

Agricultural Services Reform in Southern Africa

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ENCOURAGING SUSTAINABLE SMALLHOLDER AGRICULTURE IN NAMIBIA

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ABBREVIATIONS

CANAMCO	- Canada Namibia Cooperation
CBMNR	- Community Based Management of Natural Resources
CBO	- Community Based Organisation
CSO	- Central Statistics Office
DEES	- Directorate of Extension and Engineering Services
DVS	- Directorate of Veterinary Services
GDP	- Gross Domestic Product
FSR	- Farming Systems Research
FSRE	- Farming Systems Research Extension
ICRISAT	- International Crop Research Institute for the Semi-arid Tropics
IRDNC	- Integrated Rural Development and Nature Conservation
KFSRE	- Kavango Farming Systems Research Extension Project
LFCU	- Likwama Farmers Cooperative Union
MAWRD	- Ministry of Agriculture, Water and Rural Development
MET	- Ministry of Environment and Tourism
MLRR	- Ministry of Lands, Resettlement and Rehabilitation
NACP	- National Agricultural Credit Programme
NAPCOD	- Namibia Programme to Combat Desertification
NARP	- National Agricultural Research Plan
NCA	- Northern Communal Areas
NDC	- Namibia Development Corporation
NGO	- Non Governmental Organisation
NNFU	- Namibia National Farmers Union
NNRDP	- Northern Namibia Rural Development Programme
NOLIDEP	- Northern Regions Livestock Development Programme
NPC	- National Planning Commission
DfID	- Department for International Development (previously ODA) of the British Government
RDSP-NCA	- Rural Development Support Programme for the Northern Communal Areas
SARDEP	- Sustainable Animal and Range Development Programme
VCF	- Veterinary Cordon Fence

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£ Sterling = 7.1 Namibian \$

US\$ = 4.5 Namibian \$

EXECUTIVE SUMMARY

Introduction

Farming in Namibia's Northern Communal Areas (NCAs) is predominantly for subsistence purposes, and is characterised by very low and even declining productivity due to a combination of low and uneven rainfall and poor soils, with conditions of extreme income inequality and poverty, undernutrition, out-migration of labour and high population growth rates. More contentious is whether and to what extent resource degradation is taking place and whether land use systems are sustainable. Communal agriculture makes a very limited contribution to Namibia's GDP, and, despite a lack of clear data, is probably a vital source of income only for poorer farmers (defined, for convenience, as the 46 per cent of the households in the NCAs spending 60 per cent of their total consumption expenditure on food). Behind these problems lies a lack of appropriate resource conserving technologies, weak community-based institutions for the management of natural resources, and, in several key respects, a disabling overall policy environment. At the same time farmer support services are newly established and yet to have widespread impact. While technological and socio-economic advances may be expected to yield some growth in the agricultural sector, the key policy objectives for the future, this report suggests, should be risk reduction, production stability, and the diversification of agricultural and non-agricultural economic opportunities in the rural areas. The most fundamental problem remains, seven years after independence, the lack of a clear policy, administrative structures and legislation dealing with land allocation, tenure and management.

Resource conserving technologies and practices

Sustainable agriculture demands that farmers adopt resource conserving technologies and management innovations in response to changing conditions. At the time of independence communal farming technologies and practices were, by and large, traditional, and many, which had evolved under conditions such as an abundance of natural resources, were no longer appropriate. Given Namibia's unpredictable biophysical environment, innovations to support poor farmers in practising sustainable agriculture must minimise the risk to farmers of wasting and losing resources, be they natural resources such as grazing or soil nutrients, or economic resources such as labour, draught power or other inputs, in the event of poor rainfall or pestilence.

Little research has so far focused on the farming systems in the NCAs. Nevertheless, a broad range of issues is being looked into by a few on-farm researchers and extensionists who have adopted participatory farming systems research approaches, and on station researchers focusing on crop breeding. Important issues being investigated currently, though with varying degrees of application, include:

- Broadening choice of crop cultivars
- Crop diversification
- Draught animal powered cultivation technology

- Soil fertility management
- Small-scale irrigation
- Post-harvest technology
- Range management strategies
- Livestock breeds
- Animal health
- Diversifying non-agricultural income generation
- Bush utilisation

Progress has inevitably been limited in the short time that research has been going on. This is partly because of the lack of an enabling policy environment in the case of range management strategies. On the other hand, given the shortage of research staff, a remarkable number of extension messages have been made ready for dissemination using farming systems research extension methods in which farmers are expected to try out and adapt broad recommendations to their local circumstances. Research has often been carried out informally by extensionists more interested in adoption than scientifically proven results. Nevertheless, to make maximum use of scarce research resources, it is important to introduce a systematic research planning process, based on a policy-led overall agricultural development strategy, in which farmers themselves have a major input.

Sustaining institutions

The development of important elements of Namibian civil society is still in its infancy. Namibia's independence in 1990 saw the development of strongly centralised Government institutions in an effort to impose control on the previously disparate Bantustan administrations of the apartheid state. This not only weakened what were already compromised traditional authority and local Government structures, but has also contributed to the demise of non-government and community based organisations. Although Government policy statements recognise the need to devolve control over rural development and land management decision making and structures back to the local level, progress in key areas has been limited to vigorous debate.

Three institutions which should in future make an important contribution to sustainable agriculture are:

- ☞ community based organisations involved in the management of natural resources, including communal grazing, forests, and wildlife;
- ☞ farmer organisations providing a range of services to farmers; and
- ☞ local government structures at the Regional, Constituency and village levels to co-ordinate and direct the development efforts of line Ministries, NGOs and CBOs.

Although the Government's cautious approach to decentralisation may be justified for various reasons, it should be acknowledged that it is acting as a constraint to the development of sustainable agriculture by inhibiting the growth of a range of local institutions, comprising and accountable to farmers, deemed essential for effective agricultural development.

Enabling environment

While an impressive battery of policy statements relating to natural resources management has been produced since independence, numerous issues of policy failure, policy contradiction and the slow pace of implementation remain. This is illustrated by the case of the National Agricultural Policy, where there has been no prioritisation of policy statements, and no overall strategy has been elaborated. As a result, policy implementation remains vulnerable to whim.

Policy is effectively lacking relating to two of the major issues which need to be resolved if sustainable agricultural systems are to prevail. These are the issues of poverty reduction and land tenure. While land policy is being addressed in a manner befitting its complexity, poverty reduction policy is adrift. This may partly be put down to the prevailing political ideology of the Government which appears to be putting overriding faith in economic growth objectives. This report suggests that direct action is needed to reduce poverty, and that agriculture is potentially one important vehicle for such action. This has consequences for agricultural policy, which needs to be developed to meet the Government's equity objectives as much as economic growth objectives.

Other issues which need attention if an overall policy and service environment is to be created to facilitate the establishment of community-based agricultural development institutions, and the adoption of resource conserving technologies by farmers, include:

- ☞ the implementation of the Water and Sanitation Policy provisions on managing rural water supplies;
- ☞ the increased resource allocation to agricultural research, extension and veterinary services, and the adoption of participatory planning for these service's programmes;
- ☞ the strengthening of recently started agricultural credit services, which are aimed at relatively wealthy farmers, and the implementation by the MAWRD of the input voucher scheme as a transfer mechanism for poor farmers;
- ☞ the continuing development of transport and marketing infrastructure; and
- ☞ the reform of drought policy to transfer responsibility for managing drought from the Government, as currently, to the farmer, and to emphasise long term measures that support the management of risk by farmers.

With the correct combination of resource conserving technologies, supporting institutions, and enabling services and policies, Namibia's communal farmers should be able to increase productivity and profitability and so contribute substantively to poverty reduction and improved food security and nutrition. But this can only happen slowly. It will require farmers to gradually intensify production from a limited and fragile resource base. It will mean making maximum use of renewable natural resources, and ensuring that these resources are not degraded and thus denied to future generations.

This report is one of six country studies, the synthesis of these studies is available as a

book: Living Farms - Encouraging Sustainable Smallholders in Southern Africa. By Martin Whiteside, published by Earthscan, London 1998.

CHAPTER 1: BACKGROUND

1.1 Introduction

This is one of a series of six country reports on technologies, institution, services and policies in support of sustainable agriculture in Southern Africa. The other countries being covered in the series are Zambia, South Africa, Botswana, Zimbabwe and Malawi. The reports are part of the second phase of a project entitled Agricultural Services Reform in Southern Africa, funded by British Government's Department for International Development (DfID). Following a literature review on sustainable agriculture in the region undertaken in Phase One, these reports follow field reviews of experience in the countries included in the study. The project aims to facilitate the exchange of experiences, and particularly 'best practice', in the region, and its final phase will see the publication and widespread distribution of a book identifying the key issues and lessons learned.

This report draws on information from the above mentioned literature review (Whiteside et al. 1996), supplemented by further secondary material (see Annex 1) as well as field visits to selected programmes in northern Namibia. The principal author has also drawn on experience gained while working in various capacities in the field of sustainable agriculture in Namibia for the last seven years.

Sustainable agriculture is defined as agriculture which meets today's needs without preventing the needs of neighbours or future generations from being met. The combination of ecological, economic and social dimensions implied in this definition means that development workers are called upon to address many disciplines or levels of intervention. This is a challenge to most conventionally and narrowly trained professionals. The key message of the sustainable agriculture approach is that development interventions must look at all these levels in combination, if their work is to be of real benefit. This report characterises the different levels of intervention necessary for sustainable agricultural development under three main headings, as follows.

- ☞ Resource conserving technologies and management practices.
- ☞ Supporting community institutions and organisations.
- ☞ An enabling external environment, including farmer support services and the overall policy and macro-economic environment.

1.2 Agriculture

Namibia has a dualistic economy with a large extractive mineral sector, and growing fisheries and tourism sectors. Agriculture is less important to the national economy in terms of its contribution to GDP, which, has hovered around 10 per cent in the last two decades, and to the county's trade account, than many other countries of sub-Saharan Africa. Further, its potential

contribution to economic growth is limited by the natural environment.

Table 1 Gross domestic product

		1988	1989	1990	1991	1992	1993
Total GDP (factor cost)	million N\$ at 1985 prices	2,869	2,850	2,874	3,035	3,203	3,099
Per capita GDP (factor cost)	Namibia \$	2,242	2,161	2,114	2,165	2,216	2,080
Agriculture's contribution	% of total million N\$	8.3 325	8.5 383	8.7 411	8.7 466	7.7 479	8.0 552

Source: 1994 Economic Review. Ministry of Finance, Windhoek, 1994

Pearl millet is the major staple produced and consumed locally in the Omusati, Oshana, Ohangwena, Oshikoto and Kavango Regions, to be referred to in the rest of this report as the north central Regions, while maize and pearl millet are the main staples produced and consumed in the Caprivi Region to the east. In these northern Regions low input-low output, subsistence dryland cropping mainly of pearl millet, maize, sorghum, cowpeas, bambaranuts and groundnuts on some 300,000 hectares, is combined with extensive cattle and goat production, characterised by communal tenure of grazing and low off-take rates on much larger grazing areas. Local varieties of cultivated green leafy vegetables and curcubits, as well as a number of wild fruits and vegetables form an important component of the diet. The country's remaining agricultural areas are used for extensive livestock farming, with cattle predominating in the north and gradually giving way to sheep, goats and game as one moves to drier southern and western areas. The country has some 6,500 hectares under irrigation, out of a potentially irrigable area estimated to be 32,000 hectares. About 25,000 hectares are used for high input rainfed crop production by large scale commercial farmers in the Grootfontien area.

The national cattle herd is estimated to number more than 2.09 million, while there are an estimated 2.56 million sheep and 1.6 million goats although these figures vary considerably from year to year. The number of karakul sheep, which until recently provided an important source of livelihoods in drier regions, and of foreign exchange earnings, have fallen from 1.43 million in 1985 to 0.39 million currently, matched by an increase in the number of small stock kept for meat and wool production, and of ostriches. (Ministry of Agriculture, Water and Rural Development. 1996). Most of the output from the livestock sub-sector, which accounts for an estimated 90 per cent of the agricultural Gross Domestic Product is destined for the export market. Between 1990 and 1993, more than 86 per cent of cattle and 88 per cent of sheep marketed through formal outlets, were exported (National Planning Commission. 1995).

National coarse grain cereal production has varied in recent years from a low of 30,00 tonnes in 1991/92 to 112,700 tonnes in the 1993/94 season. It is predicted, at the time of writing, that the 1996/97 season will yield a record 154,000 tonnes (of which 133,000 tonnes will come from the NCAs, and of which 117,000 tonnes will be millet and sorghum). This compares with an estimated national annual demand for cereals of 260,800 tonnes (Namibia Early Warning and

Food Information System. 1997). National food security is however assured by commercial food imports paid for with foreign exchange earned from exports of minerals, fish, beef and other products, and increasingly from the tourist trade. For example, following the 1992/93 drought, as much as 85 per cent of the total food supply was imported (70 per cent commercial and 15 per cent food aid) (Social Sciences Division. 1995).

Communal agriculture is characterised by very low and even declining productivity due to poverty, undernutrition, lack of technological development and out-migration of labour. Pressure on natural resources is increasing with population growth, and is causing vegetation change. However whether this represents resource degradation, and whether this change is permanent, is less clear, as are the consequences of continuing the current land use system.

Agricultural production makes only a small and, it is believed, declining contribution to average communal area household income, both actual and imputed (see section 1.4). Most rural people rely mainly on purchased food, using incomes derived from a range of non-farm activities, remittances of both food and cash, pensions, and formal employment. Household and individual food insecurity is a chronic problem in most communal areas, which can take on crisis dimensions due to sudden events such as drought, pest and disease outbreaks, unemployment, children's diseases, malaria and AIDS, or due to gradual processes such as population growth, deforestation, and range degradation.

Sustainable agriculture depends on adapting to the limitations imposed by the country's physical environment. While technological and socio-economic advances may be expected to yield some growth in the agricultural sector, the key objectives for the future, this report suggests, should be risk reduction, production stability, and the diversification of agricultural and non-agricultural economic opportunities in the rural areas.

1.3 Natural resources

Namibia has a harsh and fragile environment. With a mean annual rainfall of some 250 mm (ranging from virtually nil in the south west to 700 mm in the north east) and potential evapotranspiration rates many times greater than annual rainfall, Namibia claims the driest climate in sub-Saharan Africa. Importantly, because rainfall varies greatly from year to year, and because some years have exceptionally high rainfall, median is much lower than mean rainfall throughout the country. The occurrence of serious droughts in various parts of the country over the last eight years has fuelled concern that the country may already be experiencing the effects of global warming predicted by various climate change models. Particularly severe droughts were experienced in 1991/92 throughout the country, and in 1995/96 to the south of the Veterinary Cordon Fence (VCF).

Some 97 per cent of the country's soils have a clay content of less than 5 per cent. Considering soils and rainfall, only about 1 per cent of the land surface, or 820,000 hectares, is considered to have medium to high potential for rainfed and irrigated crop production. Namibia's only perennial rivers flow along parts of its northern and southern borders.

Despite having one of the lowest overall population densities in the world (its 1.7 million people

live at an average density of about 2 persons per square kilometre), Namibia suffers increasing pressure on and consequent risks to its land and water resources. Regionally, there are large variations in population density, with heavy concentrations, reaching 100 persons per square kilometre in parts of the northern communal areas NCAs. Perhaps a better measure of population density is agro-climatic population density (Matanyaire: 1997). This considers the number of persons per million kilocalories of production potential estimated, for developing countries, at the intermediate technology level. Using this measure, Namibia as a whole is the only country in sub-Saharan Africa that has already reached a density of more than 250 persons per million kilocalories of production potential. It has been projected that Botswana will not reach this density until the year 2023 and Zimbabwe until the year 2032.

There is a conspicuous lack of facts and figures relating to resource degradation in Namibia. Few attempts have been made to analyse the nature and rates of degradation. It is also difficult to disaggregate the effects of drought as a cause of degradation, from those of resource management. However, it is felt by ecologists that problems are serious. Without hard and fast evidence, the precautionary principle guides much of the debate on sustainable natural resource management. It should be stressed that although the focus of this report is the communal areas, this should not be taken as implying that the problems of communal agriculture are worse than those of commercial areas.

1.3.1 Rangeland change

There has been rapid vegetation change on both commercial and communal rangeland due primarily to heavy grazing resulting from high stocking rates. Major causes of high stocking rates include the unregulated use and poor distribution of water points in communal areas, the keeping of milking cows around homesteads on commercial farms, the propensity of commercial farmers to hold onto livestock rather than sell in times of drought when prices drop, and to speculate by fattening during periods when grazing should be rested, and of communal farmers to build up larger and larger herds, and only marketing in times of need rather than as a consequence of a management plan. These farmer practices have sometimes been encouraged by policy failure related to Government drought relief programmes (with livestock food subsidised during a drought). Bush encroachment has also been promoted by the Government's ban on burning as a means of clearing bush.

The resultant environmental change takes several different forms. In parts of the NCAs, where overstocking has been combined with deforestation, the main result is species composition change, and, in heavily populated areas and around water points, denudation and soil erosion. For instance, there is a general transition in much of the north central Region from scrub savannah, including perennial and annual grasses, to open grasslands composed of annual grasses and dicotyledons. While perennials generally grow faster and retain nutrient value longer into the dry season in low rainfall years, annuals generally produce more in wetter years. However, feed quality is quickly lost. Ultimately, while for fenced commercial farms the production stability accorded by perennials is highly valued, in open grazing communal grazing systems, indigenous livestock breeds have become adapted to feeding on annuals over wide areas. Hence, the effects of species change in the NCAs are debateable.

Where deforestation does not occur, the result of heavy stocking is the eradication of perennial grasses, and bush encroachment and thickening (mainly with *Acacia mellifera*, *Dicrostachys cineria*, *Acacia erubescens*, *Acacia reficiens*, *Colophospermum mopane*, *Combretum apiculatum*, *Terminalia sericea*, and *Rhigozum trichotomum* in the south). There are no reliable figures for the land area affected by bush thickening. Current estimates range from 12 million to 17 million hectares (out of the country's total land surface area of about 82 million hectares). The problem is particularly intense in the central and northern commercial livestock farming areas. Depending on the degree of thickening, carrying capacities have declined from 20 to 80 per cent. This was estimated (Department of Agriculture and Nature Conservation. 1988) to be costing farmers N\$ 200 million in lost production annually.

1.3.2 Arable agro-ecology

Although there has been little study of Namibia's arable soils, the mere fact of continuous cultivation, sometimes for decades, and the high sand and low clay and loam content of soils, suggests that a nutrient equilibrium is fairly quickly achieved. This results in notoriously low but stable crop yields. It would appear that nutrients are being replaced by natural mineralisation of organic and inorganic matter, from symbiotic and non-symbiotic fixation of atmospheric nitrogen, and from rainfall. Farmers can enhance these processes, and reduce leaching losses, by incorporating manure, weeds, stover or stover ash, and by fallowing practices (sometimes inadvertently as a result of crop failure). One new threat to this equilibrium is the increasing loss of biomass in the system as trees are cut down and manure and stover used for fuel. There is evidence of increasing soil erosion caused by desiccation and pulverisation of soils resulting from cultivation, followed by winds. Dust storms are reportedly more severe than in the past when tree cover was more plentiful. In certain soils salinisation and the build up of a hard layer below the plough line have also resulted in loss of productivity. There is concern that some particularly fragile soils, once deforested, and subject to a few cultivations, could quickly return to the state from which they have only recently evolved when they constituted the northern part of the Kalahari Desert.

1.3.3 Deforestation

Northern Namibia contains large areas of low bush and dense Savannah wooded land which are under severe pressure. Resource degradation in the NCAs is perhaps most obvious in terms of deforestation. What appears to be happening is a change in land use due primarily to increasing demand for fuel and increasing areas under cultivation. This in turn has direct socio-economic consequences, for instance in terms of collecting fuel, and building and fencing materials, soil loss and sand blasting of crops resulting due to wind. Local rainfall may be effected by changes in albedo as a result of the exposure of light coloured sandy soils as has occurred most strikingly in the densely populated Cuvelai basin.

1.3.4 Water scarcity

Of Namibia's limited and erratic rainfall, an estimated 83 per cent is lost through evaporation, 14 per cent through transpiration, while two per cent runs off in rivers or into dams, and one per cent infiltrates and recharges groundwater (Department of Water Affairs 1990). Given the high

evaporation for dams and uncertain recharge rates of groundwater, and the country's rapid population growth, it is predicted that by 2000 there will be only 250 cubic metres per person available from surface and underground water resources (excluding perennial rivers, which are not currently exploited on a large scale). Internationally, this means the country is considered to be facing extreme water stress (National Drought Task Force. 1997).

Groundwater is a common property resource which is currently being depleted. For example, the water tables of the Kuiseb and Omaruru rivers have dropped significantly in the last twenty years because of water extraction to supply west coast towns and related industrial and mining activities. Farmers in the Karstveld likewise are experiencing dry boreholes for the first time as water is being pumped into the Eastern National Water Carrier canal to supply towns such as Windhoek (Marsh. A. no date). On the other hand how quickly this depletion may be reversed by a few good rainy seasons, as would appear to have happened in the past, is uncertain. Access to the country's perennial rivers on the borders is limited and depends on agreements between riparian neighbours. Nevertheless, irrigation development is seen by some as the best means of mitigating the effects of drought. In spite of concerns expressed by technicians, there is currently a strong push towards the development of large scale irrigation schemes (see Box 7). At the same time there is little or no enforcement of legislation to control ground water abstraction by farmers for small scale irrigated gardens.

1.4 Socio-economic context: poverty and plenty

Namibia's dualistic socio-economic situation is characterised by the control of 71 per cent of the Gross Domestic Product (GDP) by the richest 5 per cent of the population, with an average annual per capita income of US\$ 14,000, and high degrees of poverty, with the poorest 55 per cent accounting for 3 per cent of GDP and having a per capita income of less than US\$ 551 per year, and the poorest 25 per cent earning less than US\$ 90 (CSO. 1994). Around 30 per cent of the population are living in absolute poverty (World Bank. 1994) They have an income level insufficient to afford an adequate diet and basic necessities.

Considering the Ginni Coefficient as a measure of inequality, in which the higher the coefficient the less equal the income distribution in the country, Namibia claims one of the highest figures in the world. Certainly Namibia's income distribution is the most unequal of the countries in the current study, as demonstrated by their Ginni Coefficients, below.

Namibia	: 0.70 (CSO. 1996)	Malawi	: 0.62
Zimbabwe	: 0.57	South Africa	: 0.55
Botswana	: 0.54	Zambia	: 0.44

Poverty is reflected in a number of indicators of food insecurity and nutritional status. The 1993/94 Household Income and Expenditure Survey reveals that 37 per cent of all rural households (46 per cent in the NCAs) spend more than 60 per cent of their income on food, and that 12 per cent of all rural households (10 per cent in the NCAs) must spend more than 80 per cent of their total consumption expenditure on food. There is widespread undernutrition among children less than five years old. The 1992 National Demographic and Health Survey showed

that more than 29 per cent of children were stunted (low height for age), 8 per cent were severely stunted and 26 per cent were underweight. The incidence of undernutrition in children is highest in the NCAs, and is higher in rural as compared to urban settings generally. The prevalence of stunting increases with age from 13 per cent of children under six months to 33 per cent of two year olds, which may reflect poor weaning practices. More than two-thirds of the Namibian population suffer from moderate to severe iodine deficiency disorders, while xerophthalmia and pellagra, or niacin deficiency, are also common.

The Human Development Index, as a measure of the socio-economic progress of nations, is a composite of three components of human development: life expectancy, adult literacy and mean years of schooling, and purchasing power (UNDP. 1994). According to this measure Namibia scored 0.425 which is considered to be a low level of human development, ranking 127 out of 173 participating countries. This contrasts starkly with the country's high Gross National Product per capita income of US\$ 1,520 in 1991, ranking 84 out of 173 countries.

Information on population levels and access to services is summarised in Table 2 (National Food Security and Nutrition Council. 1995) below.

Table 2 Population and Access to Services

	1985	1990	1991	1992	1993
Population (thousands)	1235	1439	1486	1534	1584
Urban (% of total)	*	*	27.1	29	*
Rural (% of total)	*	*	72.9	71	*
Population density (per sq km)	1.5	1.7	1.8	1.9	1.9
Labour force					
(% of total population)	*	29	29	29	*
(% of labour force in agriculture)	*	43	43	43	*
Infant mortality rate (per 1000 live births)	*	*	*	56.6	*
Under-five mortality rate (per 1000 live births)	*	*	*	83.2	*
Life expectancy at birth (years)					
male	*	*	*	58	*
female	*	*	*	60	*
Adult literacy rates (%)	*	*	*	*	65
Primary School enrolment ratio	*	*	*	*	83
Safe water supply (%)					
Rural	*	*	35	*	*
Urban	*	*	98	*	*
Sanitation (%)					
Rural	*	*	35	*	*
Urban	*	*	98	*	*
Health Care					
Population per doctor	*	*	4620	*	*

* no data available

Sources: World Development Report, 1994

UNDP Human Development Report, 1994

Although existing data on sources of household income are inconclusive, Namibia's rural population is probably less dependent on agriculture than that of other countries in the region. The National Planning Commission (quoted by Hansohm and Presland, 1997) suggests that as little as 20 per cent of total household income in the north central Regions is derived from agriculture, while another study (Keyler, 1995) indicates that 18-27 per cent of household income in the north comes from crops and livestock. A recent study in Kavango (MAWRD 1997) found that 37 to 68 per cent of cash incomes are from agricultural sales, while the 1993/94 National Household Income and Expenditure Survey (CSO, 1996) indicates that for 35 per cent of all households, subsistence farming is the main source of income.

An important indicator, not yet addressed by analysts, is the degree to which the poor (eg. as noted above, those households spending more than 60 per cent of their total consumption expenditure on food) are dependent on agriculture. Rapid rural appraisal would suggest that in many areas this group, which contains a significant proportion of female headed households, is highly dependent on agriculture. Also, given the annual income figures of the poorest 25 per cent of households, quoted above at US\$ 90, and assuming that all households cultivate between one and two hectares of crops, that they harvest average pearl millet yields of 300 kilogrammes per hectare, that pearl millet prices are 1 N\$ per kilogramme, and the 1993/94 exchange rate was US\$ 1: N\$ 3.6, it is clear that crops contribute most if not all of the income of the poorest households. Furthermore, given the limited potential of other income generating enterprises in the rural areas, agriculture will remain the most important vehicle for improving the position of the rural poor.

A process of socio-economic differentiation is proceeding rapidly in some rural areas. Many households are accumulating more agricultural assets, the most valuable of which are cattle while others are being dispossessed. Perhaps the clearest indicator of poverty is lack of ownership of cattle, and thus lack of access to their products including draught power. Hence, poor households, who are the most dependent on crop production, are the least equipped to undertake it. And so, the poor get poorer, and more dependent on wealthier members of their community. The evidence suggests that in most cases community cohesion is still strong, and provides the main safety net for the poor. For instance, despite what was widely acknowledged to have been very poor targeting of food relief for the needy, following the 1992/93 drought, there was little evidence of increased levels of undernutrition (though this may have been partly due to the inadequacy of nutritional monitoring). The ultimate result of this process is that, for many, farming is no longer a viable means of livelihood. This is particularly so where cultivable land is short in the north central Regions. The inevitable result is rapid urban growth. A projected growth rate of about 5.4 per cent per annum in the urban areas, compared to between 3.1- 3.3 per cent overall, means that in the next ten years, that is by 2006, over 43 per cent of the projected population of the country, will be living in urban areas.

Ironically, while for some farming is a means of survival, and one that because of dispossession

and resource degradation amounts for many to a poverty trap, for others it is something of a hobby. Hobby farming derives from the poor productive potential of farming in comparison to more lucrative off-farm employment opportunities. This has contradictory implications for agriculture. On the one hand it means that many households have money to invest in farming (hence the rapid uptake of innovations such as tractors and animal drawn cultivators in some areas). On the other hand, the opportunity cost of labour means that farming becomes something unworthy of sustained labour input. This explains, for example, why Government agricultural extension officers tend to provide financial support their family's traditional farming practices, rather than take over management of their farms using improved methods. The increases in profitability which would be required to turn this situation around, and make small holder farming attractive to wage earners are likely to be unattainable.

This report will argue that, mainly as a result of the socio-economic and ecological factors noted above, existing Government policy which sees agriculture as a vehicle for growth is misguided. Thus, policy objectives such as the commercialisation of communal farming, and strategies including the directing of huge subsidies to commercial maize and livestock production (e.g. drought relief to the commercial sector), as well as irrigation projects, need to be reformed. Rather, agriculture is important principally in terms of its potential contribution towards the Government's equity objectives.

1.5 Land tenure : an unresolved dilemma

Independent Namibia inherited a situation in which land ownership was unevenly distributed. Some 4,064 farmers (about 2.5 per cent of farming households) own the 6,337 farms in the freehold title land area which comprises an approximate total of 36.5 million hectares or 44 per cent of the country (Office of the Prime Minister. 1992). The commercial sub-sector contributes about 6.5 per cent to GDP and 83 per cent of the net value added from the agriculture sector. This means a contribution to GDP of about N\$ 109,000 per farmer. By contrast, while the communal areas, in which land is owned by the State, and tenure is defined by various forms of custom-based practice, supports 95 per cent of the country's farming population, it occupies only 25 per cent of the total useable land. Communal farming contributes about 1.5 per cent of GDP and 17 per cent of total agricultural value added. This means a per capita GDP for communal area farmers of around N\$ 90 which is amongst the lowest in the world (National Food Security and Nutrition Technical Committee. 1995).

Concerns about inequitable allocation of freehold land are supposed to be dealt with in terms of the Agricultural (Commercial) Land Reform Act of 1995. But in the communal areas the issues of rights to land, and the roles of different interest groups in land administration, have yet to be addressed. In the NCAs land is currently administered, more or less effectively and legitimately, by traditional authorities. Arable land is generally allocated to individuals according to usufruct rights, while rangelands are meant to be used communally. The system has been corrupted in some communities by such practices of payment of considerable sums for land to traditional authorities by individuals with access to non-agricultural sources of finance. Recent phenomena such as the build up of large herds by some individuals, and the fencing off of rangelands and water sources has served to deny community access to these resources, and there is growing

tension between the 'haves' and the 'have nots' in some areas. The issue of land reform is addressed further in paragraph 4.3.

1.6 Background to Government's agricultural policy and services

Government services prior to independence were provided mainly by the second tier ethnic administrations operating in the context of the pre-independence regime's policy of apartheid. The commercial sector was well served by research, extension and training services run by the Administration for Whites. In addition, a number of parastatals and statutory bodies provided additional research, financial and marketing services to the commercial sector. Agricultural services run by the other second tier administrations aimed to support the emergence of a class of commercial farmers operating in the communal areas through the provision of a range of subsidised or free support services. Extension advice and farmer training were not provided to the mass of farmers.

The reorientation of services towards the needs of all farmers in the communal areas by the Department of Agriculture and Rural Development, which was created after independence in 1990, was constrained initially by the Government's overriding policy objective of 'national reconciliation' which, when it came to the agriculture sector, meant the effective maintenance of the status quo. The formulation of new policy directions did not take place till 1995, and even then remained far from explicit in many respects. This was partly because of the Government's chosen policy formulation process which relied on achieving the broad consensus of all interested parties. Nonetheless, the policy did signal a new departure for most Government services in several respects. Drawing up and implementing effective strategies has, however, been a painstakingly slow process. Much remains to be done, particularly in addressing fundamentals such as commercial land distribution and tenurial security in communal areas.

1.7 The Northern Communal Areas

The limited time available for field work compared to the country's vast size and wide range of farming systems and ecological zones meant that field work for this report was restricted to Namibia's Northern Communal Areas (NCAs). This area was selected because it hosts about 60 per cent of the country's population, and because, as a result of this, as well as its pre-independence neglect, relatively high rainfall, and access to perennial surface water sources, it has seen a concentration of recent agricultural development interventions.

Namibia's NCAs occupy an area of about 170,000 square kilometres to the north of the country's only active Veterinary Cordon Fence (VCF), which runs approximately along the 19th parallel. The VCF restricts the movement of livestock and livestock products from north to south, and has been successful in preventing the introduction of Foot and Mouth Disease, Contagious Bovine Pleuro-pneumonia and other scheduled diseases into the title deed farming areas from where the bulk of the country's meat exports emanate. The NCAs extend some 1,100 kilometres in length from west to east, with average annual rainfall ranging from less than 25 mm in the Namibia Desert strip on the west coast, through to some 300 to 500 mm in the north central area, where nearly 50 per cent of the country's population live, and up to 650 mm in the far east

in the Caprivi Region. Farming is mainly for subsistence, and is based on agro-pastoral farming systems which are characterised by strong crop-livestock production linkages, and, in some Regions, pastoralism based on seasonal grazing areas.

Land in the NCAs is owned by the State and administered by traditional authorities in a variety of ways, including in some areas the de facto sale (though without conferring legal title) of land to wealthy individuals. The diverse and complex land tenure situation serves to complicate any formulation of a new policy-driven land administration system. Diversity is a striking characteristic of the NCAs generally and derives from variability of, amongst other things, rainfall, natural vegetation, drinking water sources, wild food sources, ethnicity, and historical interaction with the colonial State and formal employment markets.

CHAPTER 2. RESOURCE CONSERVING TECHNOLOGIES AND PRACTICES

2.1 Introduction

Sustainable agriculture depends directly on the technology and management practices applied by farmers. Supporting farmers to achieve sustainable agriculture involves promoting innovation within complex farming systems so that farmers can meet their needs for food and income within a rapidly changing socio-economic and biophysical context. If the political, economic and social context is conducive to sustainable agriculture, then technical constraints are more easily dealt with. The following two chapters of this report deal with these issues of context, while this chapter considers possibilities for technological innovation by farmers.

2.2 Farming technology at the time of Independence

At the time of independence in 1990, farming systems in the NCAs were largely traditional. Exotic field and horticultural crops, livestock breeds, and improved production technologies were uncommon.

Maize, including hybrids, was being grown in the Caprivi Region and to a very limited extent elsewhere. Otherwise, local pearl millet landraces were grown as the staple food grain, and sorghum was grown for beverages; cowpea and occasionally bambaranuts as well as a variety of traditional vegetable crops were grown close to homesteads. Exotic vegetables such as tomato and cabbage were unknown in most areas. Reliance on wild fruits and vegetables was common especially in years of poor rains and crop yields.

Tractors were being used for cultivation in the north central Regions with their unique economy built on returns from migrant labour and the South African military presence. Some 60-80 per cent of farmers in the different Regions of the north were estimated to be using draught animal power for ploughing and transport (Starkey. 1992). The remainder cultivated using hand hoes. Donkeys, introduced into the north central Regions by returning migrant workers for draught power, were estimated to number 120,000 in 1992, as compared to 50,000 draught oxen. Insignificant numbers of donkeys are found in the Kavango and Caprivi Regions. Inorganic fertiliser was rarely and sparingly used, and manure was used to a limited extent only in the more densely populated Cuvélai basin area.

The fact that many migrant workers from the north were employed on freehold title livestock farms and were familiar with commercial livestock production technologies and practices had little impact on traditional livestock husbandry. Livestock breeds had remained indigenous and even animal disease control had remained largely untouched by modern practices, apart from the Government's measures to control a limited number of scheduled diseases deemed to be of economic importance because of their threat to livestock exports.

2.3 Objectives of resource conserving technologies

At the time of independence, there was considerable optimism that agriculture in the NCAs offered considerable potential for growth. Seven years on, it can safely be said that this optimism has not been rewarded. Average yields and household income generated from agriculture remain low. What planners had failed to reckon with was Namibia's propensity to drought. In only two seasons (1990/91 and 1993/94) out of the last six have normal rains been widespread; while only the current season (1996/97) can be described as good (notwithstanding limited flood and pest damage still in some areas). This realisation has led to a reassessment of objectives for the sector. There are an increasing number of voices calling for greater emphasis to be laid on technologies which will stabilise yields and mitigate the effects of drought.

Sustainable agriculture, it is argued, requires that farmers use technologies and management practices adapted to Namibia's arid climate and sandy soils. They must make the best use of the limited natural and other resources available to them in such a way as to ensure that those resources continue to be available to them. Given the unpredictability of the rainfall (and other factors such as pestilence), this requires technologies and practices which minimise risk to the farmer of losing resources, be they natural resources such as grazing or soil fertility, or economic resources such as labour, draught power or other inputs, in the event of a poor season.

At the same time new technologies should fulfil other socio-economic objectives including increasing productivity and income generation, and in the subsistence sector, decreasing labour requirements, particularly of women.

New technologies which will contribute towards sustainable agriculture should therefore aim to:

- stabilise crop yields and incomes derived from crops in conditions of variable rainfall;
- improve the ability of livestock farmers to track the variable grazing, and to maintain their core female breeding stock in times of stress;
- achieve small productivity increases;
- conserve the natural resource base of production systems;
- improve labour productivity and limit the workload of women specifically.

2.4 Technology development process

Prior to independence, research in the NCAs concentrated on developing commercially viable technologies. There is little that remains of these efforts nowadays, though with land tenure reform and the possibility that communal land may be leased to commercial farmers, they may yet have their day. After independence, while the Government spoke of reorienting services towards the neglected communal areas, this proved to be easier said than done. Basically, because most agricultural researchers were unwilling to live in the NCAs, which in any case their academic and professional experience had ill-prepared them to serve, little could be done. Even today the Government employs a mere handful of officers carrying out research aimed at assisting northern communal farmers. The little on-station research that there has been concentrated until recently wholly on pearl millet, sorghum, and cowpea crop breeding, where notable success has been achieved. Otherwise, agricultural research has been led by a few donor

projects employing expatriates who have worked primarily in co-operation with the agricultural extension service. In line with the latter's avowed adoption of farming systems research and extension (FSRE) strategies, these projects' have focused on a range of on-farm research approaches usually working through field extension staff.

This work is still in its infancy, but has already shown some results. The key hope for early success from current approaches is the flexibility and speed inherent in on-farm research which allows relatively few researchers to consider a wide range of issues, recommendations have to prove themselves through farmer adoption rather than through the production of scientific papers. Another important advantage of on-farm research processes is that they should be inherently gender sensitive, and they should consider the effects of new technologies on women, who are as often as not the co-researchers. Within a matter of a few years a range of improved technologies seem to be proving effective, and are now forming the core messages that extension workers are attempting to disseminate.

The Government's research system has committed itself to farming systems approaches, and has recently begun actively co-operating with some donor project research activities. Considerably more resources need to be committed to research in the communal areas. The major constraint is lack of human resources. Agricultural degree holders are few and far between, and are easily tempted away from field research and extension work.

Another issue needing immediate attention is the long overdue establishment of research and extension planning institutions. Currently, farmers do not participate in decision making on the direction of research and extension programmes, and planning is essentially the affair of technocrats. This leaves considerable room for subjective bias to influence the agenda. This tendency is reinforced by the vagueness of current agricultural policy statements, and the lack of agricultural strategy. Given the very limited research capacity that exists, it would be wise to have a more streamlined and rationalised research agenda than currently exists. This should of course be based on a clear policy-lead agricultural development strategy.

2.5 Indigenous knowledge and technologies

While much indigenous knowledge and technology is no longer relevant, depending as it does on conditions, such as an abundance of natural resources, which no longer apply, some can still contribute to sustainable agriculture. Examples of such technologies include traditional grain crop landraces as a means of spreading risk, indigenous livestock which are adapted to local conditions, and labour exchange practices to deal with labour intensive tasks. The FSRE approach, formally adopted by the Government extension and research services, involve attempting to seek out good farming practices and promoting them from farmer to farmer. For instance, one farmer may be found to be using a better seed selection practice or a better method of training draught animals than others. This farmer is encouraged to share experience with others. Another reason for seeking out traditional knowledge is that it may facilitate the promotion of new technologies. For example, an understanding of local values attached to trees and of past management practices should greatly facilitate the promotion of new agroforestry techniques.

2.6 Innovations of interest

Areas of innovation being pursued by the MAWRD and its various donor supported projects which should contribute towards sustainable agriculture in Namibia include:

- Broadening choice of crop cultivars
- Crop diversification
- Draught animal powered cultivation technology
- Soil fertility management
- Small-scale irrigation
- Post-harvest technology
- Range management
- Livestock breeds
- Animal health
- Diversifying non-agricultural (off-farm) income
- Bush utilisation

2.6.1 Broadening choice of crop cultivars

Although there is a wide variety of choice of maize and brewery sorghum seeds on the market, farmers growing pearl millet, food sorghum, cowpeas and bambaranuts have until recently been restricted to local landraces. While these are adapted to varying local soil potential and rainfall, they are mainly late maturing. This has contributed to a significant localised loss of genetic material in recent drought years.

The introduction by the Rossing Foundation, a local NGO, of early maturing Okashana 1, after some simple trials carried out in co-operation with ICRISAT in the 1989/90 season, resulted in rapid uptake by farmers in many areas. Since then the Government's crop research effort has concentrate on providing a choice of pearl millet, sorghum and cowpea cultivars with a variety of characteristics. It is based on limited crossing of imported and local cultivars, followed by on-farm evaluation based on farmer criteria. The pearl millet breeding programme uses germplasm from some 900 indigenous landraces collected in 1991. Two new varieties of pearl millet and one of sorghum are currently being bulked and will be released to farmers prior to the 1997/98 season. Work on cowpeas has started more recently, and it is hoped that a multi-purpose variety will soon be released.

New varieties like Okashana 1 are popular, but most farmers seem keen to grow a mixture of varieties, including traditional landraces, both to spread risk and for reasons of taste. This diversity is encouraged by extension services.

Box 1 Northern Namibia Farmers Seedgrowers' Co-operative

Having produced and released new crop cultivars, the next issue is how to get them to the farmer. In the case of Okashana No. 1 pearl millet, seed bulking and distribution has been undertaken by the Government. An attempt is now being made to hand this task over to the private sector in the form of a Government sponsored co-operative comprising small-scale seed growers in the Omusati Region. Using small-scale seed growers spreads risk of seed crop failure and gives these farmers a profitable cash crop. Farmers must dedicate two to five hectares to seed production, which must be carried out at least 200 metres from other pearl millet fields, and in areas not infested with wild type millets. Inspection of participating farmers' fields is carried out by the extension service. In the 1995/96 season 230 tons of seed were produced (213 tons by 93 farmers, and 17 by the Ministry). While demand from within Namibia is estimated to be about 150 tons annually, other potential markets include Botswana, Malawi, Zimbabwe, Angola, South Africa and even Sudan. In future sorghum and cowpea seed may also be produced by the co-operative. Important reasons behind the success of this undertaking include the following:

1. pearl millet is the country's main staple and the Government is fully supportive of efforts to promote it;
2. the government has donated seed cleaning and screening equipment, and other capital assets;
3. participation of growers is profitable and voluntary.

2.6.2 Crop diversification

The range of crops grown in traditional farming systems in Namibia is small, and most have limited market potential. This makes farmers vulnerable to the impact of ecological variability. The introduction of new crops to contribute to both household food security and income generation is highly desirable. On-farm trials are underway to promote cowpea, bambaranut, groundnut, sunflower, irrigated horticulture (Kavango and Caprivi only), tobacco, rice, paragrass, cotton and cassava. The only cash crop with clear potential appears to be **oriental tobacco**, which is reported to have achieved profitable yields with less than 50 mm of rain after transplanting into wet soil. **Sunflower** varieties are being grown on a small scale for subsistence consumption, but transport and processing costs make it commercially un-competitive with imported oils. The Likwama Farmers Co-operative Union (Box 6) is attempting to grow and process sunflower oil in a combined and collective operation in the hope that this will cut costs and enable the production of competitively priced oil. Small scale **irrigated horticultural** production is believed to offer much hope where farmers have access to surface water sources in the Kavango and Caprivi Regions. Constraints include lack of access to inputs and poorly developed marketing channels.

2.6.3 Draught animal powered cultivation technology

Efforts to promote draught animal powered technology for cultivation have two major objectives. Firstly, using an animal drawn mould board plough or dry planting using a small ripper generally enable more timely cultivation than by hand hoe or hired tractor. Therefore,

expansion of the already widespread use of draught animal powered technology, and improvements in its efficiency, are desirable. Secondly, row planting by hand and weeding using an interrow cultivator is more efficient than traditional methods, that is ploughing or discing to destroy initial weed growth, and, weeding by hoe after crop emergence. Promotion of these technologies is currently a major objective of the extension service.

Box 2 The introduction of the animal drawn cultivator for weeding

The concept of 'modern technology' as the solution to farmers' problems has been vigorously promoted by both pre- and post-independence politicians. Government tractor hire services, the subsidised sale of donated tractors, and the purchase of tractors by businessmen-farmers, have all tended to reinforce the belief that draught animal powered technology is primitive.

In fact, both economic and ecological considerations dictate that tractor powered disc ploughing is unsustainable in the case of extensive pearl millet production. Average yields of two to three hundred kilogrammes per hectare do not justify the cost of tractor ploughing. Discs damage the fragile structure of the light sandy soils, both by compressing it and, when cultivating at speed, by pulverising it. Also, with so few tractors in operation relative to demand, farmers have to wait their turn for them to become available. This often leads them to miss short-lived wet conditions necessary for good crop establishment.

On most NCAs soils, the main function of ploughing is to prevent weed growth, rather than to prepare the seedbed. Hence, the introduction of the animal drawn cultivator to carry out inter-row weeding, has proved a double success. Not only has it facilitated weeding (identified by farmers in most areas as the major factor limiting their production) and thus increased the area that a household is able to cultivate, it has also meant there is less need to plough in the first weeds. This in turn enables farmers to cultivate and sow immediately after the first rains or to dry plant. This is one more way in which farmers can spread risks associated with irregular rainfall. It also allows emerging seedlings to benefit from the nutrient flush associated with the first rains.

It has taken a concerted effort to persuade farmers that draught animal powered technology is the most suitable for their needs. An extension programme is attempting to deal with a range of constraints to adoption, and includes:

- ☞ on-farm demonstrations of line planting and using the new cultivators for weeding;
- ☞ programmes training farmers to train draught animals to walk in straight lines when weeding;
- programmes aimed at production of supplementary feeding for draught animals at the end of the dry season;
- ☞ the promotion of draught animal powered transport (presently little used in some areas) throughout the year (to add value to draught animals over an extended period and hence encourage farmers to target improved feeding programmes at them rather than at all animals);
- ☞ offering farmers choice by introducing two different models of cultivator (the 'Western hoe' from Senegal, and the 'maun' from Zimbabwe);
- the unsubsidised sale of cultivators at commercial retail outlets;
- the promotion of local manufacturing of the cultivators and spares.

Early signs are that adoption in the north central Regions has been rapid. In the Kavango and Caprivi Regions the sale of cultivators has been low in the first year of sale.

2.6.4 Soil fertility management

There are two major threats to the stability of existing cropping systems. Firstly, the use of animal manure and crop residues from crop lands for fuel is an increasing phenomena which could disturb the already low, but apparently stable, levels of crop nutrients in soils. Secondly, deforestation has several effects including increasing wind intensity, which leads to soil loss. **Agroforestry** may offer an affordable means of improving and maintaining soil fertility, and of providing windbreaks. *Faidherbia albida* may have the required potential, as may *Sesbania sesban* for the improvement of fallows, but no on-farm trials have been started, and results will not be forthcoming for many years after they are.

Manure is only used to any extent in the north central Regions, but hardly at all in Kavango and Caprivi. A 1992/93 survey indicated that 48 per cent of farmers in the north central Regions used manure, compared to 8 per cent in the Kavango and none in the Caprivi. The main constraints to the use of manure are lack of animals to produce it and lack of transport to carry and spread it. Possible options to overcome the latter include the use of mobile kraals and the improved siting of kraals. The addition of weeds (before flowering) and other organic matter into kraals to increase its organic matter content, and the removal of the sand layer above the hard solonetz layer in kraals to reduce the amount of sand in kraal manure for distribution by hand, are other innovations considered worth promoting.

Only 3 per cent of farmers in northern Namibia in a survey in 1992/93 reported regularly using **inorganic fertilisers**. More farmers in Caprivi report using fertiliser, but only occasionally. However, on-farm fertilizer trials using low levels of phosphorus and nitrogen (10 kg of P and 20 kg of N per hectare) over the last three seasons have shown yield increases of up to 300 per cent as compared to control yields. The application of phosphorus alone has also been shown to increase yields significantly, and, given its universal shortage in sandy soil and its residual effects, is probably the safest bet for economically sustainable viability. Unfortunately, the Ministry has chosen to supply fertiliser formulations to farmers in the NCAs which are not those recommended. The economics of using these fertilisers according to generalised recommendations are described in Box 3, below. This shows that at current subsidised prices, fertiliser use is attractive in years of good rains. On the other hand their attractiveness diminishes as one moves from east to west and the risk of crop failure increases. There seems to be no economic justification of using fertilizer at the unsubsidised price. The Government hopes subsidies will lure wealthy farmers who can bare the risk into adopting fertiliser use. Given commercial fertiliser prices the story is not, however, promising. Given stated Government policies on promoting risk minimising technologies suitable for the mass of farmers, and phasing out subsidies, it is difficult to justify current efforts to promote fertiliser use.

Box 3 The economics of using fertiliser on pearl millet at 1996/97 prices (N\$)¹

	No Fert.	Subsidised Fert.	Commercial Fert.
Value of pearl millet (threshed) - 300 kg/ha (no fertiliser) and 750 kg/ha (fertiliser) @ N\$ 1.60/kg	480	1200	1200
Seed (Okashana-subsidised)	15	15	15
Fertiliser -			
3 x 50 kg bags basal 2:3:2 (30%)	-	64.5	306
2 x 50 kg bags urea topdressing	-	32	189
AgriBank Interest @ 13% ²	-	15	66
Incremental labour - 28 days @ N\$ 10 ³	-	<u>280</u>	<u>280</u>
Total costs⁴	15	386.5	856
Net Value	465	813.5	344

Variable Cost Ratio (VCR) - N\$ 720 worth of additional pearl millet costing an additional N\$ 386.5 to produce using subsidised fertiliser, and N\$ 856 using commercial fertiliser = 1.86 in the case of subsidised fertiliser, and 0.84 in the case of commercial fertiliser.

¹ Figures used in this box derive from production figures and prices in the north central Regions of the NCAs, assuming good rains, and that draught animal powered tilling and weeding is used, as presented in a draft paper prepared by the RDSP (RDSP, 1997), and from retail fertiliser prices from Agra Grootfontein.

² The National Agricultural Credit Program's interest rates are due to rise annually until parity with commercial interest rates is achieved.

³ Assuming a combination of family and hired labour.

⁴ This only includes the incremental costs of labour, draught etc. due to the use of fertiliser.

Surveys have found that 45 per cent of millet fields in northern Namibia were regularly **intercropped**, while 34 per cent were occasionally intercropped. Nearly all farmers intercrop with cowpeas, with bambaranut and groundnut also featuring in some areas. However, legume to millet ratios are generally estimated to be low; optimum ratios for increasing and sustaining pearl millet productivity still need to be determined.

On the other hand, crop **rotation** is estimated to be practised on only 5 per cent of pearl millet land. The main constraint is the lack of alternate crops suited to the growing conditions. As much as 96 per cent of arable land in the north central Regions has been estimated to be sown to pearl millet, and slightly less in the Kavango Region where more sorghum and maize is grown. Alternate crops need to be actively promoted if rotation is to become a useful strategy for managing soil fertility.

2.6.5 Small-scale irrigation

The vision of a few large and medium sized irrigation schemes turning the desert green in several parts of Namibia has contributed to the popular belief that irrigation means high technology and large-scale capital investment. Irrigation therefore takes one of two very different forms - either large-scale projects or hand watering with buckets. Intermediate-scale irrigation has recently been tested by CANAMCO, an NGO working in the Kavango Region. These pilot tests range from small petrol or diesel pump systems to small hand pump operations using locally-produced bush pumps or rower pumps. They have concluded that small-scale irrigation is viable, and that individually managed schemes work better than collective schemes. Vegetables provide the highest return where marketing can be assured, while fruit trees also give promising results. A study of residues flowing back into the Okavango River is currently underway looking at the impact of different scales of irrigation projects.

2.6.6 Post-harvest technology

The limited work that has been carried out on crop **processing** in the communal areas has focused on the main staple crops: pearl millet, sorghum, and maize. Drying of fruit and vegetables, oil extraction, groundnut processing, and the development of new crops which require processing all deserve attention.

Small-scale threshing, dehulling, and milling technologies offer the potential for use in local villages and for local income generation. Small threshing machines have been successfully piloted in field conditions in Namibia. They require effective maintenance and repair backup. Small de-hulling machines have also been successfully tested and found to work best alongside small milling machines. The technology for small-scale milling of small grains has not been successful in field tests. Machines which work well for maize do not adapt well to small grains. Medium size dehullers and milling machines have proven successful and economically viable at places such as the Katemo Agricultural Co-operative in the Kavango Region. The Division of Co-operative Development of the MAWRD, has a programme to support small-scale threshing, dehulling and milling enterprises by providing training in technical and business skills to co-operatives and individual entrepreneurs.

Little attention has so far been given to improving household **grain storage** technologies in crop growing areas. This issue is most pressing in areas where storage, as an insurance against crop losses, has not been traditionally practised because of more reliable rainfall. Crop storage losses are however a problem in all areas. In recent surveys of farmers estimated (Keyler 1995):

	North Central Regions	Kavango Region
No storage loss -	19%	42%
0-25% loss	65%	51%
> 25% loss	16%	7%

2.6.7 Range management

To cope with Namibia's highly variable rainfall, livestock farmers must adopt 'opportunistic' approaches to rangeland management and livestock production. The strategies discussed below illustrate clearly the rationale behind the three pronged approach to sustainable agriculture being advocated in this report. Nearly all are dependent for successful application in communal areas on a combination of new technologies or practices, appropriate farmer and community institutions, and an overall enabling policy and support service environment.

(i) Managed stocking rates

There is fine balance between range stability and productivity. The most productive stocking rate is different according to the outputs required, being lower for high quality beef typical for commercial farms than for the mix of meat, draught power, and savings more typical of smallholder livestock. In addition, optimum stocking rates vary enormously from year to year according to rainfall. Overall productivity is higher if stocking rates go up in a succession of good years, and are brought down in a succession of dry years; however such fluctuations need to be managed to avoid mortality and animal suffering in drought years.

Communal farmers operating individually on open access grazing find it difficult to manage this balance. Privatising individual grazing areas produces areas too small to make use of the high variability of the environment over time and space. Community action through strong local institutions and the introduction of exclusive group land user rights seem to be needed for the management of stocking rates. This is the ultimate objective of several initiatives such as the SARDEP programme, with its proposed 'oshana' rotational resting system using mobile electric fences. The community-based conservancy experience (see section 3.2) offers a potential legal framework for such strategies, and the use of 'live fences' or existing boundaries like river beds, hills or roads, could make the practice more affordable. Another Government programme, the Northern Regions Livestock Development Programme (NOLIDEP), aims, in addition, to influence stocking rates by the planned and controlled use of water resources.

(ii) Livestock movement strategies

Livestock movement in search of better grazing is an integral part of farming on Namibia's highly dynamic rangelands. The challenge is to find ways of organising and institutionalising such movements in order to allow communal farmers to benefit. One way might be to support local community based organisations, such as farmers' associations, to develop networks to exchange information on the availability of fodder in different areas. Again, the institution of exclusive user rights to rangelands, which may be traded, would be an essential pre-requisite for this

strategy to be applied.

(iii) The use of well adapted indigenous livestock breeds and improved animal husbandry practices

Indigenous zebu-type Sanga cattle, and local small stock breeds such as the Damara and Dorper sheep and the Boer goat, are physiologically adapted to mobility and flexible responses to variable fodder and water availability. Physiological tracking through shifts in metabolic rates can reduce food needs by as much as 30 per cent in these breeds. Healthy animals are best able to track environmental fluctuations. Animals with high parasite loads are less resilient to stress. The introduction of animal husbandry practises like early weaning, and management of mating seasons that will allow young to be born during times of sufficient grazing, are other important practices being promoted.

(iv) Destocking and restocking

During periods of widespread drought the increase in animals offered for sale leads to a drop in prices, particularly in informal markets where, in the NCAs, the bulk of animals are marketed. While farmers may be encouraged to sell early by such mechanisms as the Livestock Marketing Incentive Scheme (see paragraph 4.10), the best solution to this problem lies in developing a range of markets. Similarly, rebuilding herds through animal loans, exchanges or purchases is also impossible when surplus animals are in short supply and prices high. In practice, herds are generally left to rebuild themselves, and funds generated from the emergency sale of livestock are lost to agriculture. Financial instruments which will allow farmers to save money at competitive interest rates are greatly needed. It is hoped that the AgriBank will in time develop such mechanisms (see paragraph 4.7).

(v) Fodder purchase and production

Farmers purchase fodder and licks in times of grazing stress if its cost is less than the value of the animals and animal products that will be saved or produced by supplementary feeding. Farmers should in addition be encouraged to produce their own fodder. Production costs under irrigation are likely to be prohibitive if the full costs of irrigation are applied. A programme of adaptive research is just starting to consider rainfed forage production, looking specifically at the intercropping of forage legumes with cereals after the last weeding, the use of crop residues, the use of fodder shrubs and trees in agroforestry systems, the introduction of flood tolerant grasses (*Brachiaria mutica*, *Aeschynomene americana*, and *Centrosema sp.*) and legumes into oshana¹, planting Napier grass for fodder banks on old kraal sites and around termite hills, as well as the resting of key grazing areas. The environmental implications of introducing new species into oshana would however need careful consideration.

¹Oshana are an ephemeral seasonal floodwater system of shallow water courses originating in Angola, passing through an area of some 10,000 square kilometres of the north central Regions of the NCAs which supports 25 per cent of the country's population, and ending in the Etosha Pan.

Finally, two fodder production techniques that are showing promise in on-farm trials and demonstrations in the north central Regions are the urea treatment of dried grass or pearl millet stover to produce a high protein supplementary feed during the dry season, and the production of lickstones from grain chaff, bone meal, molasses and salt, to stimulate the consumption of low quality dry grasses and to provide supplementary nutrition directly.

(vi) Combating bush encroachment

Combating bush thickening, and the resultant decline in carrying capacity, is one area where new sustainable approaches have recently been shown to have potential in commercial farming areas. While farmers have in the past relied on herbicides and burning to destroy bush, new labour intensive approaches involving the manufacture of charcoal and its export sale to pay for bush clearance are gaining ground, as is the introduction of a mix of animals including browsers such as goats and game species (see paragraph 2.6.11, below).

(vii) Diversifying farming activities

Opportunities for diversification are limited in many areas, but the introduction of game farming, agro- and eco-tourism and the introduction of bush utilisation activities such as charcoal manufacturing on land suffering from bush thickening all have some potential

2.6.8 Livestock breeds

All the major livestock species in Namibia, cattle sheep, goats, pigs, ostriches and chickens, are represented by indigenous breeds which, as noted in paragraph 2.6.7 (iii) above, are better suited than exotics to local environmental conditions. They are also more disease resistance: for example local poultry breeds are more tolerant of Newcastle Disease than exotic breeds. The introduction of new breeds, as pure breeds or as crosses, is therefore not generally recommended. Further, upgrading with exotic blood to increase particular production characteristics should primarily be considered under higher levels of management (in terms of nutrition and health care provision) than usually pertain in the communal areas, and care should be taken to conserve indigenous genetic resources.

For this reason, research and extension efforts are focusing on optimising the genetic potential of indigenous breeds, setting target performance parameters under reasonably acceptable levels of management, and matching the livestock species to prevailing environmental conditions (rather than trying to change the environment to suit the livestock). Also, species with lower daily water intake requirements, and which are able to make better use of browse than existing livestock should be encouraged. Research is therefore looking at prospects for various game species, ostriches, and possibly camels.

2.6.9 Animal health

Improved animal health enables increase productivity in normal years, and enhances the ability of

livestock to cope with periods of feed and water stress. Much remains to be done to support farmers in coping with livestock disease, particularly in the more remote communal areas and the northern communal areas generally. What is now required are technologies and practices to enable farmers to correctly diagnose and treat diseases of all livestock, including poultry, pigs and goats. Promising technologies to deal with Newcastle Disease in chickens and worm infections of goats are being developed and tested in northern Namibia. Methods need to be found to promote the controlled use of standard drugs, including anti-biotics, by farmers in remote areas.

2.6.10 Diversifying non-agricultural (off-farm) income

The establishment of farm-based, secondary and tertiary industries such as handicraft manufacture, and garages or shops need to be encouraged, however low population densities and limited purchasing power restrict the potential for non-agricultural income generating activities. The distance to bigger settlements is also a major constraint because of transport costs. Strategies, including the use of investment incentives towards developing rural industries and micro enterprises, and hence off-farm employment and income-generating activities, must be developed. Because entrepreneurial/business skills are not strongly developed within some rural communities, training and encouragement, building on existing skills, are needed to support any attempt to develop alternative income sources.

2.6.11 Bush utilisation

Bush clearing and utilisation technologies are of indirect importance to the NCAs where, because overgrazing is combined with deforestation, bush encroachment is a minor concern (see paragraph 1.3.1). Nationally, however, this technology is of great potential significance. Clearance of bush on the 17 million or so hectares infested will greatly increase rangeland productivity. This, combined with increased income generated from the sale of bush products (principally charcoal exported to Europe), should contribute significantly to GDP. It should also allow for increased employment opportunities and remuneration levels for commercial farm workers (roughly 36,000 people, or 8 per cent of the working population), who are now amongst the most poorly paid in the country. As a source of fuel wood, particularly for growing urban areas, it could contribute to the reduction of deforestation. There is also potential for fodder production from some intruder bush species.

Bush can be cleared either chemically or mechanically, the latter being preferred as it relatively labour intensive and is more environmentally friendly. The use of browsers such as goats and games species is another recommended means of reducing bush cover. In all cases, it is extremely expensive. It is often said that farmers are now, in effect, having to buy their farms for a second time. Most farmers cannot afford the initial investment required. If it is accepted that bush encroachment has been at least partly caused by Government actions (including for instance drought relief programmes which have discouraged destocking, the banning of burning, and banning of sales during disease epidemics, eg. foot and mouth in the 1960s), and that the nation as a whole will benefit from the technology, there is a good argument for Government promoting this technology through short term subsidies.

2.7 Conclusions

Where do we stand in terms of the development of new technologies which will contribute towards sustainable agriculture in the NCAs? Clearly, the answer is still pretty near the starting line. Many of the issues discussed above are still in the earliest stages of investigation.

In theory, the Farming Systems Research Extension approach formally adopted by the extension service should enable extension workers together with farmers to seek localised solutions to farmer problems. In reality, it has not been possible for the extension service to implement this approach to any significant degree, and it still relies heavily on top-down transfer of technology dissemination methods (see paragraph 4.6.2). It is therefore urgent that solutions are found to common farmer problems which can be packaged for extension use.

The main constraint to carrying out agricultural research is lack of human resources. Most research in the NCAs is being directed by a few donor project staff on short term contracts. To put it bluntly, it is doubtful that in these days of donor fatigue, they or their projects will be around long enough to make much difference. Therefore it is very important that these projects are integrated into sustainable Namibian institutions.

Partly because research work has often been carried out under the auspices of the extension service, rather than an elaborate research establishment, results have been produced quickly in a number of fields. Consequently, a number of innovations discussed in this chapter are now being promoted by the extension service where a few years ago it had little to offer.

On the other hand, the failure of the Government research system to take hold in the NCAs, means that research planning is often ad hoc, and sometimes wrongly directed. Two examples of research orientation which this report, with its emphasis on sustainable agriculture, would argue with, are research into inorganic fertiliser use and large scale irrigation. On the issue of soil fertility management, nearly all agricultural research projects have focussed considerable attention on the use of inorganic fertiliser, which will never be used by more than the wealthiest 10 per cent of farmers, while no research has yet gone into agro-forestry, and very little into overcoming farmer constraints to using manure, or appropriate crop rotation and intercropping practices. Another example is the concentration of effort by Ministry agricultural engineers on large scale irrigation schemes, and their complete neglect of the intermediate irrigation technologies flagged in this chapter.

These issues are mentioned not only to point out areas where, in the view of this report, emphasis is misplaced, but also to illustrate that while research is not directed according to policy-lead strategies, the emphasis of field work will be left to the biases of individual technocrats. Given that most Namibian and indeed many foreign agricultural scientists have been trained to work in commercial agriculture, where the emphasis is on controlling the biophysical environment, it is difficult to imagine how the research agenda will move towards the needs of small holder producers, for whom sustainable agriculture means adapting to a given environment using renewable resources.

A final constraint to the development of resource conserving technologies worthy of mention is the lack of supportive institutions, and of an overall enabling environment for implementing new technologies and practices. This is seen perhaps most vividly in the case of new range management practices, which are constrained by the lack of a clear land tenure and administration system, but applies to a greater or lesser extent in all fields of endeavour. The next two chapters of this report consider some of the major needs in relation to institutions, services and policies in support of the technologies discussed in this chapter.

CHAPTER 3. SUSTAINING INSTITUTIONS

3.1 Introduction

As elsewhere in Africa, the subordination of traditional society to central government was one of the most striking features of colonial rule in Namibia. In co-opting traditional authority, the colonial Government undermined its integrity and legitimacy. This process led to a severe breakdown of some community structures, and many communities degenerated from being adaptable self-governing societies into inflexible societies controlled by and dependent on centralised decision making structures. In other communities, interference by the colonial state was less disruptive, and traditional authority remained strong.

Independence saw the development of even more strongly centralised Government institutions in an effort to impose control on the previously disparate Bantustan administrations of the apartheid state. Seven years on significant decentralisation has yet to take place. Government continues to be preoccupied with other pressing issues, such as the need to down-size and rationalise the burgeoning civil service. The process of developing strong centralised Government structures has not only weakened what were already compromised local Government and traditional authority structures, but has also contributed to the demise of non-government and community based organisations. The leadership of many such organisations has been absorbed into the civil service as the Government has attracted donor funds and other resources, which previously supported non-government organisations. Additionally, the *raison d'être* of many non-government organisations is still undergoing redefinition as they move away from a primarily dedication to the independence struggle, and strong loyalty to the liberation movement or other political parties, towards the adoption of a more independent line.

Although Government policy statements recognise the need to devolve control over rural development and land management decision making and structures back to the local level, progress to date has been limited. New local government structures are taking form, and the most difficult issues, such as the role of the traditional authorities and the development of local land management institutions, are now being debated. Even the down-sizing of the civil service may be expected to benefit the development of civil society generally by precipitating the return of experienced personnel to the non-government sector. Farmer organisations, such as the communal farmers' union, known as the Namibia National Farmers' Union, and the commercial farmers' union, known as the Namibia Agriculture Union, and farmers co-operatives, which are expected to take off after the promulgation of new co-operative legislation, will be important contributors to the development of a healthy agricultural sector.

In general, one can conclude that the development of key elements of civil society within the Namibian state is still in its infancy. Three institutions which many hope will in future make an important contribution to sustainable agriculture are:

- ↳ community based organisations in the field of natural resource management,
- ↳ farmer organisations,
- ↳ and local government structures.

3.2 Community based organisations in natural resource management

Community based management of natural resources (CBMNR) has developed furthest in the wildlife sector where a number of partnerships between local communities, sometimes an intermediary NGO, and the Ministry of Environment and Tourism are being developed to promote 'Conservancies'

Wildlife conservation and utilisation suffers from the perception among some that it is a 'white' concern. Surveys however show that rural communities and the traditional leadership do value the existence of wild animals in their areas as long as they do not cause problems to crops, livestock or people. The conservancy programme is an attempt to get the benefits of wildlife conservation to rural communities and to minimise problems caused by wildlife to these communities.

Until 1967 all wildlife was the property of the state and wildlife numbers outside the national parks were in decline. In 1967 the ownership of wildlife on the freehold farms was transferred to the landowners and sustainable use of this wildlife was permitted. These farmers began profiting from wildlife and numbers generally started to increase.

Communities in communal areas were however not given similar user rights to the wildlife in their areas. However, in the early 1980's there were some pilot projects, organised by an NGO working with communities, to conserve wildlife either with paid community appointed game guards or with communities receiving some of the revenue from the local tourist trade.

After Independence the Ministry of Environment and Tourism (MET) moved to extend the rights over wildlife enjoyed by private farmers to communities in the communal areas using a two fold strategy:

- (i) Local pilot projects enabling communities to benefit and manage wildlife
- (ii) Development of policy and the revision of legislation

Legislation was enacted in 1996 which enables a community to register an area of land as a Conservancy in which they have the right to benefit from wildlife through tourism, sale of live game, trophy hunting and sustainable harvesting quotas agreed with MET. To be registered by MET a Conservancy must have:

- ☞ defined boundaries (involving dialogue with neighbouring communities, regional councils etc.);
- ☞ defined membership (none to be excluded on grounds of ethnicity or gender);
- ☞ a representative committee (the community is allowed to choose its own system of representation as long as it is accepted by the membership);
- ☞ a legal constitution (including a set of rules setting out how the conservancy will operate);
- ☞ a plan for the equitable distribution of the proceeds and a sound accounting system;
- ☞ satisfy the MET that it is able to sustainably manage the wildlife (a complete management plan is not needed at first).

In order to build community capacity to manage a conservancy a process of community development is usually needed. This process often involves a specialist NGO working alongside the community (see Box 4).

Box 4

Salambala Conservancy

The Caprivi Region is rich in wildlife, yet, with the exception of fish, the local population derive little benefit from wildlife. In fact wild animals cause considerable damage and the Government does little to protect communities. The main sources of livelihood are crop and cattle production.

In 1990 an NGO, Integrated Rural Development and Nature Conservation (IRDNC), started working with a number of rural communities in Caprivi. Initially the response of communities was hostile, as they had had negative experiences with Government wildlife protection programmes. IRDNC started working with the local communities and traditional leadership on a game guard programme, to reduce the damage caused by 'problem' animals to the communities, in which guards were chosen by communities and paid by IRDNC. As the communities have experienced the benefits of the programme trust has grown; currently a number of communities are working with IRDNC on developing conservancies in their areas.

The Salambala community is an example in which the population of about 6,000, in co-operation with the traditional leadership and IRDNC, have developed a plan for a conservancy on the 80,000 ha in which they live and farm. This will involve establishing a core wildlife area of 14,000 ha in which no agriculture or grazing will be allowed. The community is negotiating a joint venture agreement with a tourist company in which:

- ↳ the company will develop a lodge and game bird shooting enterprise in the core area;
- ↳ the company will pay a concession fee of N\$30,000 (US\$6,800) and a per cent of turnover to the community;
- ↳ a levy will be paid to the community on game birds killed;
- ↳ local people will be employed and trained by the company whenever possible;
- ↳ after 10 years the fixed assets will be transferred to the community.

The community is developing a trust to look after the money from the conservancy, which in addition to members of the community, will include a representative of the traditional authority, a church leader and a representative from an outside organisation. A separate management committee will organise the running of the conservancy and distribution of benefits to the community - receiving money from the trust to do this.

Another field where community based organisations are expected to play a major role in future is that of range management. The Sustainable Animal and Range Development Programme (SARDEP) of the Ministry of Agriculture, Water and Rural Development has been working for the last three years in communal areas to lay the ground work for such organisations to become effective. The Programme is approaching the issue of sustainable animal and range development from three angles.

- ↳ It supports community based organisations in identifying, prioritising and finding solutions to

their problems.

- ☞ It promotes the creation of a policy framework conducive to sustainable development;
- ☞ It encourages support organisations in reorienting their services towards the needs of communal farmers.

It is fair to say, however, that less has been achieved than could have been had the been operating in a more conducive policy environment. The sensitivity of the land issue in communal areas, and the perception that the current land situation is transitory, and that change towards a system of exclusive group rights to land was imminent, inhibited those involved in range management from actively lobbying for change. While those agencies working in the field of wildlife management proceeded directly to implement, on a pilot basis, the conservancy concept, even while the overall issue of land administration remains unresolved, SARDEP has rather concentrated on developing community capacity, through 'oikes' (Livestock and Rangeland Management Committees) in the NCAs to manage in response to the existing situation. Although these committees have undertaken a number of activities, and are proposing trials of a rotational resting method using electric fences (dubbed the 'oshana method'), SARDEP has therefore been unable to demonstrate the effectiveness or otherwise of range management approaches based on exclusive community rights to rangelands.

The conservancy approach raises a number of issues, particularly in relation to the management of a wider range of natural resources than just wildlife. Some of these issues are explored in Box 5.

Box 5

Issues arising from Conservancies

Importance of appropriate land legislation

The current conservancy legislation applies basically to wildlife, the wider use of the conservancy approach depends on new land policy and legislation, which is currently under discussion. Conservancies covering other natural resources require the establishment of *exclusive group rights* to land and the resources on it (at present exclusive individual rights are recognised on freehold land and non-exclusive communal/individual rights on communal land).

Can the approach be used for other natural resources?

The advantages of a wildlife conservancy is that it harnesses strong incremental benefits which flow to the communities from wildlife: this is not necessarily so for other natural resources. Wildlife is a resource the community currently derives little benefit from, and which may actually be a nuisance; in the right circumstances with a conservancy the community can derive fairly immediate benefits at minimal cost to themselves, in some areas with tourism potential these benefits can be quite large. In other words, in the right circumstances the community is in win-win situation.

Short term incremental benefits are likely to be much lower or even negative from a conservancy approach to other resources such as grazing, thatching grass, firewood or fishing from which the community are already getting benefits. Where these resources are already over-exploited, sustainable management through a conservancy might result in short term reduced access in order to ensure longer term sustainability. Although a conservancy approach might still be appropriate, the short term incentives for a community to undertake such a programme will be smaller.

Are there other circumstances in which a conservancy approach might yield rapid incremental benefits?

An example might be an irrigation scheme on communal land (such as the Namibia Development Corporation (NDC) schemes in the Kavango Region which are generally loss making and privatisation has been discussed). It is possible that a joint venture scheme between the community and a private company might be profitable to both parties, giving greater long term benefits to the local community than the current NDC schemes.

Community Capacity Building

Managing a conservancy requires considerable capacity in the community to:

- ↳ deal with the joint venture company;
- ↳ deal with local and national Government;
- ↳ motivate and discipline the local community;
- ↳ manage and distribute relatively large amounts of money.

Building this capacity is a process requiring a long term commitment, often starting with programmes tackling immediate concerns, such as problem animals, while building up confidence and skills, with the possible establishment of a conservancy several years later in the process. A specialist NGO is probably particularly well placed to help build this capacity. Strong local organisation and community identity is also needed.

In the conservancy policy safeguards have been built into the system - for instance conservancies are granted on a 5 year renewable basis, after review by the MET. The Salambala plan to include some independent organisations on their trust board is probably a wise move. The MET policy of letting communities decide how they want to be represented (i.e. without stipulating the need for elections, gender balance etc.) but then checking more widely with the membership to ensure they feel represented by the committee is interesting and potentially controversial (some outsiders for a more interventionist approach - for instance by insisting on specific gender representation).

3.3 Farmer organisations

Commercial farmers' associations and their umbrella body, the Namibia Agriculture Union, have long played an important role in servicing a wide range of needs, including advocacy, for farmers in the commercial sector. A few farmers co-operatives have also provided important service support to the sector. In the communal sector, early post-Independence efforts to organise farmers resulted in a proliferation of local farmer associations in several parts of the country. However, their performance record, and the services they have been able to offer their members, have varied considerably. Only a few can be said to be flourishing. Some of these are on the verge of registering themselves as co-operatives in terms of the new Co-operatives Act. At the national level the Namibia National Farmers Union (NNFU) was created in 1992 as the umbrella body for communal farmer associations. With funding from statutory levies on livestock sales and from various donor agencies, the Organization set out on a high note. Unfortunately, poor management has meant that the NNFU has been able to contribute very little to date. A new executive has recently taken over the organisation and is essentially starting afresh.

The overall picture, when it comes to organised agriculture in the communal areas, is still dim. However, the effectiveness of the commercial farmer associations and union, and of the few

communal farmers associations and pre-cooperatives that are doing well, shows communal farmers the importance of organising themselves, and provides inspiration for them to continue their efforts. It is to be hoped that, with experience, these associations will grow into an important force directly providing for the needs of farmers. The potential of farmer organisations is exemplified by the experience of the Likwama Farmers Co-operative Union, as described in Box 6.

Box 6

Likwama Farmers Co-operative Union

The Likwama Farmers Cooperative Union (LFCU) is an umbrella organisation serving a fluctuating paid-up membership, currently numbering about 800 farmers, organised in some 25 Local Associations in the Caprivi Region. It was first established in 1984 as a lobbying group, and is now one of the most developed organisation of its kind operating in Namibia's communal areas. The LFCU started selling agricultural inputs (seeds, fertiliser, ploughs, and other implements) to its members and purchasing their produce in 1991. It also established a service mill for maize, millet and sorghum processing. Its Local Association 'stock agents' act as marketing agents for the major livestock buyer, the private company MeatCo.

In addition, it has put considerable efforts into developing its own structures. It has offered training courses in leadership skills for Local Association management committee members, book keeping for Local Association treasurers and managers, and Local Association secretary training, and business management for management structures. It also organises workshops-cum-training sessions on livestock production and marketing for its stock agents, and on crop diversification and cash crops for its crop agents. These involve inputs from a wide range of Governmental, non-governmental, and private sector organisations. The local State Veterinarian has trained stock agents and sales persons (16 Local Associations operate shops) to take on the selling and administering non-prescription veterinary drugs.

As a pioneer in its field, the LFCU had to expend considerable effort in advocacy work at the National and local level towards creating an enabling environment for its own and other farmer organisations' development. For instance, it led the campaign (through the commissioning of independent consultants' reports) to halt the sale of seeds and fertilisers, and the provision of subsidised tractor hire services, by the Government's extension service (see Box 11). While the extension service had previously been lobbying for the same ends, in order that it could concentrate its resources on information and advisory type work, its efforts had come to nothing. That these Government services provided unfair competition with farmer organisations, and thus prevented them from developing capacity to deliver these services themselves, was the crucial argument needed to sway the Cabinet. In 1995, Cabinet approved a proposal to privatise the operation of commercial services operated by the extension service; funds previously allocated to these services were instead dedicated to a new voucher scheme to enable poor farmers to gain access to agricultural inputs and services.

Likwama's experience provides a number of pointers for other farmer organisations:

- ↳ the importance of good leadership and committed membership based on services received appears to be of paramount importance for success;
- ↳ it has strong involvement in advocacy at the national and regional levels (it was one of the prime movers in the establishment of the NNFU);
- ↳ it tried hard to steer clear of party political involvement (which in the Caprivi Region, particularly,

- have been the death of many good intentions);
- ☞ it has been able to exploit windows of opportunity when its own interests have coincided with those of Government (as in the cases of the reform of the Government's extension services and the development of the Government's co-operative support services);
- ☞ it has devoted much effort to developing its membership's organisational skills and its management structures (for instance it ensures the representation of women in decision making structures);
- ☞ it provides a wide range of services which are financially attractive to its members, and which earn sufficient money to support staff remuneration.
- ☞ it provides extension advice to farmers (see section on extension).

3.4 Local government structures

There is currently little effective co-ordination of rural development efforts at either the national, Regional or village levels. Although a number of institutions have been set up at the national level to co-ordinate different sectoral and cross-sectoral interest, they remain weak, partly because they are themselves not co-ordinated (see Box 8). At the Regional level, government structures are even weaker as they are effectively starved by central government of human and financial resources. The inevitable result is duplication and competition between different development agencies, and ultimately a significant waste of resources. At the village level there has been a proliferation of groups set up by different agencies (including Water Point Committees, Farmer Extension and Development Groups, Literacy Groups etc.). This means duplicating effort aimed at group mobilisation, and causes confusion amongst community members. The obvious answer is to work through existing group structures (eg traditional leadership or churches) or multi-purpose groups which co-ordinate the activities of several agencies. While the former may often have atrophied through years of limited activity, they are probably the best vehicles available for driving rural development.

Recent proposals to establish a three tier system of Regional, Constituency and Village Development Committees, comprising line Ministries, NGOs and CBOs, and answerable to both line Ministries and elected Regional Councils, are being discussed. However, the hesitancy of central Government to promote such structures is clear, and their establishment may consequently be expected to take time. It is important to note that this caution would appear to be a conscious political decision taken by the Government. It derives at least in part from historical tensions between the traditional and political leadership. Furthermore, it is consistent with the Government's generally very careful and slow approach to development activities. While this report would not presume to challenge the legitimacy of this position, its costs, it must be pointed out, are great. Specifically, it is the contention of this report that the Government's decision to go slow on decentralisation, is acting as a severe constraint to the development of sustainable agriculture by inhibiting the growth of a whole range of local institutions, comprising and accountable to farmers, deemed essential for effective communal area agricultural development.

CHAPTER 4. CREATING AN ENABLING ENVIRONMENT

4.1 Introduction

Promoting the adoption of improved management practices and technologies, as discussed in Chapter 2, in resource-poor and ecologically fragile areas such as much of Namibia is more difficult than in areas of higher potential. High levels of poverty also militate against farmers' risking investment in innovations. The key to success in promoting resource conserving technologies is that they should be supported by effective community-based institutions. As noted in Chapter 3, these are in their formative stages in rural Namibia, and their development is being constrained by a number of policy factors, primarily the general reluctance of the Government to decentralise authority over development and natural resources management. This Chapter looks at some of the other key factors that need to be addressed towards the creation of an overall enabling policy and macro-economic environment supportive of sustainable agriculture.

One issue, which perversely is vital for rural development, and which this report will not address, is the growth and development of the non-agricultural sectors of the economy. As has been noted, the Namibian economy is fairly well diversified, and agriculture (apart from commercial livestock farming undertaken by some 4,000 commercial farmers) makes a relatively limited contribution to it. Furthermore, the country's limited agricultural natural resource base dictates strict limits to the capacity of the rural areas to provide livelihoods to people. Hence, it can be argued that taking people off the land to be employed in non-agricultural sectors, is vital for the future of those who remain. Off-farm employment is also important as it provides income that can be invested back into agriculture. Therefore, the link between general economic policies and NCA agriculture is important at both direct and indirect levels.

The most important contribution of NCA agriculture to the Namibian economy is in terms of poverty alleviation. Therefore, the primary objective of NCA agricultural policy should be to improve its role in sustainable poverty alleviation. Commercialisation should be considered secondary, and only supported when it does not contradict the primary objective of poverty alleviation.

4.2 The limits of policy-led development

It is worth noting that while the Government has overseen the preparation of a whole range of policy statements covering sustainable agricultural development in the last few years, prioritisation of its policy objectives and the development of parallel **strategies** for implementing policies has been less impressive. This is revealed by a number of consequent problems, including policy failure, policy contradictions, and lack of cross-sectoral co-ordination and poor institutional development. Examples of each of these are given in Boxes 7, 8, and 9, below.

Box 7**Policy failure**

Policy failure may be considered to have occurred when a policy designed to achieve one objective has an unintended negative impact on another objective (NAPCOD. 1996). The case of the provision of subsidised livestock fodder and licks as a drought relief measure is an example of a policy instrument which has undermined sustainable agriculture. Subsidised fodder and licks are intended to enable livestock farmers to maintain their core breeding herds in times of drought. However, they have usually been provided too liberally, and are widely credited as being responsible for encouraging farmers to overstock during droughts and thus overgraze and degrade their grazing land. Current moves to define a national drought policy should put an end to the provision of fodder, rather promoting destocking and restocking mechanisms, and, in *extremis*, the transport of livestock to and leasing of emergency grazing (see paragraph 4.10). However, to some extent any livestock related drought intervention by Government will affect the behaviour of farmers negatively, as they will tend to wait and see whether relief programmes are triggered rather than take precautionary management measures. Hence, many would argue for the complete abandonment of livestock related drought relief measures. This report however recommends carefully targeted and tested measures that encourage early destocking. Monitoring would be needed to ensure any measure was in fact having the desired effect, with flexibility to modify or remove the measure if it was not being effective.

Box 8**Policy contradictions**

Food security, defined as access by all people at all times to enough food for an active, healthy life, involves assuring an adequate supply of food, irrespective of its source, and the access of the population to that supply through generating effective demand via income growth or transfers. **Food self sufficiency** concentrates on ensuring that the supply of food adequate for the country's total population is produced from a country's own resources; it is not concerned with improving accessibility to food. To the extent that the implementation of these policies involves competition for scarce resources, these policies are often seen as being in contradiction to each other.

The Namibian Government has given contradictory indications as to whether it is pursuing food security or self-sufficiency objectives. For instance, the National Agricultural Policy (MAWRD. 1995) states that the Government will pursue food self-sufficiency objectives only to the extent that it is financially rewarding and economically viable to do so. More important will be efforts to improve household food security and to promote improved food consumption of poor families. On the other hand the First National Development Plan's medium term policy objectives include 'to achieve self-sufficiency in basic foodstuffs'.

In practice both policy objectives are being pursued. The problem lies in the resources allocated to the latter. The Government has, for instance, invested heavily in irrigation projects producing maize, and subsidises drought-prone commercial maize producers. Namibian Agronomy Board has estimated that the Government will have to support commercial rainfed maize farmers to the tune of N\$ 5.4 million annually, at current prices, to maintain rainfed maize production on 20,000 hectares, when non-tariff barriers are removed as prescribed under the World Trade Organisation agreements, and when free trade in maize prevails in the South African Customs Union (Namibian Agronomy Board. 1997). Looking specifically at the case of irrigation, the following concerns arise:

- **diversion of investment costs:** the huge cost of investment in new irrigation projects (for instance, investment in the 600 hectare Etunda Irrigation Schemes has cost N\$ 29 million, in 1995/96 constant prices) takes scarce public funds from alternative uses;

- ↳ **diversion of operational and maintenance costs:** the current Water Supply and Sanitation Policy provides that irrigation is to be charged for at an economic rate which may be reduced through a special subsidy determined by the value of the produce relative to its socio-economic benefits. The total cost of water at the Hardap Irrigation Scheme is estimated to be N\$ 0.15 per cubic metre, while farmers are charged N\$ 0.015 per cubic metre; at Etunda the actual cost is estimated at N\$ 0.38 per cubic metre, while farmers are charged N\$ 0.08 per cubic metre.
- ↳ **alternative uses of water:** water is being committed to projects with a 30 year lifespan when that water will have a far greater value in other activities (domestic and industrial use when the country's population is twice its current level). Even in 1993, the value added by the agriculture per million cubic metres of water was calculated to be about N\$ 4 million, compared with N\$ 451 million in fish processing and N\$ 308 million in the construction industry for example (Lange, G. 1997).

The dropping of food-self sufficiency policy objectives would lead to existing irrigation users being charged the full cost of supply, so that they would switch to higher value-added production of non-food and food export crops. This would create more jobs than current low value crops, and would earn the Government income, which along with the funds saved from subsidising irrigated food crop production, would contribute considerably to small holder production promotion and poverty reduction programmes to increase household food security. Finally, it should be stressed that it is generally considered that Namibia can always be assured of having enough food in the country to feed its population. Namibia's GDP per capita income of US\$ 1,520 (in 1991) allows for the import of all its food requirements over and above what is produced locally.

Box 9**Lack of cross-sectoral co-ordination**

Given the lack of decentralisation characteristic of the functioning of the Government's line Ministries, cross-sectoral co-ordination at the national level becomes essential to avoid duplication and waste, and to deal with cross-sectoral issues such as rural development, natural resource management, land reform, rural infrastructure, poverty reduction, food security and nutrition, and drought and emergency management. In practice, while numerous co-ordinating institutions (such as those dealing with emergency management, food security and nutrition, and land use and environment) have been established at the national level, they themselves are uncoordinated, resulting in a situation where the institutions are ineffective, and co-ordinating line Ministries have little incentive to participate in their time consuming procedures. There is an urgent need for an overall structure for co-ordinating cross-sectoral issues to be established. To this end, many have viewed the rural development co-ordinating system in Botswana with envy.

Key policy issues to be addressed in support of sustainable agriculture in the NCAs include the following.

4.2 Poverty reduction

At the time of preparing this report, Namibia has just celebrated the seventh anniversary of its independence, and is heading shortly for local government elections. One theme raised repeatedly in both contexts has been the country's failure to address the issue of poverty reduction. While the Government hopes that it has put in place a platform of policies that will lead to economic growth, increasing employment opportunities, and thus ultimately poverty reduction, there is a nagging concern that, in view of the extremity of Namibia's poverty problems, more direct action may be required. The indecision which has characterised the Government's approach to poverty reduction is clearly illustrated by its attempt to establish a mechanism to direct and co-ordinate a national poverty reduction programme. Partly in response to the World Social Summit in Copenhagen in 1994, the Government committed itself to address the poverty problem. Nearly three years later the initiative is still stalled at the first hurdle: the establishment of institutions to co-ordinate and implement programmes. There is indeed no sign of the grandly titled Poverty Commission which is reportedly to be established in the Ministry of Labour and Human Resources Development to direct the national programme to reduce poverty.

4.3 Land tenure reform

Land reform to broaden ownership of freehold title land continues to be a major political concern nationally, while without new mechanisms to increase tenurial security of State owned communal areas little progress can be made in developing sustainable farming systems. A national Land Policy is being vigorously debated as a basis for new legislation on communal land, while implementation of existing legislation on commercial land is still controversial.

4.3.1 Communal land

While Namibia's past customary tenure systems were very diverse, it can in general be said that crop lands were held on the basis of individual usufruct rights, while common property resources such as rangelands and forests were operated on the basis of exclusive group rights. Members of a group had the right to use the common resource independently, but under a set of commonly agreed rules, which conferred a high degree of tenurial security to individuals. It can therefore be argued that customary tenure systems were sound, and that the 'tragedy of the commons' derives largely from the breakdown of these systems as they adapted to and became compromised by the dictates of the colonial administration. Resulting practices, including open access to natural resources, and defensive fencing by individuals of common resources, have reduced tenurial security (particularly of women and the poor) and contributed significantly to social differentiation and impoverishment in many communities.

Many would suggest that the land reform debate in post-independence Namibia has been unnecessarily protracted. This view fails to appreciate that the process of transformation of the colonial Government's 'command and control' approach to administration, to one based on decentralised, bottom up decision making is bound to take time. This report takes the view that, considering the existing land tenure situation sketched above, as well as the added complexity resulting from significant differences in land tenure and traditional authority systems pertaining in the country's different Regions, the Government is wise to pursue a gradual process of reform based on the development of local land management institutions. The danger of this approach is that it will be overtaken by the demands of the better off for the privatisation of communal land.

At the moment the debate on a national land policy appears to be hanging in the balance with interest groups advocating strongly for both sides in some Regions, while in others more of a consensus has been achieved. Legislation defining future mechanisms for the administration of communal land is only due to be promulgated after a statement of national land policy has been adopted. As well as the issue of how to deal with communal land that has already been de facto privatised, the major tension remains the degree to which democratically elected representatives and traditional authorities will exercise control of the proposed Regional and subordinate local Land Boards, the institutions that will administer communal land.

This report supports the view that the introduction of secure, exclusive tenure at the individual (in the case of arable land) and community level (in the case of rangeland) is the critical provision needed to support sustainable agriculture and rural livelihoods. Only if communities can capture the benefits of wise management of their common range, forest, water and wildlife resources, will they have the incentive to do so. As long as outsiders can use and abuse resources without sanction, wise management will be undermined.

For equity considerations the draft National Land Policy (draft Green Paper) ruled out the conversion of any part of the Communal Areas to freehold. Freehold tenure could exacerbate the already disastrous situation of the poor, who could be quickly dispossessed of their key productive asset: their land. On the other hand, many of the advantages of freehold land can be derived from other forms of tenure such as long term leases (for commercial undertakings) which are secure, registerable, transferable, inheritable, renewable and mortgageable; customary grants (of residential and subsistence farming land) which are secure, inheritable, not limited in

time, and non-transferable; as well as community rights, as long as these forms of tenure are recognised in law and by financial institutions.

A key element of the new land legislation is that communities should have clearly defined rights to all natural resources on their land (grazing, trees, wildlife, water). For example, granting exclusive tenure over rangeland while allowing open access to water points would be senseless. In addition, people should take financial and maintenance responsibility for infrastructure related to natural resources, such as water points and marketing facilities, on their lands.

The Government's recent "conservancy" initiative which gives communities user rights over wildlife on the condition that they use them sustainably represents a useful model for the development of community tenure (see paragraph 3.2). Existing legislation could be extended to cover exclusive rights to other natural resources, and this could be done now on a pilot basis by specific projects as a means of demonstrating the potential of community based management of grazing and water points to land policy makers.

4.3.2 Title-deed or commercial land

Legislation has recently been promulgated (Agricultural (Commercial) Land Reform Act. 1995) which gives the Government the first option to buy land according to the principle of 'willing seller - willing buyer', and sizeable sums have been budgeted annually for that purpose. Pressure is building up for the Government to adopt a more aggressive stand, in terms of the Act, on acquiring land for resettlement. The exercise of the Government's right to compulsorily purchase land, and the introduction of a land tax on freehold land to discourage excessive land holdings, to encourage the economic use of land, and bring more land onto the market, are being considered. In addition, the Government itself occupies large areas of freehold title land which should be made available for redistribution.

On the other hand, there is good reason to move slowly on acquiring land for resettlement. Some farms so far subject to resettlement have quickly been degraded as a result of overstocking. Current resettlement strategies satisfy few people. One suggestion is that the Government should reorient the programme away from intensive support to a small number of farmers who are resettled on land purchased simply where it becomes available. It is argued that resources would be better used to relieve pressure by:

- ↳ purchasing farms adjoining communal areas,
- ↳ purchasing such farms in blocks,
- ↳ opening up of some new grazing areas through planned resettlement schemes, and
- ↳ supporting the movement of large communal farmers to commercial areas through so called affirmative action loans schemes, as well as other measures such as tax reform, investment incentives, and special drought relief provisions, specifically targeted at newly resettled farmers.

4.4 National Agricultural Policy objectives and strategy

The objectives of the National Agricultural Policy (MAWRD. 1995) are given in Box 10.

Box 10**National Agricultural Policy Objectives**

Paragraph 21

∴the objectives of the National Agricultural policy are to:

- ☞ achieve growth rates and stability in farm incomes, agricultural productivity and production levels higher than population growth rates;
- ☞ ensure food security and improve nutritional status;
- ☞ create and sustain viable livelihood and employment opportunities in rural areas;
- ☞ improve the profitability of agriculture and increase investment in agriculture;
- ☞ contribute towards the improvement of the balance of payments;
- ☞ expand vertical integration and domestic value-added for agricultural products;
- ☞ promote the sustainable utilisation of the nation's land and natural resources; and
- ☞ contribute to balanced rural and regional development based on comparative advantage.

Recognising that this list represents a tall order, the policy document further states that: “the Ministry will prioritise the policy objectives in this document and the ensuing strategies and actions to facilitate and guide the implementation of the National Agricultural Policy”.

Prioritisation, and indeed any comprehensive form of strategic planning, has yet to take place. The Ministry's actions remain therefore dangerously directionless, and subject to the whims of individuals: politicians and technocrats alike. It is important that the Ministry should address the issue of strategic planning, based on a rigorous prioritisation of objectives and the realistic assessment of implementing capacity.

This report argues that the overall goal of the Government's policy should be the promotion of sustainable agricultural practices as a basis for improving rural livelihoods. It suggests that the Ministry should recognise those issues which agriculture can realistically address, that is high levels of extreme poverty and natural resources degradation, and unambiguously state that its priority objectives are therefore:

- ☞ **to ensure food security and improve nutritional status;**
- ☞ **to create and sustain viable livelihood and employment opportunities in rural areas; and**
- ☞ **to promote the sustainable utilisation of the nation's land and natural resources.**

Furthermore, the objective of achieving growth rates in farm incomes, agricultural productivity and production levels higher than population growth rates, as noted in Box 9, which is currently accorded greatest prominence (NPC. 1995), implying erroneously, as it does, that the agriculture sector can meet the needs of Namibia's growing population, should be reconsidered. This prioritisation as a basis for strategic planning, would mean a radical departure from current

practice. Sustained and strong advocacy would be required to convince politicians that the approach advocated is not simply due to 'negativity'.

4.5 Rural water development

The development of rural water supplies particularly in the NCAs has in the last few decades been driven as much by unplanned emergency responses to drought as by planned development. Pipelines and boreholes are developed in areas which have become degraded through over exploitation. These are often designated for temporary use but are usually settled permanently, whether or not the area is suitable for permanent settlement and farming. To overcome this problem a twin strategy must be undertaken. Firstly, politicians must be convinced of the necessity of adhering to planned rural water development in order that they do not make untenable demands on water planners. Secondly, increased effort must go into pro-active, rather than reactive planning of rural water supply. New water developments must be linked to assessment of existing water provision and grazing potential. Extraction rates from boreholes and pipelines and the capacity of surface dams should be determined according to the requirements of humans and livestock numbers based on the assessed carrying capacity of the area served. While there is increasing consensus that for communal livestock farmers, considering the range of benefits they get from livestock, stocking rates can be higher than those applicable for commercial beef production enterprises, these are very difficult to determine. The advantage of conservative stocking rates is that they enable range lands to build up grazing capacity to serve livestock in times of stress. While drought is an ever-present threat, and Government policy seems to be moving towards putting the onus on the farmer to manage for this reality, the precautionary principle would suggest that conservative stocking rates be applied.

Water providers can respond to increasing demand for water by a combination of demand management techniques, including public awareness campaigns to reduce waste and improve the efficiency of water use, and by ensuring that the price of water limits consumption to sustainable levels. Namibia's 1993 Water Supply and Sanitation Policy (as amended for rural areas) dictates that payment by the community should cover operation and maintenance costs increasing to full cost recovery by 2006, although there will be cases where a subsidy applies. The establishment of some 6,000 Water Point Committees country-wide to manage Government water installations will have an important role to play.

4.6 Government research, extension and farmer training, and veterinary services.

A general theme running through any assessment of the capacity of Government (and indeed non-government organisations) to provide farmer support services is the problem of Namibia's lack of trained human resources. One of the main lessons, which will be evident to future generations looking back on the first few years after independence, is the importance of investing in tertiary level education. Although as the State President has often said education is "the priority of priorities", and the Government has invested up to a third of its budget annually in it, since independence there has been a shift of investment from tertiary to primary and secondary education. While there may be good immediate reasons for this, it is suggested that the cost of

lack of investment in tertiary education has been great. For example the demise of the bursary system in support of tertiary education in South Africa has meant that, because the University of Namibia's new Faculty of Agriculture and Natural Resources will not produce undergraduates until the year 2000, the country will have been virtually starved of new agricultural graduates for the first ten years of its existence.

4.6.1 Agricultural research

At the time of independence, no Government research of specific relevance to communal farming in the NCAs had taken place. This was mainly because, within the context of the second tier agricultural administrations, economies of scale could not be achieved which would justify the allocation of resources to research. It was also because conventional agricultural research, based on disciplinary lines, when it did take place, was aimed at 'commercialising communal agriculture' and was unable to contribute to resource poor, risk prone, small scale, mixed farming systems prevalent in northern Namibia.

Starting with a number of small donor projects, which were initially entirely manned by foreign staff, farming systems research (FSR) has now become the accepted basic strategy for Government research in NCAs, formally accepted in the National Agricultural Research Plan of 1995. Two of these projects are described in Box 11.

FSR aims to acknowledge the biophysical and socio-economic diversity and complexity of Namibia's farming systems. It tries to find out how farmers farm, and then to enable them to improve their farming practices. It is based on supporting the farmers' objectives which are usually to minimise risk and maximise production of a mixture of essential needs including food, fodder, wood, cash and so on. It involves working in multi-disciplinary teams and working with farmers as on-farm researchers. This is a challenge to conventionally trained research scientists. It also involves developing appropriate methods of disseminating findings more widely. Again, this straying into the field of extension is difficult for some researchers who have often been content to present their findings in obscure research language and publications, and leave it at that.

Implementation of the NARP has been sluggish. This is partly because many individual conventionally trained researchers are yet to be convinced of the merits of FSR. It is also because the tradition has grown up in Namibia that agricultural researchers are based mainly in Windhoek, where they direct research projects implemented on a network of research stations by technicians. Another constraint has been the inability of the research service (along with all Government agricultural services) to recruit and retain the services of new graduates who may be more amenable to the demands of FSR.

Box 11 The Kavango Farming Systems Research and Extension Project

The aim of this DfID funded project is to develop capacity in the Kavango Region to carry out adaptive research involving farmer, researcher and extension participation. This it is doing by conducting a conventional FSR programme, and by supporting the development of the Government's research and

extension services' capacity to conduct such research. Since the start of the project in 1995 a small team of Namibian researchers and extensionists have been supported by two expatriates and have concentrated mainly on issues of soil fertility, crop varieties, and weeding technology. They have also laid the ground work for a much broader research programme, through a range of focus studies and advocacy, in support of FSR, aimed at the Government.

Northern Namibia Rural Development Project

This French Government funded project operating in the north central Regions pursues a form of FSR, developed in Francophone Africa, known as 'action-oriented research'. It is different from the standard FSR approaches developed in Anglophone Africa, as exemplified by the Kavango FSRE project, in several respects.

- ☞ To reinforce its linkage with the farmers as the point of departure, action oriented research is considered a function of the extension service rather than the research service.
- ☞ It implements an 'action', in other words the introduction of a specific solution to a farmer problem, earlier in the research process as the basic tool of experimentation. Experimentation does not involve scientific methodology; the experiment is considered a success if the solution is adopted. The process is faster than with conventional FSR.
- ☞ It emphasises different research target groups or domains based on socio-economic class.

The NNRDP has moved quickly in developing several important lines of research. It has had particular success with issues of draught animal power technology. It has been less successful in terms of institutional capacity building. The new approach it has advocated, in a sense a hybrid of extension and research functions, has not been readily accepted by either extension or research services. It is to be hoped however that the project does continue the work it has started, with perhaps greater emphasis on advocacy.

Lessons learned:

- ☞ It is much easier to build a new development approach from scratch, in this case the FSR approach in the NCAs, than to rebuild an existing one.
- ☞ Advocacy in favour of what is essentially a radically different approach to research is crucial to success.
- ☞ The support of a range of agencies (in this case the extension service and NGOs) in undertaking this new approach is vital.

4.6.2 Extension services

Up until recently the Government's extension services in Namibia's communal areas were mainly involved in the provision of agricultural services, including ploughing services, the sale of farming inputs, the maintenance of farm infrastructure, and the administration of non-extension activities including a number of drought relief and credit schemes.

A new extension strategy was adopted in 1994 which stressed the provision of advisory, information communications, and farmer training services, and emphasised participatory farming systems research extension (FSRE) approaches (MAWRD. 1994(b)). This is probably the only example of a Government extension service that has tried to adopt FSRE approaches as a national extension strategy in Africa (Shepherd D.). It came about because of the perceived need for an explicit change of direction, and because of the influence of a new extension management

team that had only relatively recently completed training and was open to new ideas.

Key activities of the proposed strategy included:

- (1) participatory situation determination and problem diagnosis;
- (2) the localised development and adaptation of improved technologies and practices;
- (3) the dissemination of information on improved technologies and practices; and
- (4) the co-ordination and facilitation of farmer support services;
- (5) monitoring and evaluation.

The process as described by these five stages is essentially circular. Several cycles are expected to take place simultaneously, and at any time each cycle may be at a different stage.

Space was created for this new approach by a policy decision to the effect that the extension service should cease providing services which could be provided by the private sector. How this decision was engineered is described in Box 12. At the same time new agencies began assuming responsibility for drought relief and credit administration.

Box 12

Divestment of Non-extension Duties

The decision to divest the extension service of responsibility for operating highly subsidised tractor hire services which had served a small but vociferous group, and which had been an overwhelming burden for the three critical months at the start of each cropping season, in the face of considerable political pressure to expand services, was the critical turning point for the development of extension services. It was brought about by a convergence of the interests of agribusinesses which saw Government services as unfair competition, preventing them from providing commercial services, and extension managers who saw that continuing responsibility for tractor hire services would constrain the development of other extension services. The process involved contracting independent research to analyse the implications of the various options for commercial agricultural services. These researchers were guided by and reported to a large Task Force comprising a wide range of interested parties, most notably those representing communal farming and agribusiness interests.

In 1995, the Cabinet approved the Task Force's proposal under which the Directorate of Extension and Engineering Services would withdraw from the direct provision of ploughing services and the retailing of fertilisers and seeds, as and when the capacity of the private sector had developed to the stage when it could provide these services efficiently. The scheme involves training programmes for, and the sale of tractors to, the private sector. It also proposed the introduction of grants in the form of vouchers to the value of about N\$ 70 (US\$16), to be redeemed in part payment for commercial ploughing services (tractor or animal drawn), fertiliser and certified seeds. The cost of this voucher scheme was equivalent to the cost to the Government of operating the various services to be handed over to the private sector. The voucher scheme is targeted at some 65,000 northern communal crop growing farming households, being those classified as poor because they are amongst the 46 per cent of households spending more than 60 per cent of their total consumption expenditure on food (according to the Namibia Household Income and Expenditure Survey of 1993 (CSO. 1996).

Regrettably, poor management has meant that there has been virtually no progress in implementing this Cabinet decision at the time of writing. There has also been no serious attempt to inform farmers and even field extension staff of the decision. Mechanisms for the implementation of the scheme in the

1997/98 season are still being worked out, and there remains some apprehension that implementation may require extension staff resources. On the other hand, the Ministry's submission, which was approved by Cabinet, stated in its motivation that: "The operational efficiency of the existing agricultural extension staff would be improved dramatically since they could finally concentrate on their extension functions."

Two new themes are emerging to this process. It has been suggested that as long term transfer measure, the agricultural input voucher scheme should be designed so that it can be upgraded after drought years to compensate poorer farmers for loss of vital inputs (e.g. seeds) and other assets (e.g. draught animals and implements) suffered as a result of droughts. Also, political pressure demands that an equivalent grant scheme for livestock farmers be developed. Two major problems confront the designers of this scheme. These are (1) the targeting of grants to the poorest farmers (who are by definition without livestock), and (2) the determination of the level of a grant which would have a significantly beneficial impact on livestock farmers.

In the two years since the Ministry's new extension approach was signalled, it is clear that its application in practice has been limited. The extension service is in theory involved in four main activities:

- ☞ Relatively intensive on-farm research and technology development work carried out by researchers and extensionists, using participatory methods, sometimes working in farming systems oriented multi-disciplinary teams, in a few strategically selected 'focus' communities. This work aims to identify messages, and appropriate dissemination methods, and properly test them before more widespread dissemination.
- ☞ Less intensive contacts between front line extension workers (Agricultural Extension Technicians) and Farmer Extension and Development (FED) Groups promoting localised technology adaptation and adoption by farmers, and mainly employing traditional top-down transfer of technology dissemination methods such as standardised demonstrations and farmer training.
- ☞ The use of mass communications technologies such as radio as part of broader efforts to disseminate agricultural information.
- ☞ The continuing delivery of farmer support services, employing streamlined procedures in anticipation of the increasing involvement of and ultimately hand-over to partner organisations.

However because of the extension service's weak front line extension worker, subject matter specialist, field researcher, and management staff resources, and its inherently top-down bureaucratic organisational structures and management practices, the de facto system uses, for the most part, traditional, top-down, transfer of technology dissemination methods.

Some Regions and some individual extension staff have tried to develop capacity to implement certain elements of the participatory FSRE approaches. These include diagnostic surveys and joint farmer-extension programme planning, the promotion of farmer experimentation and localised technology adaptation, and the promotion of farmer to farmer dissemination methods.

It is also recognised that in dealing with more complex issues, for which off-the-shelf solutions, are not applicable, top-down dissemination methods are insufficient, and that these methods become more effective to the extent that participatory extension programme planning and implementation methods are also used. In dealing with complex farmer problems, extension should be able to present a range of options to farmers for consideration, experimentation, adaptation and ultimately adoption.

Considerable Government and donor funding has gone into developing the extension service in the last few years. Whether this level of support will be sustained is doubtful. It is essential that positive results are forthcoming and demonstrated in the near future, if the current direction of extension activity is to continue receiving the political and thus budgetary support it needs.

Box 13

Farmer Directed Extension Services.

One area of reform which is being debated amongst communal farmer associations, but which has yet to impinge on the thinking of the Government's extension planners, is the question of how to make extension services more answerable to farmers. Extension services are run in a highly centralised way, with little influence being exerted on them at the Regional, let alone the community level. Farmer associations (and other local bodies such as Regional Councils) are vociferous in their views that, partly because of this, extension services are failing to meet farmers' real needs. A number of farmer associations claim that, because they represent and are accountable to farmers directly, they will be in a good position to manage extension services. In the context of the Government's overall policy of contracting out services to the private sector, and in support of the advantages to be had from a diversity of service providers, it is recommended that this suggestion should be taken seriously, and that the extension service should consider contracting a few well established farmer associations to provide specific extension services in their areas of jurisdiction.

4.6.3 Veterinary Services

Because of the socio-economic value of livestock and livestock produce, farmers throughout Namibia tend to identify animal health problems as amongst the most significant they encounter. In fact, partly because of its dry climate, animal disease is less significant in Namibia than other countries in sub-Saharan Africa.

In the NCAs, the Directorate of Veterinary Services has concentrated on the control of scheduled diseases, so classified because of the threat they pose to the commercial sector and its export markets. Scheduled diseases include foot and mouth disease, contagious bovine pleuropneumonia, anthrax, brucellosis and trypanosomiasis in cattle, sheep scab in sheep, African swine fever in pigs, and Newcastle disease in poultry and ostriches. Most attention in the north is focused on the first two of these. In line with internationally approved practice, there has until recently been compulsory annual vaccination of cattle and fortnightly inspections. In addition, no livestock or meat is allowed to cross to the south of a Veterinary Cordon Fence, marking the boundary of the NCAs, unless it has been through quarantine procedures. The Veterinary Service also provides limited clinical and outreach services, and information and advisory type extension

services.

The National Agricultural Policy calls for increased attention to be given to the communal areas. It is expected that the reform of the foot and mouth disease surveillance system, based on fortnightly inspection of every animal, to one of roving inspections, the development of veterinary service infrastructure including new offices and accommodation, and the training of community members to work as veterinary auxiliaries, will greatly improve the services capacity to respond to farmer demands regarding treatment of non-scheduled diseases. Much will depend, however, on the provision of additional personnel resources to the service; and indications are that the Government's overall policy of down-sizing may make a casualty out of the service's good intentions. This would be at odds not only with efforts to develop sustainable agriculture in the NCAs, but also with one of the Government's partly politically oriented objectives which is to make the NCAs a disease free zone, so as to enable the translocation of the Veterinary Cordon Fence northwards to the Angolan border. This is intended to allow, in turn, the NCA's livestock produce to enter the private tenure farm market and the export market without costly restrictions.

4.7 Agricultural financing

Communal farmers, who by definition lack land title, have, up till recently, been effectively excluded from access to credit which has been dependent on conventional collateral mechanism. The National Agricultural Credit Programme implemented by the AgriBank in support of smallholder communal farmers was launched in 1995. It is intended that loan accountability will be a responsibility shared by borrowers in joint liability groups.

The NACP was launched in mid-1995, but did not become effectively operational in the NCAs until 1996. During its first year of operation branch offices have been partially staffed and opened. Planning documentation related to the implementation of the NACP is conspicuously absent. This has resulted in a number of operational teething troubles for the Programme, such as shortages of input supplies for borrowers to purchase, and a general sense that the Programme is 'making it up as it goes along'. Substantial capacity building is still required, particularly in terms of staff development and training.

The response of farmers has varied considerably across the Regions. Well over double the forecast amount has been loaned to date. As of the end of February more than N\$ 17 million had been loaned to more than 3,000 groups and individuals in all communal areas. In the north central Regions there has reportedly been reluctance to enter into joint liability arrangements, and loans have been taken mainly for purchasing fencing materials. In the north eastern Regions loans have been taken mainly for the purchase of inputs for crop production including draught animals and implements which have accounted for more than N\$ 11 million of the total loaned amount. Other loans have gone for small and large stock purchases, for tractors and even ostriches.

But there is concern that basic control mechanisms have failed in some areas. Equally, although in theory no collateral is required for borrowing, in practice the applicants' ability to repay is

judged on the basis of assets (though there is no mechanism for checking the veracity of declarations). It would appear that large sums are being loaned at highly subsidised interest rates to relatively wealthy individuals. Certainly, the Programme makes no pretensions that it aims to be accessible to the mass of poor farmers. Expenditure on subsidies for the wealthy rather than on extending access to credit to lower income groups is clearly at odds with the tried and tested statement of principle, made in the National Agricultural Policy, that 'Access to credit is far more important as a factor in determining the uptake of credit than the interest rate charged'. It is planned that the rate of subsidy will be phased down so that interest rates will be equivalent to those offered by commercial lenders in the seventh year of the Programme's operation.

Government agricultural extension staff have been used to promote the scheme, to assist farmers in completing application forms, and are expected to measure field areas for which loans are requested for inputs (amounting to a claimed 10,000 hectares, approximately, in Caprivi Region alone). Some have reported feeling exposed in this role. They are often ill-informed as to procedures, do not have the time to measure fields as required, and are not clear as to their role in terms of further communications and follow-up with the AgriBank.

Meanwhile, savings instruments continue to be inaccessible to communal farmers; even today only three commercial bank branches serve the 60 per cent of the population living in the NCAs. Hence, savings are primarily kept in the form of livestock, contributing to heavy grazing pressure. One of the keys to encouraging sustainable range management systems is likely to be the strengthening of the livestock marketing system. Savings facilities have an important role to play in this process by enabling farmers to deposit the money they earn from selling their livestock, and to earn real interest on it. The mobilisation of such savings will have numerous other positive spin-offs. The Government should be actively supporting the development of new saving facilities by the AgriBank, as well as the introduction of disincentives to holding investments in the form of livestock, such as taxing communal farmer livestock holdings, and thus levelling the playing field with formal savings alternatives. For the same reason, the introduction of taxation on communal farming will also serve as an incentive for big communal farmers to move to the commercial farms, thus leaving more land for smallholders.

4.8 Transport infrastructure

A good road system is a basic requirements for rural development since it provides producers with ready access to markets and inputs, and enables the delivery of a range of public services. Namibia has more kilometres of road per head than any other African country - including South Africa. However, the road network is characterised by imbalance between the urban, and private-tenure farming areas in the centre and south of the country, and the communal-tenure rural areas, particularly those in the north. For instance, at the time of independence, the then Ovamboland had nine times as many people per kilometre of proclaimed road than the national average. The lack of roads, and, in particular, all-weather rural feeder roads and access tracks in the NCAs, acts as a constraint to agricultural development. On the other hand, it is safe to say that the development of commercial agriculture in the country owes much to the investments which were made by the colonial governments in infrastructural development, including roads, railways, harbours, air services, posts and telecommunications, as well as electricity supplies.

Since Independence the focus of the road construction programme has been on the communal areas, particularly in the north. The Government has increased its funding of the construction and upgrading (i.e. from earth to gravel) of rural feeder roads and, in addition, it is now emphasising labour based approaches to construction wherever possible. It will nevertheless be many years before imbalances are rectified.

4.9 Marketing

Market access varies from area to area and according to the linkages enjoyed by individual households. Poor crop marketing channels are a feature of many of the communal areas, and improvements, would, it is believed by some, offer the single most important, and least expensive, stimulant for growth. On the other hand, many surplus-producing households do have ready access to marketing outlets; for example, in Caprivi, farmers sell maize surpluses to the local mill which, in turn, supplies most of the local demand. It may thus be argued that the chief constraint to profitable grain marketing by small holder producers is not a marketing one but rather the low productivity of the crops. For this reason, marketing support cannot substitute for efforts to increase the efficiency of millet, sorghum and maize production.

The Government is investing in rural roads, as noted in the previous section, an expansion of related transport services and provision of information to farmers and traders on grain availability and prices. The recent establishment by the Department of Agriculture and Rural Development of a Millet Marketing Intelligence Unit in Oshakati to provide periodic reports on grain stocks and prices, aims to meets this latter need. The Government is also considering support to private sector investment in transport which could take the form of tax breaks or interest rate subsidies on the purchase of particular types of vehicles.

Since 1992, MeatCo, a private company, has been responsible for all formal meat marketing activities in the area to the north of the Veterinary Cordon Fence, and for implementing a special Government Meat Marketing Scheme involving a uniform national live weight grading and pricing structure. The introduction of the Scheme led to an immediate increase in the number of

cattle sold on the formal market. While the number of cattle marketed through formal channels varied between 4,000 and 5,000 between 1983 and 1991, in 1992 it rose to some 17,000 and in 1995 to 29,690. This still only represents between about four to seven per cent of the total cattle marketed in Namibia through formal channels, despite the fact that the NCAs accounts for about one third of the nations total cattle herd. In addition, there is an active informal livestock and meat marketing system which functions well in the NCAs - accounting for perhaps double the cattle marketed through formal channels. Nevertheless, off-take rates remain lamentably low and highly seasonal, and the system is unable to respond in times of drought, often resulting in depletion of grazing and high livestock mortality.

The main constraints to marketing, apart from traditional inhibitions, are high transport costs because of the low density of rural feeder roads, as well as the costs associated with the loss in the condition of the animals when in quarantine. A prioritised list of roads has been drawn up linking producers with quarantine farms and abattoirs. However, construction costs are high and it is questionable whether the benefits of livestock marketing alone would be sufficient to justify the investment. In order to meet the animal health requirements necessary to export fresh/chilled meat to South Africa, cattle must be held on a Government quarantine farm for at least 21 days prior to slaughter and be held as chilled meat chilled for a further 21 days after slaughter. A project has recently been approved to rehabilitate a number of existing quarantine stations and to develop new ones at strategic locations throughout the NCAs. Meanwhile, the Government remains committed in the long term to the progressive movement of the Veterinary Cordon Fence northwards.

Two other interventions being used to promote livestock sales are the provision of added incentives for sale in the form of price subsidies at certain times of year and as a drought relief measure, and the provision of market information to livestock producers to enable them to make sales' decisions based on objective, accurate and up-to-date information.

4.10 Drought policy

A general perception has developed over the past few decades that droughts, warranting Government funded relief, are frequent events. Farmers have been receiving substantial drought relief assistance from Government since the 1950s. In the seven years since Independence livestock farmers (often amongst the wealthier members of society) have received an estimated N\$ 315 million (US\$ 72 million) in livestock related assistance alone (National Drought Task Force. 1997). Furthermore, the readiness with which Government has been willing to provide assistance is increasingly recognised to have discouraged farmers from adopting management practices adapted to Namibia's natural aridity. On the contrary, a number of interventions, such as the subsidy on fodder, have led to unsustainable practices by encouraging farmers to keep stock when they should be marketed. This in turn inhibits the recovery of grazing. These interventions not only promote unsustainable farming practices, but are highly inequitable, with the bulk of assistance being captured by wealthy livestock owners and commercial maize farmers rather than the poor.

A new policy is currently being discussed which aims to shift responsibility for managing drought

risk from the Government to the farmer (MAWRD. 1997). It is now being argued that previous perceptions of the degree of drought warranting relief measures were misconceived. Drought relief should only apply when a disaster drought, defined in terms of its extremity and rarity in relation to normal arid conditions, occurs. The policy seeks rather to emphasise long term measures that support the management of risk by farmers. Short term assistance to support crop and livestock farmers will be limited to disaster droughts when conditions are so severe or protracted that they are beyond what a farmer would be expected deal with in terms of normal risk management.

This calls firstly for an objective definition of drought which cannot be subjected to the dictates of political expediency. Relief assistance to commercial farmers should in future be financed mainly by farmers themselves and industry levies. Policy reform will promote sustainable farming practices by supporting mechanisms which will stabilise their incomes under conditions of extreme climatic variability. Reforms are needed in the tax regime to which farmers are subject, and incentives are needed to promote investment in diversified farming and non-farming operations. For equity reasons communal farmers will continue to receive government financed drought relief. Support for communal area livestock farmers in disaster droughts should take the form of a livestock marketing incentives, and in extreme cases, for the preservation of core breeding stock, through financial support to the leasing of and transport of livestock to emergency grazing.

It is also proposed that long-term programmes must be instituted to ensure that all communal area crop farmers have access to and can afford the inputs for production in the year after a disaster drought, flood or pest damage. Free seed handouts should be abolished on condition that seeds are readily available and affordable. The agricultural input voucher scheme, as discussed in Box 12, should be vigorously pursued and be designed so that it can be upgraded after drought years to compensate poorer (agriculture dependent) farmers for the loss of vital inputs (eg seeds) and other assets (eg draught animals and implements) suffered as a result of droughts.

CHAPTER 5. ACHIEVING SUSTAINABLE AGRICULTURE IN THE NCAs: CONCLUSIONS

5.1. 'Growth for equity' or 'equity for growth'

Government policy should promote equity, promote efficient resource use, and promote sustainable natural resource use. Considering the Namibian Government's four major development objectives as stated in its First National Development Plan (NPC. 1995), the promotion of growth and employment, and the reduction poverty and inequality, this report suggests that communal agriculture is in a position to contribute most significantly to the latter two. In Namibia, which has one of the highest income inequality in the world, it is important to deal with issues of poverty and equity directly instead of simply promoting growth and waiting for wealth to trickle down. In order to do this the focus of Government strategies and expenditure should be on the promotion of sustainable agriculture amongst smallholder farmers, and especially the poor.

Smallholder farming in the NCAs contributes less to household incomes than in other sub-Saharan African countries, and that from crop production specifically, contributes significantly less than livestock production. For many rural households agriculture provides an important but not vital source of income. However, for poorer households, as well as for wealthier households in certain regions with fewer linkages to the country's non-agricultural sectors, agriculture is of great importance to livelihoods. These households should be the primary focus of Government's agricultural support. Agriculture is the only means of poverty reduction open to the rural poor and must be supported as such. However, the limits of the capacity of agriculture to support the poor must also be recognised. Because of rainfall and water shortages and poor soils, there can be no 'green revolution' in Namibia, while processes of intensification will depend on maximising the use of renewable natural resources, and will only be achieved gradually. For this reason, the growth of the economy's non-agricultural sectors so as to be able to support those whom the rural areas cannot accommodate, other than in poverty, and to generate off-farm income that can be invested in farming, is vital.

5.2 Agricultural services

The Government's agricultural services have had the opportunity of building largely from scratch in the NCAs, although many of the senior personnel were inherited from the pre-independence system. The process the extension service has been going through of trying to divest itself of the provision of commercial services, like tractor ploughing and the sale of inputs, which use up considerable resources and it is thought will be better handled within the private/non-governmental sector, is important. The possibility of 'contracting out' extension to some farmers organisations would be an interesting experiment, however sufficiently strong farmers organisations only exist in some parts of the country at the current time.

The farming system approach has enabled the Government's extension and research services, and semi-independent projects linked to them, to develop fairly rapidly some appropriate

technologies for smallholder farmers. This should be an encouragement to continue this approach, but it should be recognised that some of the easiest problems have yielded first, with the help of experience from other countries. Developing a fuller range of technologies for sustainable small holder agriculture will be very much more difficult, as neighbouring countries are finding. This will need closer links between farmers, FSRE projects, extension and research, as well as the exchange of ideas and experience at a regional level.

5.3 Agricultural policy

The current written agricultural policy assumes agriculture can achieve more than the resources will permit. There is therefore a need for prioritisation of objectives and the development a strategy to achieve priority objectives. As stated in paragraph 5.1, this report considers the alleviation of poverty and environmental protection objectives to be priorities.

Agricultural development is also vitally dependent on policies related to other issues such as land tenure. The balance between individual and group land rights in the forthcoming land policy and legislation, and the way these are mediated, will have a profound impact on both poverty alleviation and environmental protection.

Environmental management schemes, like the conservancies being developed in collaboration between local communities and the Ministry of Environment and Tourism, have potential for wider applicability. However, extending the principles to a wider range of natural resources will be challenging, especially when the resources are contested or in short supply.

Decentralisation is necessary to enable policy to be implemented in line with local conditions and traditions. Decentralisation is also needed to improve co-ordination at the local level between different institutions, such as government departments, NGOs, CBOs and traditional authorities, which are involved in rural development. Achieving the balance between co-ordination and control, thus enabling freedom to innovate, is not always easy.

Finally it is important to adopt a learning approach to both policy and implementation strategies. There are no blue prints for success. Approaches need to be tried, monitored and evaluated and then modified as experience grows.

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