/2003 marketing season in six Southern African Countries (Lesotho, Malawi, Mozambique, Swaziland, Zambia and Zimbabwe) which experts attributed to a mixture of bad weather, bad policies and the HIV/AIDS pandemic (SADC Food Security Bulletin, 28 June 2002). If information on bad weather is adequately disseminated, farmers may try and brace themselves for adverse climatic conditions and plant the crops that are drought or flood tolerant.

Similarly, information exchange among the farmers is important in not only ensuring the sharing of experiences and information but also empowering each other and making sure they create a single force that should enable them participate in decision-making process (MCT, 2003). In summary the main information access problems lead to insufficient information flow between the farmers, experts and other stakeholders in the agricultural sector that are mostly due to:

- Insufficient accessibility to agricultural information provided through various channels/sources, which denies farmers the latest knowledge and skills in agricultural technologies, prices and marketing and other issues that relate to agricultural production and productivity;

- Insufficient feed back between the farmers and the information providers, as well as other stakeholders in the agricultural sector such as policymakers which may lead to making policies and agricultural programmes that may not fully address real priorities and needs of farmers;
- Non-existence of a central/common resource base to avail the stakeholders with information whenever it is needed so as to avoid airing and disseminating not well-researched information. It is also necessary for all stakeholders such as the farmers, extension officers and policy makers to share information.

5.1. Draft ICT policy and Farmer's Information needs

Information for farmers, though not the only requirement in development, is important as it does not only lead to knowledge and certainty on occurrences but also enables informed decision-making (Bedi, 1999; MCT, 2003). Therefore the indication, in the draft policy, that "online information on agro-technologies and techniques, pricing and market information for all agro-products at national, provincial and district levels" will be provided may ensure satisfaction of farmers' information needs and if strictly implemented may guarantee a more efficient information sharing system (MCT, 2003: 35). Additionally the creation of "an integrated agricultural information system" may provide the solution to the farmers' receiving of fragmented pieces and not well researched information (MCT, 2003: 34; NAIS, June 2002).

Incomplete information reception is particularly dangerous as it does not only lead to inefficiencies, but also to "behaviour that differs markedly from what it would have been if more information had been available" (Bedi, 1999: 2). It is therefore important to have an "efficient information management" as it is key to the success of information provision through ICTs (MCT, 2003: 36). The draft policy therefore seems to provide a solution to the farmers' information needs. However there is no indication of how most importantly the farmers' knowledge and other feed back will be collected. In other words it does not state how the local needs will be integrated in using the ICTs but rather there is an assumption that the farmers need the centrally provided information.. In short, the document shows a top-down approach of information provision ignoring the importance of listening to the priorities and needs of the farmers (Chambers, 1983).

It can therefore be concluded that though the draft policy will provide a solution to the information needs of the farmers, it does not clearly show how the farmers will effectively participate in information generation and dissemination.

5.2. Draft ICT policy, access and use of ICTs by farmers

For effective ICT use, access is a necessary condition and a starting point in information provision (Ashwani, 2001). But there is also need for ICTs use by the target group if these technologies are to be beneficial (ibid). However access to ICTs is determined by the ability of the target group, in this case the small-scale farmers, to afford, connect and use the technologies (Gerster and Zimmermann, October 2003). Therefore if these technologies have to effectively contribute to increased agricultural production and productivity and ultimately poverty reduction, the draft policy should ensure access to ICTs by all in the agricultural sector including the small-scale farmers. Above all, information provision through ICTs should be sustainable.

5.2.1. Draft Policy and affordability/cost

To ensure affordability of ICTs the draft policy has provided for incentives for the "deployment of affordable ICTs to support rural connectivity" (MCT, 2003: 35). It has also provided for special incentives "for rollout and provision of affordable services in under served areas" (ibid: 26). This, it is hoped, will stimulate the provision of cheap ICTs to small-scale farmers.

However the challenge of 'high cost of equipment" is indeed a genuine and huge ICT use restriction considering the national and the small-scale farmers' poverty levels (ibid). In particular, small-scale farmers constitute the largest percentage of the rural poor with the overall poverty level of 84% (MFNP, 2002). As the cost of equipment is not only limited to initial acquisition or purchase, it still remains unclear how the sustenance and maintenance of the technologies will be done. This is particularly problematic considering small-scale farmers face information access problems even through the conventional ICTs like radio and television due to various reasons that include cost (NAIS, June 2002). It therefore remains a wonder as to how they would manage to

access information through more sophisticated and expensive ICTs like the Internet. Additionally, even the sustenance and maintenance of radio/television sets has been problematic due to the associated running costs such as batteries' purchase and broken down equipment repairs (ibid).

Furthermore the draft policy indicates that incentives for cheap provision of ICTs will be done at the Farm Training Institutes that are situated at provincial and district headquarters (MCT, 2003; Wood et al, 1990). The document does not show how the farmers will be enabled to frequently travel to these places to access information.

This means that if no other strategy is put in place to offset the costs abovementioned, majority of the 84% income poverty stricken farmers will not access information through ICTs as envisaged in the draft policy. It also means that information access to these farmers will continue being very costly while its provision will remain "poor, scarce, maldistributed, inefficiently communicated, and intensely valued" (Bedi, 1999: 7). It also means that the draft policy in its current form will perpetuate "unequal distribution" of the technical knowledge among the farmers and the continuation of the difficulties associated with incomplete knowledge (WDR, 1998/99, 1999: 1). In short, the draft policy, if implemented in its current form, will not be a solution to the many small-scale farmers that may not afford to purchase the ICTs or travel to training centres to access information.

5.2.2. Draft Policy and rural ICT connectivity

The biggest impediment in the provision of information to farmers is the lack of an enabling communication infrastructure in the rural areas where most of the small-scale farmers live (MCT, 2003; MFNP, 2002). In fact the limited enabling infrastructure is one of the major huddles in the access to information and technology by the small-scale farmers (MCT, 2003: 35). Sadly even radio reception whose infrastructure is relatively better than other ICTs is problematic as evidenced by the farmers' complaints of bad

reception and disturbances in transmission especially in the rainy season[6] (AMAG, May 2004).

Therefore establishing an enabling communication infrastructure is important in information provision to small-scale farmers because it will determine how information will be provided, in what form and which technology will be used. Similarly an infrastructure framework not only puts in perspective why information provision to this group of farmers is problematic, but also explains why it is so costly and time consuming for extension and other information providers to do their work.

Therefore the acknowledgement in the draft policy that infrastructure is necessary and that plans, designs and developments of "a scalable ICT infrastructure backbone" to facilitate the deployment of a high capacity and reliable national ICT infrastructure backbone "capable of supporting multimedia information distribution" will be done, is almost an assurance of connectivity to rural areas (MCT, 2003; 25). Additionally, the indication that incentives will be developed for deploying affordable ICT solutions for supporting rural connectivity may also be interpreted to mean that effort will be made to ensure that farmers access information (MCT, 2003). These strategies may also facilitate information exchange between the farmers and extension officers, which has been limited but necessary in ensuring that information providers, policy makers and other agricultural service providers advance issues that answer to the real needs of the farmers (AMAG, May 2004; MCT, 2003; NAIS, June 2002). The Farm Training Centres, where deployment of cheap ICTs is hoped to be made, may provide venues and opportunities for farmers and extension officers to meet and share ideas. Further access and information exchange may be assured by establishing online information for agricultural products at "national, provincial and district level" and ensuring "that reliable and scalable ICT infrastructure is extended to all government ministries and provincial administration centre to support public access centres for ... agriculture information, media information..." (MCT, 2003: 35; 26).

[6] Bad reception is particularly prevalent in areas where radio waves are received via short wave

However, the draft policy does not satisfactorily ensure rural connectivity and information exchange by farmers in remote areas of the country. More specifically infrastructure development is mostly planned to cover up to provincial level while on agriculture the draft policy indicates information provision up to district headquarters. This is worrying, as most farmers and even extension officers do not live in towns. Therefore establishing online information network up to district level, let alone province, may still leave out a lot of extension officers and farmers. For example, telephone line connectivity up to district level has not guaranteed direct access and use by the extension officers or the farmers (MCT, 2003). In fact even connectivity to training centres is not guaranteed as the draft policy states that there will be development of incentives "for deployment of affordable ICTs solutions to support rural connectivity" which does not automatically follow that there will be investment in ICTs at Farm Training Centres (MCT, 2003: 35).

Moreover, it is insufficient to just plan overseeing and resource mobilising for the infrastructure development but rather there should be actual plans made to establish connectivity to remote areas of the country if farmers, let alone the extension officers are to access ICTs. Therefore unless ICTs will be provided at extension block or camp level, some farmers, let alone some extension officers may not have access to information provided through these technologies. In fact even if ICTs were integrated in the extension service delivery system, as stated in the draft policy, some farmers may still not benefit as it is currently estimated that extension officers reach less than 50% of the 600,000 small-scale farmers (NAIS, June; September 2002).

Therefore if infrastructure development is not assured at least up to village or local community level, there is very little hope that the poor farmers will access information through ICTs and extension officers equally risk being left out from ICT access and use.

5.2.3. Draft Policy and Capability of small-scale farmers

The only mention of any type of ICT is the "online information" which can be assumed to mean Internet connectivity (MCT, 2003: 35). Knowledge on the types of ICTs is necessary as it determines the training needs of the target groups. As the draft policy

does not clearly indicate this, it is difficult to determine what sort of ICT skills the extension officers and the farmers may need. On the other hand the draft policy allows for the development and promotion of ICTs skills for the extension officers and farmers as well as the creation of "ICT awareness for all types of farmers" (MCT, 2003: 35). In other words, it is hoped that the information services through ICTs will not only be made available but also that the potential users of the technologies will have the necessary skills to access and use them. Literally this should also ensure use and diffusion of ICTs to all farmers.

However the draft policy gives out very little on the type of ICTs (radio, internet, television, telephone etc). It is therefore difficult to ascertain the capability of the target group to learn and comprehend the skills needed. But if the 'online information' means the Internet, then it means that the extension officers and the farmers will need training in computer skills, Internet and web browsing. And unless the computer services and the online information will be provided in the local language, it may be wishful thinking to assume that most farmers will manage to access the online information displayed in English. If the low farmers' literacy levels of 20-50% are anything to go by, there is very little hope for the farmers to use the "online technologies and techniques" unless the language and the technologies will be conducive (Ashworth, 1999; MCT, 2003: 35; MFNP, 2002). This is compounded by the fact that the draft policy does not illustrate how the low literacy levels will be countered in information provision to the small-scale farmers through ICTs.

In other words, the draft policy does not clearly state, how considering the low literacy levels, it will ensure that all the farmers, especially the poor small-scale farmers in the outlying areas, will benefit not only from the use of ICTs but also the information provided through them.

Additionally, despite stating that there will be ICT skills development for extension workers and farmers and noting that this "requires significant information processing, analysis and communication skills that may not be readily available in the existing skills base" it is not clear how this training will be done (ibid: 36).

5.2.4. Draft Policy, strategies, objectives and implementation plan

The objectives under infrastructure and agriculture seem broad enough to encompass solutions to the farmers' information access problems. However the strategies do not fully address the information access problems at hand.

The implementation framework provides more of the institutional arrangements but not the timeframe within which the whole implementation will be done. Specifically the implementation framework is more on the setting up of a regulator than the actual ICT provision and use. There are also no clear indicators on what the ICT policy will achieve.

5.2.5. Draft Policy, Conventional ICTs Vs Modern ICTs

There is very little recognition of the role of the conventional ICTs like radio in the draft policy. This is despite the fact that the radio, in particular, is currently an important information source not only for farmers but extension officers as well (NAIS, June 2002). Radio access, though limited by the financial capacity of the farmers to acquire radio sets, is more appreciated than other technologies such as television and Internet (AMAG, May 2004). The establishment of community radio stations has also increased radio listenership in rural areas (MCT, 2003; PANOS Southern Africa, May 2002). In addition, community radio stations "can become instruments of the people's empowerment" as they are closer to the people and are easily locally accessed than the national radio station (Gerster and Zimmermann, October 2003: 35).

Therefore the link between the new and old ICTs is missing as there is little mention of the role the modern ICTs will play in supplementing the conventional ICTs in information provision to farmers. This is despite the fact that some old ICTs are cheaper to acquire and maintain as well as easier to use by the farmers. Additionally, combining the use of modern technologies with conventional ICTs "can be most effective and efficient" in facilitating adoption of new ICTs and ultimately creating an opportunity for change (ibid: 38).

CHAPTER 6. CONCLUSIONS AND RECOMMENDATIONS

6.1. Conclusions

This study was aimed at evaluating whether the draft National ICT policy currently under formulation provides a solution to the small-scale farmers information access problems in Zambia. It was also aimed at ascertaining to what extent the draft document has ensured that information through ICTs will be accessed and used by all stakeholders in the agricultural sector, especially the small-scale farmers. In achieving these objectives, small-scale farmers' various activities were highlighted so as to gauge their information needs. Their current information sources and access problems were also highlighted to assess whether the draft policy provides a solution.

The study found that the Zambian agricultural sector is considered the major sector not only in facilitating national economic growth but also in rural poverty reduction as it provides potential for foreign exchange gain through exports and food, income and employment to over 80% of the rural population (MFNP, 2002). In particular to small-scale farmers, who constitute the majority of the rural poor, the agricultural sector is perceived to provide the best opportunities for enhancing their livelihoods and reducing poverty (ibid). Despite its potential and importance however, the sector is characterised by various problems that include limited credit markets, an inadequate and weak extension and information service delivery system, and poor rural infrastructure.

Specifically on the extension and information provision, there are many agricultural activities that the farmers are engaged in that create diverse information needs. These activities are constantly changing due to shifts in economic status, technology, climate and market prices (CSO, 1997; MAFF, 2001; MFNP, 2002). These activities and changes give rise to various information requirements that in turn create need for more information provision and exchange. The information provision, monopolised by the government through its extension and information system, has also been performing below par due to various problems including financial constraints and the HIV/AIDS pandemic (NAIS, September 2002; Wood, et al, 1990).

The government is therefore hoping that the implementation of an ICT policy, will enhance efficient information flow within the agricultural sector which will in turn facilitate significant progress in the manner in which agro-business is managed (MCT, 2003). The draft policy though adequately answers the farmers' information needs, does not fully address the information access problems the small-scale farmers are facing. Specifically the document does not show how ICT infrastructure will be assured in reaching the small-scale farmers in the countryside. This is despite noting the importance of infrastructure development.

Similarly and considering the poverty levels of the farmers, the document does not clearly show how the poor farmers, who have no access to extension services and may be unable to travel to Farm Training Centres, will acquire ICTs, let alone access information from them. It also does not fully state what sort of ICTs will be used so as to ascertain training needs and the appropriateness of ICTs for farmers. There is also no mention of how the conventional ICTs will be blended with the new ones for an efficient and effective information system despite research findings showing that the radio, second only from the extension officers, is an important source of information for the farmers. Furthermore, the draft policy gives no indication of how the views, indigenous knowledge and priorities of the farmers will be integrated in information provision facilitated through ICTs.

Therefore this study concludes that if the above issues are not taken into consideration during formulation, policy implementation risks perpetuating unequal distribution of information and leaving out the majority of the poor farmers who may be denied an opportunity to possibly improve and increase their agricultural production and productivity. It may also deny farmers an opportunity to participate in national decision-making and possibly come out of their poverty situation.

Above all, while appreciating the formulation of a policy, there is need to assure implementation. Experience shows that policy documents are written and put on the shelf. A clear example is that of the agricultural policy that has been under formulation for over a decade now. Additionally, it is the feeling of the author that the agricultural

policy (whose draft was launched in April 2004) and the ICT policy should have been compared to ascertain whether they complement each other especially as regards to the information provision. This would strengthen both documents, avoid activity duplication and ensure efficiency during policy implementation. Considerations should therefore be made to the fact that though Zambia needs an ICT policy, there is need to synchronise and mainstream the ICT requirements in other government policy documents, such as the PRSP and TNDP so that a budget line can be assured.

6.2 Recommendations

Therefore the study recommends the following:

1. The Draft policy should state clearly how rural connectivity will be achieved to ensure access and use of ICTs by the farmers in the remotest areas of the country
2. It should also clearly indicate ICT types. This will help ascertain the training needs of farmers and extension officers and the appropriateness of the ICTs (in terms of local needs, language and cost) for the target group. This is because there is need to prioritise the ICTs that are more likely to reach the farmers and concentrate on training the extension officers and the farmers on those particular ICTs.
3. There is need to recognise the role the conventional ICTs play in information provision to the farmers. This will facilitate prioritising and help avoid investing in technologies that may not provide solutions to the farmers but create more costs and complications
4. The draft policy should facilitate the appreciation of the farmers' knowledge by allowing information collection and feedback from the farmers using ICTs. This can also provide the farmers an opportunity to air out their views as well as share their indigenous knowledge.
5. An implementation plan should include the timeframe and indicators within which the policy will be implemented.

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