Rural Development Priorities in Northern Namibia

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Preface

This paper was researched and written during the first months of NEPRU's existence, just before and after Namibia's independence on 21 March 1990. The authors' purpose was to make a preliminary attempt at identifying some of the more significant rural development priorities in northern Namibia, where the great majority of the rural population live and work. Several of their specific recommendations for further study were subsequently taken up as NEPRU projects and in the research programme of the 1991 Land Reform Conference, which NEPRU undertook on behalf of the Office of the Prime Minister.
1. Summary and Main Conclusions

1.1 Background

This report is intended as a briefing document to highlight priority rural development policy issues. Since the vast majority of the population of the so-called "communal areas" are self-employed in subsistence production, whether crops, livestock, fishing or hunting and gathering, the focus is on this and on directly related rural development topics.

The report is considered relevant to the following ministries:

- Agriculture, Fisheries, Water and Rural Development
- Lands, Resettlement and Rehabilitation
- Trade and Industry
- Works, Transport and Communications
- Finance

The majority of reports addressing development issues for the communal areas have been produced by external agencies for their own purposes. Many cover such a wide range of topics that it is difficult to isolate policy priorities. A number of reports, several of good quality, have been produced by local NGOs and church organisations but most are specific to geographic locations or particular projects. Little interest in rural development was evident at any level of the former colonial administration except within the framework of bantustan institution-building. Officially-sponsored field research has been insubstantial and hardly any results have been analysed and published.

The central government, in particular the Ministry of Agriculture, has already signalled a major shift of emphasis towards addressing rural development needs in the communal areas, a field which was previously in the hands of the weakly administered "second tier" authorities. Certain existing parastatals, notably the Agronomic Board and the First National Development Corporation, have also begun to adjust their approach and activities in line with the emerging policy priorities. A major consequential requirement will be the restructuring of the relevant ministries and parastatals at local as well as central levels, and the specification of roles for the proposed new regional authorities to be established in the first year of independence.

1.2 The Communal Areas

The communal areas have the following principal features today:

- At the 1981 census some 70% of the total population of Namibia lived in the communal areas and close to 60% in the far northern mixed farming zone. This proportion has probably not decreased significantly despite continuing urban growth (see Appendix A);

- Economic activity in the communal areas is mainly agricultural and subsistence-based with very little other primary or secondary
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production, but with sizeable service sectors based on external cash remittances and mainly administrative local employment;

- Land is not formally owned freehold or leasehold according to the statutory land laws applicable to the rest of Namibia, but under various forms of customary tenure whose standing has been compromised by their adaptation to the practices of apartheid administration;

- Economic and social conditions in the communal areas are primarily the product of the gross distortions of colonial land policy in favour of immigrant commercial farmers and of the migrant labour system serving the commercial economy. Their improvement is to varying degrees integrally related to general issues of land reform and resource redirection.

- Within the general framework of their subordination to the commercial economy, significant differences arise between communal areas in the southern and central pastoral zone and those in the northern mixed farming zone in three respects: the southern and central areas are shrunken remnants displaced to the margins of former ancestral lands; they are nonetheless within the open veterinary zone and have market access for their livestock; and they have experienced little war damage. On the other hand, in addition to their greater resource endowment the northern areas have suffered by isolation rather than displacement, have virtually no access to markets for meat and grain, and have absorbed major material and social damage from the war.

Largely due to the previous repression and neglect of people living in the communal areas, there is considerable scope for improvement in the standard of living and wealth of the inhabitants. Appropriate emphasis by government on small farmers and on regional economic diversification could also significantly enhance local employment and self-employment, thereby contributing towards reducing the drift towards the urban centres of central Namibia and the worsening of urban poverty and unemployment. Greater emphasis on food production and crop diversification also holds the promise of much greater food self-sufficiency. Although large-scale intensive crop farming has its place, promoting this principal national goal through investment in the expertise and commitment of small farmers holds one of the best prospects of making a large contribution towards another priority goal, the creation of productive employment.

Nor is the scope for improvement limited to the communal areas. A shift in incentives and planning priorities towards arable products and closer settlement could generate new areas of smallholder mixed farming, especially in high potential zones such as the Otavi highlands where wasteful cattle ranching has rendered large tracts unproductive through bush encroachment. As in the communal areas, the potential development gain in new employment, economic integration and rural-urban linkages is substantially greater than either specialised cattle-ranching or highly mechanised large-scale crop farming.
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Issues of land ownership and use will remain to the fore. In the existing commercial farming zone, historic rights based on the original colonial land theft are bound to come under pressure in certain areas, especially where farms are used for non-agricultural purposes such as private trophy hunting or are held by foreign or absentee landlords. In the communal areas, the customary rights to land are usually family-based in the case of cultivation and clan- or tribe-based in the case of open pastureage.

However, conflicting claims to the usage of unoccupied land outside the established settled zones, especially in the northeast, are already emerging in two main forms. First, seasonal grazing is being fenced off and privatised into cattle ranches. Second, scarce riverain land is sought for intensive commercial irrigation schemes. Since unplanned privatisation could seriously pre-empt integrated schemes having far greater development gain, in particular expanded mixed farming settlement in the far north, the formulation of enforceable land-use guidelines for access to 'open' communal land is an urgent short-term priority.

This report synthesises the results of a brief applied research project comprising an appraisal of the large body of consultancy reports bearing on rural development and food security and a short field visit to Ovamboland and Kavango. It attempts to go a little beyond the frontier of vague generalisations at which many such reports terminate their conclusions, but does not embark on a comprehensive assessment of rural development policy priorities and resulting programmes. It concentrates on the communal end of the agrarian syndrome and more particularly on the northern mixed farming zone, where the concentration of people, resources and problems places heavy immediate demands on policy and programme formulation. The growing proliferation of donor-sponsored projects in the north, both governmental and NGO, raises the pressure for policy guidelines to coordinate development efforts and minimise the disruptive impact that over-hasty and poorly prepared initiatives have exerted on fragile eco-systems in a number of other African countries.

1.3 Main Conclusions

Top priority should be given to the promotion of the crop production sector in the mixed farming zone of the northern communal areas, and hence the creation of new agricultural research, extension, and training services. Of equal importance are the creation of new marketing, processing, and transporting opportunities for small farmers and traders. Apart from urgently required initiatives in the areas of veterinary care and livestock marketing, promotion of the livestock sector requires careful long-term work on management of grazing resources and moving the veterinary cordon north. The planning and regulation of land use according to a strategy oriented to sustainable development is important to the coherence of rural development programmes in general.
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The main conclusions are:

- High priority should be given to the restructuring of the Ministry of Agriculture to enable the creation of new National agricultural research, extension and training services. Ministerial planning and management units should be established: one to cover a coordinated research and extension programme, and another for training, linked also with the Ministry of Education. The latest approaches to agricultural research and extension involving maximum farmer participation can and should be adopted (Section 4). Redeployment of existing manpower will by itself be insufficient and new staff need to be recruited. All staff will need intensive in-service training. Initially funding requirements will be relatively high for investment in necessary infrastructure for the extension service, but research and training infrastructure already largely exists. The government should seek appropriate external donor assistance in terms of expertise and funds in these areas.

- Given the planned restructuring of government administration and the priorities being accorded to rural development in the communal areas, a specific study of priorities for relevant public expenditure is proposed[1].

- In parallel with the above Government should promote both crop and livestock marketing processes. Marketing studies are an urgent priority for the communal areas. In the short term, spanning the next 1-2 seasons, an interim marketing scheme for local cattle north of the control fence, using the existing, largely inactive meat processing plants, could provide the quickest means of generating a cash return to small farmer production, helping to counteract a severe contraction of the commercial economy. More generally, a broad spectrum of economic issues embracing production incentives, transport, roads, storage, retail outlets, potential for involving local traders and external trade relations, and issues of import substitution and exports, all need to be urgently addressed. The engagement of an experienced crop marketing consultant for a period of two months is recommended, possibly through NEPRU[2].

- The promotion of communal livestock production is a complex and long term task. Alongside the creation of livestock marketing outlets for communal farmers, upgrading veterinary services and the introduction of associated animal husbandry extension services are a priority. However, the build-up of herds should be avoided before the introduction of appropriate systems for the management of communal grazing and the reserving of communal grazing as part of national land use plans if a policy protecting communal rights against wholesale privatisation is adopted.

1. Appendix B in the original, but omitted here.
2. Appendix C in the original, but omitted here.
Summary & Conclusions

- Issues of land use and human settlement require urgent attention to allow for the efficient use of land and water resources, and to promote rural livelihoods and environmental concerns. Policy-makers face early choices which will have far-reaching long-term consequences. One such instance is the competing claims on unoccupied pastoral land for seasonal pasturage, an expansion of smallholder mixed farming, commercial cattle-ranching, and mechanised field cropping. Decisions on land use alternatives may be based on criteria of profitability or of employment creation and income distribution. A major land use planning exercise is warranted to forestal the dangerous consequences of the uncontrolled private enclosure of "communal land" in Ovamboland, and as a prelude to any large-scale resettlement scheme. A land use plan should demarcate lands for various competing users. It should take into consideration land and water resources outside Ovamboland, particularly those in Kavango and the Otavi triangle area. Recommendations resulting from this exercise will have political implications, and their implementation will depend on binding legislation and effective local level community support.

- The use of water as a scarce resource needs to be monitored and controlled, especially in Ovamboland. Even in Kavango and Caprivi use of water for irrigation needs to be controlled and the government needs to allocate priorities for irrigation between small farmers and commercial concerns to ensure that small farmers have adequate opportunities. Water availability will be a major determinant of where resettlement will be feasible and future access to it will also affect livestock grazing potential (Section 5).

- Related issues of self-sustaining community development and potential for co-operation in marketing, obtaining inputs and possibly co-operative management of irrigation schemes need attention. These areas may be best dealt with by local and foreign NGOs, who should be encouraged by Government to take up the challenge they offer. Further investigation is needed of the most appropriate means to promote urban employment and local trading and business enterprises, many of which could service the needs of the farming community (Section 6).

- Priority further studies which have been identified include: socio-economicdemographic sample survey; farming systems research; economic marketing studies; potential availability and use of both surface and ground water; Bushmen socio-economic survey; a comparative study of regional agricultural research and extension programmes; and the role of women in agricultural production and rural development (Section 7).

Since most readers will have general knowledge of the communal areas and because descriptive and historical information is available in the plethora of reports and books already existing, it is not considered necessary to re-iterate such information in this document.
2. Agricultural Production Constraints and Priority Issues for Attention

The South African government and Windhoek central administration deliberately neglected the agricultural development of the communal areas, leaving initiatives in the hands of the relevant "second tier" authorities which have been weakly administered, lacked suitably qualified or trained staff, were not technically supported by Windhoek departments, and were heavily tainted by corruption (UNDP, 1989). Compounding the bias was the almost complete disinterest of the parastatal First National Development Corporation (FNDC) in the development of small-scale farming.

Considerable damage to the physical environment has already resulted, particularly as regards deforestation and range degradation. Perennial grasses have almost entirely disappeared from the densely settled central zone of Ovamboland and other overgrazed areas, leaving livestock more vulnerable to drought, in poor condition for ploughing at the end of the dry season, and more dependent on seasonal migration to outlying grazing areas. The stripping of forest cover has made building materials and fuelwood increasingly hard to find.

To turn this situation around requires a major reversal of the policies of the previous regime. General priorities are investment in farm production and supporting infrastructure and promotion of the range of services required by farmers to increase agricultural productivity and incomes in an ecologically sustainable and economically viable way.

Farming families and livestock owners in most communal areas have for long not been able to rely on agricultural production alone. In drought years most farming families in both Ovamboland and Kavango must draw heavily on off-farm income. In Ovamboland the gap between food output and local demand is under particular strain owing to population pressure, the influx of returnees and growing unemployment. UNICEF (1989) estimated that in Ovamboland less than 25% of the value of total household income has come directly from crops and livestock production, whether sold or consumed on farm, in the recent dry years, the remaining 75% deriving from a combination of remittances from absentee/migrant workers, local wage employment and pensions. Additional cash income is derived from conversion of millet into local beer for sale.

Various specific constraints to production have been cited by a number of reports (see for example: UNDP 1989, UNICEF 1989, CEC 1990). Some of these are:

- Non-functional extension services and training facilities for farmers; in particular, women, the majority of practising crop farmers, are hardly reached;

- Population pressure in the existing cultivated areas;

- Wholly inadequate marketing and trading facilities affecting both the supply of inputs and the potential for marketing farm produce;
Agricultural Production Constraints

- Insufficient traction power (oxen or tractors), partly due to the extended absence of livestock in search of increasingly scarce grazing and also because of the poor condition of oxen at ploughing time;

- Drought conditions prevailing for the last few years, although the 1989/90 season was considered adequate;

- Lack of necessary inputs such as certified seeds and improved varieties, phosphate fertilisers, and suitable hand tools;

- Shortage of men for clearing, cultivation and maintenance, due mainly to absence as employees in the commercial and industrial sectors;

- In the case of livestock, ecological degradation of grazing areas, especially through concentration near watering points such as the pipeline in Ovamboland. Grazing degradation issues are also relevant to southern areas of Namibia, affecting sheep and goats.

- The high incidence of diseases amongst cattle in the north, especially lung sickness, quarter-evil (sponsseikte), botulism (lamsiekte), and occasional outbreaks of foot and mouth disease and anthrax.

Of these various constraints, marketing, both of outputs and of inputs related to crop production, is seen as one of the most important issues to be addressed in the short to medium term. Extension, research and the training of both farmers and extension workers are of equal importance; but extension efforts aimed at boosting crop surplus and introducing new crops will fail if the marketing issue is not addressed concurrently.

In the short term, the main emphasis in alleviating production constraints in areas of mixed farming should be on crops rather than on livestock. Improving communal livestock systems is important but is a longer term objective, while promotion of commercial livestock production entails high capital investment (mainly fencing, boreholes, access roads and initial breeding stock) and affects only a small number of people in any given area. On the other hand, the position is reversed in addressing marketing constraints, where short-term measures to open up outlets for livestock are more urgent (see Section 3).

In the northern areas at least, crop production or perhaps more accurately the "mixed farming" sector, should therefore receive the priority attention of new agricultural services and marketing organisations. Mixed farming may be defined as predominantly field crop production, together with some raising of small livestock, cattle and draught animals near the homestead for at least part of the year. Justification for this priority includes:

- Crop farming offers the prospect of employing larger numbers of people on the land than does a northward extension of the type of specialist ranching which prevails in the commercial zone. Indeed it appears that with current market conditions only large-scale ranching, such as the
Agricultural Production Constraints

Mangetti ranches of FNDC, is reliably profitable in the long run, most commercial owners having long been sustained by a range of subsidies, mainly in the form of low interest loans.

- Irrigated crop production has limited potential, especially in Kavango and Caprivi. But under present circumstances intensive irrigation schemes are likely to benefit only a few and at considerable initial capital cost. They may compete for water from the Kunene and Okavango Rivers with alternative uses of funds and water which might be of greater benefit to local farmers. There may be potential to alleviate constraints posed by capital investment requirements through cooperative management, but this in itself will require specific "group mobilisation", training and assistance.

- Field crop production and incomes may be expected to increase relatively quickly and without major capital investment of public funds by pursuing a two-pronged approach: the promotion of good farming practices and the introduction of simple technologies and new crop varieties, especially of millet; and the creation of market opportunities and hence incentives to encourage the production of surpluses.

There is, however, scope for improving veterinary services, animal husbandry practices and communal grazing regimes which would benefit existing livestock owners. Such efforts might also enhance the availability of oxen in good condition for ploughing and hence contribute to boosting crop production. In the longer term, further promotion of commercial livestock may be in the national interest; but this will depend on export opportunities on the one hand and, on the other, on the relative benefits of using scarce government resources for different purposes. Also in the longer term, there may be potential to create communally managed livestock production within an extended veterinary cordon, with offtake approaching existing commercial levels.
3. Marketing

3.1 Overview

The improvement of marketing, processing, trading and transport structures would have a significant impact on the production of existing and new crops and on the marketing of the cattle offtake. It would assist import substitution and in a few cases boost exports.

In the northern mixed farming zone, Ovamboland is in substantial food deficit in all but exceptionally good harvest years. Kavango and the eastern Caprivi approach self-sufficiency more regularly and have the potential to generate surpluses within the existing farmed area. However, recent drought years have inhibited the surplus production of most crops and indeed food security problems have only been narrowly averted in parts of Ovamboland this year because of a period of good rains in March.

Despite the recent drought years, new seed varieties of millet grown at the Rössing Agricultural Training Centre at Okashana have indicated the potential for doubling yields even in dry years and without the significant application of fertiliser. In general, this suggests that there is scope for the surplus production of millet even in marginal conditions. If so, issues of marketing, extension and training, input supply and a related issue, seasonal credit, come to the fore (see Section 6.2).

Marketing of crop outputs is a process which potentially comprises a wide range of activities, for example:

- production of a surplus of particular crops
- temporary on-farm storage
- local sales and/or "conversion" for sale (e.g. millet into beer)
- local or district level transport and trading of raw products
- processing (milling etc), or packaging or storage and local resale
- bulk transport to areas of high demand and storage where relevant
- retailing in urban areas
- identification and quantification of retail outlets, external competition, and import substitution and export potential.

Marketing of inputs to the agricultural community comprises several of the same activities, although the nature of the commodities is generally more durable (seeds in tins, tools, etc) and hence storage is less of a critical issue. Promotion of local farmer trading centres would enable marketing of both outputs and inputs at the same time.

Transport from the rural areas to urban centres is scarce. Even if it were more readily available it is unlikely that the volume of output in the short term would be sufficient to be economically transported to areas of high demand to compete with imported produce. Further, it is not necessary for production and marketing to be limited only to higher value cash crops since the growth of local urban communities, including Ovamboland, will create potential demand for cheaper basic staple foods like millet.
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3.2 Crop Marketing and Production Potential

3.2.1 Introduction

The various activities in the marketing process listed above are closely inter-related. The evidence suggests that the current marketing constraints are recognised by the majority of farmers and hence that there is little incentive to produce a surplus, even in years of good rainfall, beyond that required for on-farm storage and food security. The most immediate constraint perceived by farmers is limited local market demand, which has also reduced incentives for farmers to introduce new crops like vegetables in Kavango and Caprivi. Millet is a subsistence crop and barely marketed as grain except in Kavango, where small quantities are purchased by local merchants. Most millet and sorghum marketing is currently through conversion into beverages. Certain crops like maize in Kavango and Caprivi are normally sold fresh or "green" for immediate local consumption rather than storage, while the stalks are used as livestock fodder.

3.2.2 Local Demand

Cash is available in all the northern areas from a variety of sources: urban earnings from trading and employment; remittances from absentee and migrant workers in the commercial areas; and from pensions. In Ovamboland especially, local employment and cash earning opportunities are tending to decline and a reduction in profits of trading enterprises is expected with the withdrawal of troops and more recently UNTAG staff which affects not only direct employment but also demand forretailed goods of many types. Rough estimates by FNDC managers on the basis of their trading turnover indicate a fall of 15% already in central Ovamboland and predict a decline in commercial activity by mid-year of 30% in Ovamboland, 60% in Kavango and at least 15% in the eastern Caprivi. Even the informal "Cuca" shops, which are distributed throughout the farming area as well as along the main roads, will be adversely affected by the reduction of cash in circulation. These epitomise the service character of the northern economies: a lot of trading but little production.

The small and unformed state of the local market for millet is illustrated by the high price of millet retailed (most at over R1,000/tonne) during the last 9 months. The bulk of this was purchased through FNDC's Musese farm in Kavango at very favourable prices (R700/tonne) following the 1989 harvest when rains had been relatively good. The FNDC estimates that about 750 tonnes were purchased, of which probably 80% was resold to either the Ovambo Administration or Ovambo traders, while the remaining 20% was milled and resold in Kavango. Nonetheless, not all trader's stocks in Ovamboland have been sold as yet, partly due to the excessive retail prices but also because maize flour, which removes the need for laborious stamping, is cheaper and long dominant in the local market.

The Agronomic Board considers that most Namibians originating from the north, urban as well as rural, are prepared to pay a price premium for
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millet over Maize. This is for reasons of taste preference and cultural habit, also because millet, together with Sorghum, is better for brewing traditional beer which is a major source of income to the Cuca shops and to homesteads throughout the north. Indeed, what is not known is the quantities used for each potential purpose and it should not necessarily be assumed that all sales were used for basic food consumption. However, in view of the barely developed state of millet marketing, especially in milled form, any assumptions as to price levels and relativities must be taken as very preliminary assessments.

3.2.3 The Agronomic Board

The Agronomic Board is responsible for guaranteeing floor prices for certain crops, at present maize, sunflower and wheat, and therefore undertakes to act as buyer of the last resort. The guaranteed minimum price of maize, equivalent to grain in bags at the farm gate, is R440/tonne. In the immediate future the Board expects to become involved for the first time in supporting purchases of millet in the communal areas and to be able to offer a support price between R500-550/tonne for the 1990 season. This is substantially lower than the price offered by FNDC in 1989 but compatible with keeping millet not too far out of line with its nearest substitute, maize.

The Board sees its role primarily as a marketing initiator, providing advice and, through price support and involvement in storage and fumigation, the means for the private sector to engage in marketing and trading of the relevant crops. It intends to organise millet purchases on a pilot basis in 1990 through selected collection points in Kavango and Ovamboland, probably using the three FNDC farms in Kavango, and two points in Ovamboland: one at the Rössing Training Centre at Okashana and one probably through a private trader in Oshakati. Many farmers or traders in Ovamboland will have to travel substantial distances to reach these centres, which may reduce the incentive to sell.

In the future, parastatal corporations could play a role in providing collection and milling facilities. At the same time these collection centres could stock relevant inputs for farmers and even offer specific training facilities. Nonetheless, further studies are required to help define more clearly the roles for these bigger agencies with a view to ensuring that monopoly or monopsony powers do not unfairly inhibit smaller trading and business enterprises.

More generally, the use of existing institutions such as the FNDC and sections of the former ethnic administrations could run into serious difficulties. The local FNDC operations in particular are widely viewed by local farmers and businessmen as colonial relics, paternalist in character, and hostile to their development interests. Alternative approaches consolidating local trading networks and community-based or cooperative efforts, hitherto marginalised by war and institutional
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disinterest, should form part of a thorough evaluation of marketing and input support to small farmers.

The Board also intends to research millet milling and storage technology: the short shelf life of millet flour puts it at a serious competitive disadvantage to maize meal. Appropriate small-scale milling technology could also bring significant improvements to farming communities at the local level, especially to women for whom manual food processing currently forms a heavy labour demand in the daily cycle. The Okashana centre has been in consultation with ICRISAT in Zimbabwe and experimental work in Botswana is likely to prove relevant.

The Agronomic Board has only been operational since 1985 and has hitherto only dealt with the commercial farming sector. However, in collaboration with the Ministry of Agriculture, Fisheries, Water Affairs and Rural Development (MAFWARD), it intends not only to extend its role for millet in the communal areas but also to expand its interests beyond the range of crops it currently covers. It is recommended that the Board should be given the necessary mandate and budget to do so on the basis of its existing provisional plans, its particular advantages being that it has a national marketing framework, that it is non-profit-making, that it is not compromised by having vested local business interests, and that it is not tainted by the questionable records of existing organisations in the region.

3.3 Livestock Marketing

The livestock component of peasant farming systems in the north forms a minor theme in this report and is covered much less fully than arable farming. This is not, however, intended to detract from its importance in the rural economy. A proper assessment is hamstrung by the scarcity of reliable published data, although some local offices have maintained extensive records. Within this empirical void, the prevailing orthodoxy amongst most local officials - there are notable exceptions - has similarities with the past perceptions of colonial administrators elsewhere in Africa, that livestock are kept in excessive numbers primarily for non-economic reasons of prestige and cultural symbolism. In practice, it is unlikely that the average number of animals per homestead or overall has shown a general increase in recent years, if not the reverse, owing to the effects of epidemic disease and drought.

Given a more than fourfold increase in population over the last half century, the concomitant expansion in the numbers of cattle, goats and donkeys has brought the pastoral eco-system under severe pressure, especially in and around the Ovambo floodplain. Grass cover over much of the settled area has long since degraded to annuals and is largely stripped by the latter half of the dry season. Access to pasturage in the adjacent sparsely inhabited zone has become more important for many farmers and patterns of seasonal migration to cattle posts have become more extensive and complex. The pressure on pasturage was dramatically
exemplified recently by the breakthrough into the Etosha Game Reserve, where better rains attracted herders from poorer pasturage further north.

Their almost total exclusion from access to stock markets outside the region has long been a key obstacle confronting farmers in the north. The 'Red Line' veterinary cordon, erected to protect the export outlets of commercial ranchers to the south, forms a barrier impassable to the movement of animals and fresh meat for most northern farmers, for whom access to the few quarantine camps is difficult. Its maintenance as protection against potential outbreaks of foot-and-mouth disease and lung-sickness will undoubtedly remain in the national interest for exports both to South Africa and overseas, especially the EC. Apart from the local fresh meat market, in the short and medium term northern farmers will thus be able to sell only to processing plants which can sell their products beyond the Red Line.

Through its existing plants - the Eloolo abattoir/cannery and butchery at Oshakati and smaller plants at Rundu and Katima Mulilo - the FNDC has a virtual monopoly on abattoir and meat processing capacity in the north. It has used this powerful position to develop an integrated enclave operation which is highly profitable, taking cattle almost exclusively from its Mangetti ranches and supplying mostly fresh and processed meat to institutions such as schools and hospitals and, before independence, to the SADF and UNITA. Although theoretically open to local stock-farmers, very little effort was made to build a marketing infrastructure. Prices were fixed after weighing at the abattoir rather than on leaving the farm; and payment by cheque rather than cash was highly inconvenient given the complete absence of rural banking facilities. Also affecting farmers' perceptions were local butchery prices fetching at times a premium above the FNDC's buying rates, which have usually been pegged to commercial producer prices in the south.

The current situation is thus quite untenable. The Eloolo cannery, although in good working order, has hardly been run since the early 1980s. The withdrawal of the SADF and UNTAG has drastically cut the demand for fresh meat and the Rundu butchery has already closed. The Mangetti ranches can redirect their offtake into the commercial market, West by virtue of its newly acquired approved veterinary status, East by means of quarantine. Meanwhile northern farmers are still without access to external markets.

There are quite distinct short- and long-term dimensions to the stock marketing issue. In the immediate future, a central predicament confronting the vast majority of small farmers is their exclusion, apart from local trade, from access to markets for any of their products, whether arable or pastoral. At the same time they face high urban unemployment and a drastic shrinkage in the regional commercial economy, hitting both wage employment and trade income. A significant consequence could be a sharp acceleration after this year's harvest is gathered of migration to central Namibian towns, exacerbating the already serious pressure on jobs, housing and social services. While dramatic early
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results should not be expected, a measure that might generate quicker results than most would be the organisation of an interim marketing scheme to buy in local cattle using the established processing facilities at the FNDC's meat plants. While an element of price support might be required, the larger contribution would be towards the stabilisation of income to farmers from their own productive activities.

In the longer term, a consolidated marketing scheme with appropriate infrastructure and technical support could have lasting impact on the viability of farming in the north. Improved management practices and disease control programmes would increase returns to farmers' efforts. But deep-seated policy dilemmas will persist. One well-canvassed solution to the veterinary barrier is to move the Red Line gradually northward, eventually reaching the Angolan border. However, much of the unoccupied land in the Ovambo, Kavango and Kaokoland districts, which could be fairly rapidly transferred into the open marketing regime, forms essential seasonal pasture whose loss would seriously damage the viability of many small farmers. Nor is it easy to envisage rigid stock controls at the Angolan border given the extent of cross-border interchange.

Joint Namibian-Angolan programmes in what is a common economic zone may eventually achieve the desirable goal of improved, disease-free herds at sustainable stocking ratios. In what could meanwhile prove to be a lengthy transitional period, a careful balance will need to be struck between the extension of commercial ranching and the removal of seasonal range-land from access by small farmers. Alternative models of organisation and ownership include communal access to fenced and watered grazing areas and the expansion of smallholder mixed farming into disease-free areas south and west of the Okavango River sustained by a mix of borehole and river water.

3.4 Import Substitution and Export Potential

It is difficult to estimate current total production of staples because of lack of data from the communal areas. Figures from the commercial farming sector are more readily available. Estimates of both have been obtained from the Agronomic Board together with estimates of total demand and production potentials in Namibia. These are combined to give the following estimates for staple crops:
### Table 1. Production and Demand Estimates for Staple Crops

<table>
<thead>
<tr>
<th></th>
<th>Potential demand</th>
<th>Domestic production</th>
<th>Existing shortfall*</th>
<th>Potential production</th>
<th>Future shortfall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Millet</td>
<td>(80,000)+</td>
<td>60,000</td>
<td>20,000+</td>
<td>80,000+</td>
<td>0</td>
</tr>
<tr>
<td>White maize</td>
<td>60,000</td>
<td>20,000</td>
<td>40,000</td>
<td>50,000</td>
<td>25,000</td>
</tr>
<tr>
<td>Yellow maize</td>
<td>15,000</td>
<td>5,000</td>
<td>10,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wheat</td>
<td>32,000</td>
<td>5,000</td>
<td>27,000</td>
<td>9,000</td>
<td>21,000</td>
</tr>
<tr>
<td>Total</td>
<td>187,000</td>
<td>90,000</td>
<td>97,000</td>
<td>139,000</td>
<td>46,000</td>
</tr>
<tr>
<td>Sunflower</td>
<td>10,000</td>
<td>1,000</td>
<td>9,000#</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Same as imports, except in the case of millet: estimated potential.
+ Millet: Potential demand only, given deficit in Ovamboland, returnees increasing urban poor, etc. Potential production assumes improved agronomy and marketing.
# Sunflower actually imported as oil; figure is equivalent tonnage.

Through improved agronomy, marketing and processing, and to some extent the cultivation of new areas through resettlement, there is good potential to boost millet production, which is considered to be the preferred staple of over 60% of the population of Namibia, mostly in the communal areas. Increased production of Maize, Wheat and Sunflower would come mainly from the existing commercial regions through a combination of expanding the cultivated area in the Otavi highlands, the conversion of some ranches into crop cultivation, and increased irrigation, the latter partly through reactivating abandoned areas and further expansion along the Orange River and from the Hardap dam irrigation system.

It is estimated that 50-80% of all Namibia’s cereal requirements are imported, depending on harvests, while about 95% of all vegetables and fruits are imported (CEC, 1990). The potential for cereals is considerable, as the table above indicates, in particular for millet from the northern communal areas but also for other cereals. These would derive mainly from the commercial areas but with some potential for expanded output of maize for milling, which is traditionally sold fresh or "green", in Caprivi and Kavango.

Lack of local market outlets, coupled with lack of transport to other areas, is known to pose an immediate constraint to the adoption of new cash crops such as vegetables. For example, the "Salem" irrigation scheme near Rundu in Kavango comprises only 34 hectares and is mostly cropped with maize (sold "green"). Yet even the small proportion under production of cash crops like tomatoes, onions, groundnuts and chili has generated enough produce to saturate the Rundu market. The farmers are disillusioned
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and prefer to concentrate on irrigating maize for local cash sale and to use a proportion of the income to buy in milled maize or millet and other basic foods.

The main constraint on the potential for import substitution of vegetables is transport costs rather than technical or ecological constraints. The previous practice whereby refrigerated truck operators freighting beef to South Africa offered cheap back-haul rates for vegetables and fruit was recently stopped by the vehicle licensing authority. Economies of scale in production, transport and organisation will continue to act strongly in favour of the bulk South African suppliers. It is also doubtful whether vegetable production in the north will be able to compete with potential vegetable producing areas closer to Windhoek. However, the production potential merits sustained trials and organisational support. The potential for exporting off-season fresh fruit, vegetables and cut flowers to Europe also calls for investigation in the light of successes in several neighbouring countries.

There are, however, other constraints. The upgrading of the main road to Caprivi to trunk road standard, which was abandoned by the South Africans, is currently an obstacle to heavy freight traffic but is likely to receive top planning priority. There is also some evidence of South African firms selling goods in Namibia at prices lower than those fetched on the South African market. If it can be substantiated that this kind of "dumping" occurs regularly, Namibia could use the "orderly marketing" clauses in the SACU Agreement to prevent it. Regulation of trade through a "sole agent" for certain goods would also be permitted under SACU. It is recommended that the government seeks the cooperation of Botswana, Lesotho and/or Swaziland to explore how various regulatory measures may be used within SACU.

Considerable potential exists for other new crops in communal areas which would not directly compete with imports. In drier northern areas these might include promotion of new higher-yielding millet and sorghum varieties where relevant; expansion of cowpeas, groundnuts, and pumpkins and possible introduction of pigeon peas and sunflower. There is also potential for dates in selected areas of the east (Kaokoland and Damaraland) and in the south of Namibia; also in the south for prickly pears. In wetter and/or irrigated areas of Kavango and Caprivi the following crops have domestic and export market potential for the future:

- **Groundnuts**: good for small scale farmers, import substitution and maybe for export.

- **Sunflower**: can be produced by small farmers as well as commercial producers and would contribute to reduced reliance on oil imports from South Africa.

- **Tobacco**: good market and technical potential. Small farmers could be involved as outgrowers to a commercial concern.
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- **Chili**: potential in Caprivi (and under experimentation by the FNDC) for supply to Walvis Bay fish canning factories. Indirectly competing with imports but not with fresh chili retail sales which are in any case modest.

- **Cotton**: some potential for small farmers as outgrowers to commercial concerns but depends on seasonal labour availability.

- **Rice**: the river wetlands of the Caprivi may offer viable sites, although the FNDC's rice project failed.

- **Sugar cane**: some potential for small farmers and even for local processing (as for example in Indonesia). Conventionally grown on a large scale by agro-industrial concerns, but outgrower schemes around a central mill are technically and economically feasible. Lonrho is investigating the establishment of commercial sugar cane growing in Caprivi. This raises issues of total availability of irrigation water and how it should best be allocated amongst various users in the longer term. It also raises questions of whether land for irrigation should be allocated to small farmers for resettlement (or expansion) rather than large companies. A conscious policy decision needs to be made as to whether land for irrigation should be allocated to commercial companies or small farmers.

The Agronomic Board, in conjunction with the Ministry of Agriculture, can and should play a major role in promoting private marketing and trading of existing crops and new crops through extending its price support strategy to cover crops relevant to import substitution and export potential. To alleviate unemployment and for social reasons it is considered preferable to give main emphasis to promoting smallholder production and local level transport and trading. The Agronomic Board's role would therefore be to research into storage and processing technologies, monitor international and domestic trading activities, offer price support where considered relevant and create new bulk storage facilities for certain crops. Larger companies or parastatal corporations could still play a role in running depots or larger collection, distribution and processing centres.
3.5 Trading, Transport and Subsidies

Production and marketing constraints and related constraints on local trading and transport need to be overcome concurrently. In order to raise confidence and stimulate production of relevant crops to levels where economies of scale can be realised for farm gate purchases, transport, storage and selling to consumers on a competitive basis, it is likely that government price support schemes, or some form of subsidy will be required at least in the short term. It may be stressed that, until FNDC purchased millet last year at favourable prices, small farmers in communal areas had not benefitted from any of the subsidies or base price support schemes which have been available to commercial producers.

In the short to medium term crop purchasing schemes with guaranteed floor prices need to be implemented by a centralised authority, whether directly by government or indirectly through appropriate parastatals such as the Agronomic Board or even private businesses. However, it is important to encourage locally based small scale traders and transporters as far as possible. Not only are small transport companies likely to be most appropriate for farm gate or local centre collection from many small producers but in the longer term this approach would also enhance local employment and small business prospects.

In addition to the somewhat limited long-distance state passenger transport services, private operators have expanded considerably in recent years down to ad hoc hiring arrangements deep in the rural farming areas. Stimulation of such services at the local level would further assist farmers with only small quantities of produce to take it themselves directly to the relevant central depots or markets, as happens in many other African countries.

Mainly for reasons of employment generation, it is preferable generally to avoid creating or stimulating large scale monopoly (or more correctly "monopsony") purchasing or transporting organisations at local levels in the communal areas. A partial solution would be to have a small number of central, larger scale depots in selected towns where selected crops could be purchased from small traders/transporters. These could be run by larger scale commercial companies with strict monitoring by the Agronomic Board.

Improvements in rural feeder roads in communal areas, which already carry a much higher volume of traffic than rural roads in the commercial areas, would enable both public and private vehicles regularly to visit remoter parts. Hitherto the secondary roads were maintained largely by SADF graders for military purposes, while country tracks have not been maintained at all.

It is likely that if production for surplus was successfully stimulated, demand for inputs would itself stimulate traders to stock and supply a relevant range of agricultural inputs which are currently unavailable locally (see Section 4.2).
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The best policies and mechanisms by which small farmers may be brought increasingly into production for the market with associated stimulation of local business and employment are difficult to define in the absence of a specific analysis of marketing and trading constraints and potentials. Therefore a marketing and trading study, which could be undertaken by a consultant assisted by NEPRU, is proposed[3].

3. Appendix C in the original, but omitted here.
4. Agricultural Extension, Research and Training

4.1 Existing Extension, Research and Training Services

4.1.1 Background

Ironically, it is the very lack of institutional history in the area of agricultural services that provides the most grounds for optimism for development in the communal areas. Recognising some of the considerable failings of approaches to agricultural extension, research, and training services adopted in other countries, Namibia will to a large extent be able to avoid the extremely painful and laborious process of transforming institutions and accommodating new perceptions of needs and solutions, that is being experienced in many countries. To a great extent, Namibia will be able to establish from scratch a framework for the provision of extension, research and training services without the encumbrances of the past.

A priority will be for the Ministry of Agriculture to set up a suitable planning and management structure to oversee the development of these new services.

4.1.2 Agricultural Extension

The second tier Administrations in Ovamboland and Kavango Regions both have a small nucleus of staff with Agricultural Diplomas obtained in Namibia, and some other qualifications from South Africa, whose nominal task is agricultural extension. In practice they have not attempted to provide an agricultural extension service as it is commonly understood, that is a service which, working with the farming community and agricultural researchers, attempts to promote the wide scale adoption of technological and sociological innovations by farmers in order to increase production, incomes and general welfare. The 1989/90 budget of the Department of Agriculture and Forestry within the Administration for Ovambos was R4.47 million, which was 1.9% of the Administration's total budget. This was reportedly only sufficient to cover basic running costs and the salaries of 270 employees, including 230 labourers and drivers, as well as casual workers.

In previous years activities have included:

- The drilling and maintenance of boreholes in order to extend the grazing area;

- The planning of farm units and the erection of subsidised fencing for private ranching, in particular a scheme which has settled 102 farmers, each on 1,200 ha fenced blocks, in the Mangetti area, which has subsequently proved unviable;

- Mechanised millet production on land at Mangetti, Lecuto, Ogongo, Mahanene and Ruacana;
Extension, Research & Training

- Running Ogongo Agricultural College and Mahanene Research Station;
- The management of the eucalyptus plantations at Onankali, Onangwena and Leeuwpkop.

In Kavango likewise activity has come to a virtual halt due to budget cuts. Previous activities include:

- Borehole installation and maintenance, normally absorbing more than 50% of annual budget and staff time;
- Running Mashari Agricultural College, now closed;
- Establishment of a Eucalyptus plantation;
- Setting up local farmers on 4,200 ha. ranches (three so far);
- Managing an irrigated vegetable scheme for settler farmers at Nkurenkuru;
- A game breeding scheme;
- In cooperation with other Administration Directorates the establishment of community centres, each provided with a school, a medical post, adult education classes, a T.V. etc.

4.1.3 Agricultural Research

Mahanene Research Station, which the Administration for Ovambos contracted out to a South African company, Loxton Venn, carried out research largely involving high technology irrigated agriculture which has proved of little relevance to the region. It was closed in 1986 and is presently maintained by caretakers.

The Rössing Foundation's Agricultural Training Centre at Okashana was started in 1986, and has carried out on-station trials of millet varieties provided by ICRISAT in Zimbabwe, and to a lesser degree trials of sorghum, cowpeas, pigeon peas and sunflower varieties. These trials are of a limited nature, particularly as regards variations of environmental factors. Nevertheless a variety of millet which is well adapted to dry local conditions has been identified and distributed in Ovamboland, and the principle that different varieties can increase yields in now widely accepted in the region.

The FNDC carries out some research into high technology irrigated crop production, particularly of maize, at Musese in Kavango. Attempts have also been made at establishing commercial production of wheat, potatoes, sweet potatoes, cotton, and cassava, on the corporation's farms in Kavango, apparently without success. As was the case at Mahanene this research is of little immediate relevance to local farmers.
4.1.4 Agricultural Training

Ongongo Agricultural College, Ovamboland and Mashari Agricultural College, Kavango: both the above institutions were established in the early 1970s for the agricultural training of residential students, and have good physical infrastructure and land resources. Ongongo can accommodate 96 students, and Mashari 40. Both institutions have been shockingly under-utilised throughout their existence, each producing only a trickle of graduates from a three-year diploma course. Much of the course contents was theoretical and not practical, and were irrelevant to the needs of the area. Graduates took up posts in the local Administrations, and also as teachers. Only this single course, with its inappropriate curriculum, was offered year after year. No attempt appears to have been made to use these facilities to provide training courses at different levels, in different specialised subjects, and for different durations. Both colleges were closed in the last couple of years, and stock and equipment have been partially sold, for reasons that are not entirely clear. What remains is being maintained by caretakers.

The Rössing Foundation's Training Centre at Okashana: since 1986 the centre has run five-day residential courses in general agriculture for up to ten students at a time. Some 450 people, approximately 50% women and 50% men, have undertaken courses, having been nominated through local churches. A R1.5 million building programme is nearing completion, which will enable the Centre to accommodate 40 persons on a residential basis, and up to 200 on a daily basis. So far course contents have centred on basic agriculture, but have been flexible to take account of course participants' level of prior knowledge and their particular interests and concerns.

Rural Development Centre, Ongwediva, Ovamboland: construction and operation of this Centre by Loxton Venn was started in 1983, with a five year contract from the Administration for Ovambos. It is not clear why this expensive project was initiated while at the same time operations at Ongongo and Mahanene, the latter apparently established by the same company, were closed down, rather than adapt Ongongo to provide for the range of technical training now available at the new Rural Development Centre.

The Centre can accommodate 24 residential students, and has facilities for training in a variety of subjects, including: food preparation and sewing, irrigated vegetable production, tree seedlings, fish, and poultry production, and workshop skills including motor mechanics, welding, water hand pump and water tank construction, and low cost housing construction. Course contents are still being developed, as are various services being offered from the Centre, such as shallow tube-well installation, and the sale of produce including fish fingerlings, seedlings, vegetables and poultry products. Three sub-centres are planned at Onandjokwe (already under construction), Oshikuku, and Onanulagu. Links with the local
community are poor, and attempts now being made in that direction appear to be rather ill planned afterthoughts.

Mission and Church Farms: Various farms exist in Ovamboland and Kavango where local people can gain experience of agricultural innovations. However for the most part there have been few attempts at training or extension associated with the missions, and they remain, as it were, islands of order each with its own Garden of Eden, having little influence of a self-sustaining nature on the agricultural or horticultural practices around them. Examples such as the dairy farm at Oniipa using exotic stock are unlikely to be appropriate for adaptation. However, a number of individual local pastors have influenced positively the promotion of agricultural innovations.

The FNDC's farm at Musesse undertakes various ad hoc training activities for its employees and families but training is not geared to outreach for improving local agricultural practice. The farm at Musesse is this year carrying out trials of different methods of millet cultivation, which it proposes to demonstrate to local farmers on field days. This is one of the few examples of FNDC activities which goes beyond purely profit-motivated commercial production. Attempts at establishing local production of citrus and vegetables under irrigation adjacent to Musesse farm have failed to a greater or lesser extent, basically because they result from outsiders foisting on local farmers, in classic top-down fashion, high technology systems whose viability has not been established. The new farm manager is fully aware of this and plans to shift emphasis more towards adaptive research relevant to the local communities.

Musesse farm offers milling facilities to local farmers at subsidised prices and also has a small community education centre for its employees and families where a range of subjects from literacy and learning English to sewing and cooking are covered. The centre is financed and controlled independently by FNDC head office in Windhoek as part of its community development programme.

4.2 Input Supplies

4.2.1 Existing Supplies in Ovamboland and Kavango

Tractors have been available for hire in limited numbers from a number of sources, including FNDC and the second tier Administrations, as well as a few private owners. However, most are reportedly in a state of disrepair with possibly fewer than fifty tractors actually working in Ovamboland. Many tractors still cultivate using destructive deep ploughing, as opposed to the recommended disc harrow. Wide-level disc harrows are not available, nor have they been tested in the area. There is great potential demand for tractor hire, with fees during the 1989/90 season reportedly around R50-60 per hour in Ovamboland.
Other farm implements such as animal-drawn planters, and inter-row weeder, are not available. These may be expected to make a major contribution to expanding the area that can be cultivated, which is presently thought to be limited above all by the shortage of labour for weeding but also for cultivation. Hand tools are in short supply and the variety of such basic implements as hoes available through local retail outlets is inadequate in Ovamboland. There is little local blacksmith production or repair of tools.

Certified seed is not available. In Ovamboland and Kavango, different local early and late season millet varieties are used. Staff at Rössing's Training Centre at Okashana have established that adequate provision of treated certified seed could have a significant impact because it could enable dry planting before the rains, whereas traditionally ploughing only takes place after the first significant rains and subsequent weed growth.

Fertiliser is available in some shops in the north, and also from shops supplying the Otavi triangle to the south, but it is costly and barely used. In previous years the Administration for Ovambos sold some compound fertilisers, but apparently without proper research into soil nutrient deficiencies, or cost-benefit to the farmers. Based on the findings at Okashana and taking account of the soil characteristics, it is likely that small applications of Superphosphate will prove cost effective in increasing yields and from next season the Training Centre intends to make supplies available at cost price.

Veterinary supplies are available from the state veterinary service and some mission stations. An annual vaccination campaign is carried out by the service against the major diseases (foot and mouth, lung sickness, anthrax). In Ovamboland this was resumed in 1989, after disruption by the war, when some 150,000 head of cattle were vaccinated out of an estimated total herd of 300-360,000 in the region. At present there are no vets in the Ovambo, Herero, Kaoko, Damara and Nama regions and the state veterinary services' activities are limited mainly to essential vaccination campaigns. In Kavango and Caprivi, the presence of dedicated state vets has stimulated effective veterinary services.

4.2.2 Improving Input Supplies

It is suggested that most agricultural inputs can in the immediate future be supplied at the local level through existing NGOs and through the private sector. The Rössing Training Centre at Okashana is already providing millet seed through church outlets and has plans to introduce fertiliser sales. FNDC intends to provide input supplies through farm service centres on a commercial basis but there is potentially a major role for small enterprises, especially if these are also related to purchase and marketing of crop outputs in the longer term.

The issue of subsidising inputs should be approached carefully. There may be a case for partially subsidising fertilisers or perhaps tractor hire
services as a means of inducing a rapid uptake of these technologies, for example in support of a policy aimed at fostering alternatives to townward migration. However, subsidies once introduced are difficult to withdraw unless the item being subsidised proves to be economically viable.

For instance, mechanised cultivation could make a significant impact on yields and profitability if for example it could facilitate seed sowing at the start of the rains (ie if soils were cultivated before the rains). However, for this to be worthwhile it would probably require in turn the introduction of row planting and improved weeding technology, to compensate for the loss of the effect of late cultivation on weeds, and the planting of windbreaks to prevent seedlings being buried in blown sand at the start of the rainy season. These and many other factors will have a bearing on the eventual economic viability for small farmers of tractor cultivation as compared to animal driven cultivation. Rather than using subsidies, tractor hire services might be promoted by providing credit to hire tractors at commercial rates.

Nevertheless, the widespread substitution of mechanised for animal draught power in small-scale farming has to be approached with great caution. On the one hand, the already severe pressure on pasturage may leave many farmers, especially in homesteads where men are absent, without enough oxen of their own to plough sufficient land, especially when the animals are weak from lack of grazing. But reliance on tractor hire, as well as other inputs bought with cash, will accelerate social differentiation and the concentration of holdings. Alternative approaches based on the sharing of scarce means of production, including cooperative ploughing arrangements and community access to distant grazing, merit serious consideration and would build on existing patterns of local cooperation.

4.3 Organisation of Extension, Research and Training

To facilitate existing plans to restructure the Ministry of Agriculture, Fisheries, Water and Rural Development, it is suggested that as a first step specific planning and management units could be established at the Ministry in Windhoek, which might be kept partially autonomous of the administrative structures of the Ministry. Each would undertake a consultative process relating to their respective areas of responsibility aimed at creating various agricultural services relevant to the communal areas. Two such units would be required to cover the crops sector: one for extension and research and another for training. Other units could be established to cover livestock, marketing and production, etc, as thought necessary.

These units would develop close and on-going contacts with identified local expertise and interested parties, most particularly with farmers and livestock owners themselves. They would also benefit from the comparative study of institutional and methodological aspects of equivalent services in other Southern and East African countries, notably Zambia, Botswana, Zimbabwe, Tanzania, and Kenya.
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The units may require external donor assistance (manpower and possibly finance for equipment and/or special studies and surveys). They would undertake the following tasks:

- Review the existing situation in Namibia and become familiar with relevant sources of international assistance;

- Evaluate the capabilities of existing structures, systems and manpower availability to create and implement the newly conceived services, and the assistance they may require;

- Propose an institutional framework and strategic approach for developing the services in question over a specified period of years, as well as detailing staffing, materials and equipment requirements, and budgetary needs.

Proposals made would be constantly under review and future adaptations should be expected as a result of lessons learned during implementation. Where foreign expertise is used, Namibian counterparts should be assigned for training as appropriate.

Extension and research should be considered together in the same planning and management unit, so as to foster from the start the close links between the two that are so necessary if research is to be of practical use to farmers. Training may be dealt with separately though it is closely linked with extension in that extension agents, farmers, and the community at large must be trained, as well as with research in that much useful on-station research work may be carried on at the existing agricultural colleges. Specific training would be required for research workers.

There will clearly be great demand for those Namibians with qualifications and experience useful to the Ministry of Agriculture to work in the government sector, and for NGOs and international and bilateral agencies in aid projects, as well as in the private sector. The Ministry has already obtained a list of over 100 returnee graduates and diplomats with relevant qualifications. In order to build confidence in the new service amongst farming communities, it is important that senior as well field posts be taken as rapidly as possible by officials having local knowledge and language skills.

A suitable code of practice should be established to ensure that external and non-governmental agencies employ skilled Namibians only with the specific agreement of the government and under conditions that allow fair competition with the government service. Otherwise there is a real danger of "poaching" by other agencies although supposedly working to the same ends as government.

Addressing the role of women in arable agriculture, as in Namibian society generally, is vital if development efforts are to achieve long-term success. This aspect has been addressed only peripherally in the current paper, but its multi-facetted significance is fully appreciated and
extended treatment on another occasion is strongly recommended. It is today widely recognised that the failure of much rural development effort is not unrelated to the fact that it is directed primarily by male officials to male local representatives and household heads, largely excluding from direct participation the women who actually organise and perform much of the agricultural and service work in the rural community.

In the northern mixed farming zone, and especially Ovamboland, a number of sensitive issues arise. One is the impact of labour migration on the household social structure: in many homesteads women are de facto farm managers, but lack property rights, authority over key parts of the production process such as ploughing, and adequate labour at times of peak demand, such as weeding and harvesting. Another is the contradictory implications of customary inheritance law. The matrilineal descent which still predominates leaves certain groups, such as widows, vulnerable to the sudden loss of personal property and even livelihood. But the patrilineal system which is progressively taking over can be expected to accelerate the concentration of property, including land rights, rendering the higher concentration of women amongst the poorer farming households more exposed to economic marginalisation.

The gender issue extends across many aspects of policy and practice and its general character is explicitly recognised in the constitution. In the field of extension, for example, it implies not only that particular efforts should be made to recruit and train female staff, but also that women in farming communities should be served as farmers, artisans, food processors and traders in addition to the traditional approaches of home economics and hygiene.

4.4 Development of Extension, Research and Training Services

4.4.1 International Context

As Namibia has limited relevant experience on which to build in developing extension, research and training services, the temptation will be to adopt, to a greater or lesser extent, models from other countries. International expertise and advice may also have considerable influence over the nature of institutions and services that result.

Crop production in most of Namibia takes place in a "resource poor" context as defined by the 1987 Bruntland Commission. It is mainly subject to unreliable rainfall and poor soils. This type of agriculture can be characterised as complex in its farming systems, diverse in its environments, and risk prone. Conventional agricultural research has contributed less to this type of agriculture than it has to industrial agriculture (large units, highly capitalised, high inputs and often subsidised), or to "green revolution" agriculture whose success is dependent on irrigation or good and reliable rainfall.
This is because, in contrast to industrial and green revolution agriculture, the physical, social and economic conditions of "resource poor" agriculture differ greatly from those of research stations. Traditional on-station research tends to produce recommendations for farmers in the form of simple and high input packages which do not suit small-scale, complex and diverse farming systems, nor their risk prone environments. Rather each season demands its own adapted programme from the farmer, depending on the unpredictable weather, the household's resources, and access to inputs. Over the years therefore, resource poor agriculture, which supports some 300 million people in sub-Saharan Africa, has been slow or unable to adopt many of the recommendations flowing through extension services from agricultural research.

In the 1950s and 1960s, non-adopter of technological innovations was put down to farmer ignorance and extension education was prescribed. In the 1970s and 1980s it was attributed more to farm level constraints and the prescription was to try and make conditions on farms like those on research stations. It is now increasingly being accepted that the problem is not with the farmer or the farm but the technology itself, and that the faults of the technology are due to the processes that generated it.

4.4.2 "Farmer First" Approaches

The traditional "transfer of technology" approach, whereby priorities are determined by scientists, who generate technology on research stations to be passed via the extension service down to the farmer, is increasingly being recognised to have failed. To complement the "transfer of technology" system, an alternative approach is gaining acceptance whereby the process of technology generation starts with the knowledge, problems, and analysis of farmers. The main focus of research in this approach is the farm, and the main researcher is the farmer, assisted by the extension service.

To some extent on-station and laboratory research will always be needed, but its role, especially in the context of Namibia, should be strictly limited. It is therefore strongly recommended that Namibia should promote a pluralist approach to agricultural research. The extension and research system so adopted would promote research in a range of contexts. These include:

- Scientists' on-station trials
- Scientists' on-farm trials
- Farmers' on-farm trials
- Farmers' participatory trials
- Farmers' informal trials.
Extension, Research & Training

In the first three of these, trials are dominated by scientists, but with increasing involvement of farmers as experimenters, and extension workers as facilitators. In farmers' on-farm trials the technology to be tested and the trial design are decided by scientists, but with farmers making the management decisions. In contrast the last two involve an agenda determined by farmers rather than scientists, with the scientists and extension workers serving only as advisors. This has been labelled the "farmer first" approach.

Farming systems research, which has made a huge contribution to the understanding of researchers, has historically tended to service the top-down "transfer of technology" approach, although it can be adapted to assist with "farmer first" methods. The newer approach sees farming systems research being carried out by extension workers with farmers, rather than by researchers alone, and being used to generate ideas for the farmers themselves, as well as for researchers who have access to the process.

The main emphasis in the Ministry of Agriculture should be on the extension service, where extension agents should work as field researchers with farmers, and act as organisers, catalysts and communicators to encourage the farmers' own informal research. In this respect farmers' groups and associations have a role to play.

Training is crucial for preparing research and extension workers, and for teaching the methodologies and attitudes required for them to learn from and with farmers. Conventional professional agricultural extension, research, training, associated values, and conventional bureaucracy, have generally favoured the transfer of technology approach. They stress the importance of scientists and they are hierarchical and centralised. Moreover, when they combine in such institutions as agricultural colleges, and international and national research centres, they have a strong tendency to resist change. However, change is required and Namibia is in a good position to adopt new approaches from the outset. This would require sustained affirmative action on the part of the proposed Planning and Management Units to keep at bay conventional tendencies of agricultural professionalism and bureaucracy.

Appropriate management and organisation is the key to successful research and extension programmes. Three main issues may be identified:

- **Decentralisation** of planning, decision making and control of resources is needed if local actions are to fit different conditions. This may be possible through the proposed new regional authorities.

- **Information and communications**: field staff should be encouraged to search for and find, on behalf of and together with farmers, such things as genetic material (seed or stock), as well as potentially useful principles, practices and technologies, and make suitable requests upwards through Ministerial information channels. Of vital importance therefore is that the Ministry's information management
system is not geared only towards the centre but that it includes a retrieval system able to pass useful information out to the field to serve the farmer.

- Incentives are needed to encourage staff to work with and for farmers and efforts must be made to recognise and reward field agents accordingly. Such work is just as important as that of the scientist working in the high profile and high status research station.

While there will be a need for some on-station research into the rainfed sector, it is recommended that this should be undertaken at training institutions, such as Ogongo and Mashari Agricultural Colleges, rather than at exclusive research centres such as Mahanene.

4.5 Sustainable Livestock Rearing Systems

There is clearly an early need to expand or create services to support livestock production in communal grazing areas. These should include, in the short term, the promotion of veterinary programmes and animal husbandry extension services, borehole rehabilitation, installation, and management, range management, and marketing. However, there is an inherent danger that the promotion of these services on their own will lead to the rapid build up of stock numbers, with all the perilous consequences of overstocking and environmental degradation this entails.

Current livestock and range management practices in Ovamboland, as carried on under the traditional transhumance systems offer little opportunity to control numbers of cattle and their grazing densities. A build up of stock should not be encouraged until ecologically sustainable and economically viable systems of livestock rearing have been found. There is a need to develop on the one hand suitable land-use plans which should take account of water resources and resettlement with dryland cropping, and on the other, systems and structures for managing communal grazing resources.

These are medium to long term objectives. However, the severity of the existing pressure on pastoral resources lends urgency to making an early start. The serious danger also arises that equitable and ecologically sustainable solutions may be pre-empted by delay in setting policy guidelines and a framework of control which excludes incompatible developments. For example, one possible scenario following from a laissez-faire approach to the large unoccupied areas of seasonal grazing would be the rapid de facto privatisation of communal land by investors able to finance fencing and boreholes, resulting in a patchwork of commercial ranches.

The gain from such an expansion of commercial stock-farming would be increased output of beef cattle and a number of more or less self-financed profit-making enterprises. But there could also be serious negative impact on small farmers and employment. The loss of seasonal grazing would reduce
the viability of mixed farming in the settled areas and accelerate out-
migration. Commercial ranching also creates few jobs and in the higher 
rainfall zone of the northeast would pre-empt alternative uses of the land 
for smallholder mixed farming which would absorb far greater numbers, 
generate higher output, and contribute to national food self-sufficiency. 
The establishment of ranches on communal land was encouraged by the second 
tier administrations and indications are that the process is accelerating. 
An early statement of basic policy together with any necessary supporting 
measures on land use will be advisable in order to keep open options for 
considered and comprehensive long-term rural development planning.
5. Water and Land Use

5.1 Water and Irrigation

Water is in general a scarce resource in Namibia and even in riverside areas such as in Kavango and Caprivi its use needs to be carefully monitored and controlled. The Department of Water Affairs within the Ministry of Agriculture is responsible for bulk water provision and for monitoring water use on a nation-wide basis.

In Ovamboland water is available for urban areas and for livestock along the main road from the open canal and from the pipeline, both running south-east from Ruacana towards Oshivel. The Ovambo floodplain is the most heavily populated area of Namibia with about 45% of total population in 1981, but total water supply is limited. In the densely settled rural parts, most water is extracted from hand-dug open wells with winch and bucket. The open well depth is typically 5-25 metres. In some places shallow boreholes exist with hand (lever) pumps. These simple technologies impose a natural constraint on over-use of water and it is generally not used for irrigation.

In many arid and semi-arid areas of Africa, water limitations can pose the main constraint on livestock numbers and hence on over-grazing such that with improved access to water livestock numbers rapidly increase and then shortage of grazing becomes the new limiting factor. It is noticeable that over-grazing is especially severe in the vicinity of the pipeline, where watering points are available, and in the vicinity of traditional wells.

The mid-eastern area of Ovamboland is thinly populated with little cultivation and grazing potential is apparently abundant because there is no perched (shallow) water table and hence few permanent wells for livestock to use. The water depth in this area is in excess of 100 metres and therefore only accessible with boreholes. For example, travelling north from the main road towards the "Kauluma" resettlement project area, a customary cattle watering area is encountered after about 20km where there are approximately 22 open wells in use with a water table of approx 20 metres. But only 20km further north at the location for the project the water table is in excess of 100 metres. As may be expected, bushes and other natural vegetation are much more abundant due to relative lack of livestock grazing. It is not clear to what extent, if at all, this deeper water table in the limestone areas is recharged (replenished) through subterranean aquifer flows. Certainly it is essential to assemble accurate data to ascertain the true nature of water resources in these areas which in terms of available space might otherwise offer the best potential for resettlement.

UNDP (1989) estimate that the maximum potential area for irrigation in Ovamboland is around 7,000ha and only in specific locations but even this estimate may be optimistic for the longer term.

At the same time ways of using water more economically in the urban areas should be investigated, for example there is potential to use a new method
to purify and recirculate and hence reuse waste water by using root zone plants (Pauly 1989).

In Kavango and Caprivi there is already limited extraction of river water for irrigation for commercial purposes, mainly controlled by the FNDC, but only a tiny proportion of small-scale private farmers have without assistance attempted dry season flood irrigation of vegetables at riverside locations.

Before any such future schemes may be implemented it would be worth evaluating the opportunities to replace electrical or diesel pumps with solar pumps. According to the Rössing Training Centre (Okashana), solar pumps have the capability to lift water from a depth of 80 metres and cost only R5,000 with virtually no running costs and little maintenance. By comparison, diesel pumps costs around R8,000 initially and incur high running costs.

In the rainy season the Okavango river has substantial flow which, however, falls off sharply in the winter season when conditions are most suitable for growing vegetables. Inevitably there will be commercial interests in further exploitation of irrigated agriculture and production potential in eastern Kavango and in Caprivi is good. The UNDP report (1989) estimates that the maximum potential for irrigation in Kavango is 5,000ha and in Caprivi 10,000ha.

However, this raises a major policy issue: given that water for irrigation is a finite resource, should the priority be to promote its use by small farmers, either through government irrigation management or through cooperative ventures, or should larger scale commercial production be allowed to dominate?

Another issue is international: substantial extraction of water from the Okavango river would require an agreement with the governments of Botswana and Angola.

5.2 Land Use and Resettlement

Water, whether from rain, surface flows or wells, is the prime determinant of existing land use. Given its relative scarcity it therefore follows that water availability will constrain the future potential for different forms of land use and hence resettlement potential, although water is not the only consideration, soils and soil fertility being another. The UNDP report (1989) suggests that in terms of soils and rainfall, approximately 50,000ha may be available in Ovamboland alone for resettlement purposes, but this is without reference to groundwater availability.

The southern and eastern areas of Ovamboland have traditionally been primarily used for livestock grazing mainly because of the lack of a year-round supply of groundwater accessible to shallow wells. FNDC's Mangetti West ranch (104,000 hectares) is situated in the extreme south-east corner
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of Ovamboland and water for both livestock and people is pumped from a
depth of approximately 150 metres. In the central parts of eastern Ovambo
rainfall may be generally adequate for millet growing in the future but
these areas have hitherto been little used because of the extreme depth
of groundwater. Potentially this area offers opportunities for
resettlement and the establishment of mixed dryland farming and livestock
grazing.

It is in this area that the Kauluma project has been allocated some 16,000
ha for a resettlement project at which it is planned in theory to settle
a total of 2,000 people. However, the availability and quality of the deep
ground-water has yet to be clarified and in any case project proposals
to use water for irrigation are not appropriate. A large rainfed millet
farm situated about 20km south of the Kauluma resettlement project
demonstrates that millet will grow and, in that location at least, that
groundwater is suitable for human consumption.

Similar circumstances prevail in southern Kavango and rainfall declines
and groundwater depth increases from north to south. It is partly for this
reason that there have been attempts by the Directorate of Agriculture
and Forestry, Rundu, to establish for Kavango entrepreneurs a small number
of commercial ranches of about 4,200 hectares each immediately north of
FNDC's huge Mangetti East Ranch (260,000 hectares). This was with a view
to extending the veterinary cordon northwards from FNDC's farms. However,
due to the high capital costs of initial setting up and because only a
small number of people would benefit, it is not likely that government
would wish to use its own resources to promote this scheme any further.
For example, FNDC's Mangetti West ranch is efficiently run and is divided
into 16 "farms" (self contained breeding and rearing units) on average
6,500 hectares each. But in total there are only 50 employees including
management, or one employee per 2,000 hectares.

It is partly for these reasons that this report concludes that in the
short and medium term government resources should concentrate on the
promotion of crop production, albeit in a mixed crops and livestock
scenario. The short term emphasis for government involvement in livestock
in the northern communal areas should therefore be limited to improving
grazing regimes and promotion of extension and veterinary services with
the long term objectives of maintaining suitably flexible livestock
numbers and the elimination of disease, rather than the promotion of
commercial ranching.

In terms of land use in Ovamboland and Kavango the priority for the short
and medium term should be to define the southern boundaries beyond which
mixed farming (dryland cropping and associated local mobile livestock
grazing) would not be feasible. This should be given priority over pushing
commercial ranching northwards in view not only of the high capital costs
of establishing commercially viable ranches, which in the past have in
any case been heavily subsidised through very favourable interest rates
on loans, but also in view of uncertainty over the long-term potential
for meat production for export.
Water & Land Use

In suitable land-use areas, where it is known that rainfall is too unreliable for sustained dryland cropping, an interesting test case would be to permit the establishment of new ranches but with access only to loans at commercial rates, without government assistance. With regard to resettlement there is clearly only limited potential through purely livestock enterprises in Ovamboland and Kavango.

It is recommended that as an instrument of policy aimed at promoting rational development of land and water resources, a land use planning exercise, based partly on technical considerations and partly on considerations of development strategy, should be carried out. Decisions need to be taken about the preferred systems of agriculture to be promoted by government in the communal areas, and indeed in certain contentious areas in the commercial zone, such as the Otavi triangle. In Ovamboland and Kavango, for example, should basically traditional agropastoral systems be promoted and crop-based mixed farming with communal grazing be developed in unexploited areas, or should extensive ranching be promoted further to the north than is presently the case? Should irrigation potential be developed for commercial interests or small farmers? Should the Otavi triangle area be developed as a resettlement area for small-scale mixed farmers, for extensive ranching, or for large-scale crop production?

Assessment of these options may be based on various criteria. In terms of national level profitability small farmer options will tend to lose out; but considering such criteria as employment creation, income distribution and social welfare, development favouring small farmers is the more attractive. Decisions taken will have far-reaching consequences as regards the nature of the development process in store for rural people.

Land use plans should indicate future recommended uses of lands, distinguishing between major systems of land use with potential, including:
- small scale rainfed cropping
- communal grazing
- large scale mechanised rainfed cropping
- commercial ranching
- small farmer irrigation schemes
- commercial irrigation schemes involving local capital
- commercial irrigation schemes involving foreign capital

Recommendations resulting from this exercise will have political implications, and their implementation will depend on binding legislation and effective local level community support. Such mechanisms as controlling access to credit may also be used by the government to promote its land use preferences.

In connection with land use policy, legislation will be required to implement necessary reforms of existing land tenure law in communal areas. Urgency is lent to the issue in Ovamboland where population pressure is leading to the breakdown of traditional land tenure arrangements. One
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consequence of this is the ongoing uncontrolled fenced enclosure of arable and grazing lands by private interests. This threatens to undermine all efforts towards rural development in Ovamboland, as the mass of farmers will become increasingly excluded from access to sufficient land, particularly for grazing.
6. Related Issues

6.1 Community Development and Co-operation

No significant community development programmes of a self-sustaining nature have yet emerged in the northern communal areas. The most important community focused programmes have been implemented by or through the various member groups of the Council of Churches of Namibia (CCN). These have demonstrated the most sympathetic understanding of the needs of the people and a number of highly beneficial programmes have been operational for years, in particular related to health, education and social development. It was also these groups who were responsible for receiving the many returnees at the cessation of hostilities.

While all these activities must be given due credit, many schemes are reliant on expatriate manpower and external funding and nearly all, whether CCN or other, consist of centrally located facilities. It is therefore not clear to what extent communities, especially those in remote areas, are being stimulated towards self-reliance and the self-sustainment of their own desired development programmes, as distinct from continuing to be externally dependent. "Bottom up" community development implies a skilful and diplomatic approach to target group "mobilisation" through various means, including the identification of the community's own priorities, involvement of community members in both planning and implementation and, not least, training in skills relevant to group management and associated technical skills as required. Outside assistance is required to help communities acquire self-confidence in their own abilities and to realise their objectives.

Of particular relevance to this report is community mobilisation, self-help co-operation and self-management to promote agricultural production and related rural development. In the short to medium term, potential may exist for rural communities to cooperate in gaining better access to input supplies, traction power for cultivation, marketing of crop outputs and, where relevant, cooperative management of locally centralised irrigation. Co-operation does not necessarily have to imply fully fledged co-operatives as such. For example, in the case of improving input supplies it could in theory simply mean a mutual agreement and preparedness amongst a number of farmers to buy selected commodities at the same moment in time in order to attract a local trader to take in or deliver bulk stocks.

A similar approach could be applied to selling crops. The main ingredients in this case are establishment of a mutually acceptable farmer coordination body, either a management committee or "leadership" group, and co-operation amongst the members of the community such that the confidence of the supplier or buyer is gained. Co-operation amongst farming communities can also improve access to credit. It is often NGOs who have the best expertise in group mobilisation for self-help community development.

Issues of group mobilisation may be illustrated with the case of the "Salem" irrigation scheme near Rundu already referred to in this report. In this scheme 34 farmers, each with one hectare, are supplied with water
delivered by central electrical irrigation pumps from the river to farms and fields through underground pipes and upright sprinklers. It was originally intended that the scheme should be run on a co-operative basis and a trust account was opened at the local bank to pool farmer resources for payment of electricity bills, maintenance and joint funding for bulk purchase of input supplies which are not available in Rundu. The expatriate scheme manager is by training an engineer and the assistant manager (resident on location) is a Namibian extension officer allocated by the Kavango Directorate of Agriculture and Forestry.

The farmers have autonomy to choose the crops that they grow and the majority of the area is under maize which is sold fresh or "green" at a good price. Farmers tend to buy in millet in the dry season for their food requirements. Incentives to grow vegetables are restricted because the local market in Rundu is quickly over-supplied and there are no other market openings. As yet there is no management control by the farmers and so the extension officer, who comes from outside the local community, has the difficult and unpleasant task of trying to extract money from the individual farmers to finance the running costs of the scheme and to purchase inputs. Inputs, including common manure, are ordered in bulk through the Directorate and come from Windhoek or further afield. The scheme does not appear to have any advisory staff experienced in issues of group mobilisation, community development or co-operative management. The extension officer would prefer to devote more time to agricultural extension and farmer training but under present circumstances has to spend much of his time on administrative matters.

Another potential candidate for co-operative management would be fish farming, especially in Caprivi and Kavango and to some extent in Ovamboland as well. Certainly the technical potential exists but issues of community co-operation and management would have to be addressed first. The issue of community management of an open resource is posed very sharply in Kavango by the imminent risk of collapse of the river fish stock. Certain species (eg tilapia spp) are in danger of being virtually wiped out within a few years, depriving the river community of a major protein source. Two explanations have been advanced for the crisis: excessive fishing pressure, including the use of over-efficient gear; and disturbance of vital spawning grounds by erosion of the river margins. Whatever the immediate cause, the driving force is the rapid increase in the river population, including significant influxes of immigrants and refugees, in conditions of isolation and neglect of peasant farming needs. Stock recovery and sustainable exploitation will depend on a combination of practical measures, reinforced through legislation proposed by the Ministry of Wildlife, Nature Conservation and Tourism, and community acceptance of the overall strategy. The FNDC's proposed solution, a large state-funded hatchery upstream, can be no more than a stopgap defence in the absence of community responsibility.
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6.2 Credit

Low interest credit has hitherto been only available to commercial farmers, while the "mini-loans" scheme implemented by the FNDC is directed at urban commerce, not agriculture. Experiences in other African countries have demonstrated that short-term or seasonal credit can significantly benefit small farmers, especially when combined with activities of extension services and farmer training schemes. The potential benefits of seasonal credit for small farmers requires further investigation but it may be anticipated that financial assistance towards the purchase of suitable inputs and, where relevant, to help with tractor hire and contracting in labour at peak periods, could enable significant increases in production. In the northern mixed farming zone, seasonal credit for agriculture should be directed mainly to women as the principal farm managers and workers. Such credit would be repaid shortly after harvest. It is important, however, that credit should be made available in conjunction with appropriate technical advice to ensure that it is used productively, hence facilitating repayment.

6.3 Employment and Self-Employment

Stimulation of agricultural production offers opportunities to promote local employment and self-employment in both rural areas and nearby urban centres. If the technical opportunities for production of surplus of crops for sale can be realised through improved services to farmers and the enhancement of marketing, then the demand for agricultural labour will increase and may attract a number of absentee or unemployed men back to the land. At the same time, employment in local trading of both inputs and crop outputs, and associated transport and processing, would also increase.

Government policy for the communal areas should as far as possible be directed at promoting small-scale trade and commerce rather than large commercial ventures in order to involve as many people as possible and alleviate the increasing problems of urban unemployment and poverty. To facilitate trading and marketing, the improvement of rural feeder roads to enhance all year round movement of light vehicles should be given high priority, together with the creation of public transport services along the more important routes.

Local light industries could be promoted through establishing small business loan schemes, possibly the provision of specific infrastructure and equipment on loan or credit, and technical training centres and other pilot projects involving specific training in both technical and business management skills relevant to servicing the demands of the majority of the population. For example, farmers complain of a shortage of agricultural hand tools and lack of access to facilities for the repair of ploughing equipment. Another example is manufacture and repair of hand pumps for shallow boreholes. The Rural Development Centre at Ongwediva
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has demonstrated that with suitable training in welding skills such pumps can be produced at less than half the cost of imported models.

The demand for housing and the production and use of suitable materials for construction purposes, partly to reduce the felling of trees, is another aspect which merits priority attention. In much of the south and west of the Ovambo floodplain, wood is largely substituted by millet stalks for building walls and stockades. Corrugated iron has also proliferated in rural as well as urban and roadside areas: when used for walls as opposed to roofing, its lifespan may be rather short. Sun-dried bricks are widely used; and brick-making from clay deposits in the region could provide an alternative indigenous material.

A prerequisite to government or other agency involvement in promoting local trade and industry will be a comprehensive assessment of demand and technical potential for a wide range of products. Associated with this is the requirement for farming systems research and a better understanding of the problems and needs of the rural population involved with both crop production and livestock.

6.4 Socio-Economic Aspects

Under customary law, the main requirement for land allocation was for a man to be married before a traditional ruler would grant usufruct of any particular land block. The headmen appointed under colonial rule increasingly converted entry payments into cash. Although there is in theory no permanent "ownership" of agricultural land in practice it tends to pass from one member of the extended family group to another, via maternal linkages. Today, there is a growing tendency for payments to headmen to be regarded as final, the plots effectively coming permanently into family ownership.

Where land used to be relatively abundant, previously uncultivated areas could be allocated although this was not always necessary when population growth was modest. In the past newly-wedded couples were thus able to establish new homesteads and cultivate crops with land space remaining between homesteads where livestock could graze for longer periods which meant that livestock were absent from the farmstead for shorter periods than they are today. These days, especially in Ovamboland, population pressure has caused local grazing areas between homesteads to be severely limited and deforestation has over time been so severe that cultivated areas, including fallow land, are more or less contiguous in many areas.

Extended grazing areas away from the homesteads and cultivated areas were, and still are, clan-based such that all clan members know their traditional boundaries. Little information has been collected on these but it is known that each clan has access to particular water-holes or wells, often in central locations where the corner boundaries of several clans' grazing areas meet at a focal point. One such focal point exists about 20km north of the main road from Ondangwa to Oshivele on the route
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to the "Kauluma" settlement project. There are about 22 open wells in active use but it is not known how many per clan. Further north on the same route one clan area has recently been enclosed with modern fencing and although the extent of this is not known, a distance of about 6km was recorded from one gate to another. Customary grazing areas are believed to comprise typically 5-10,000 ha each.

Clearly more information is needed on customary grazing rights and grazing control because any proposed government intervention for improving livestock husbandry and grazing regulation should be in harmony with clan-based organisation. The clan leadership structure is likely to be the best medium for implementing any new schemes proposed.

Transfer or inheritance of livestock and other material wealth, including to some extent transfer of agricultural land, is matrilineal. However, wealth is mainly in the control of men which means, for example, that livestock or other wealth is likely to be inherited by a male from his mother's brother. This also means that ownership of and decisions to sell livestock rest mainly with the menfolk of the wife's (or mother's) family and not with the husband (or father) who in other respects is normally considered head of the household. By the same token a son requesting help or material assistance will by tradition turn first to male members of his mother's family rather than to his own father. Despite the patriarchal nature of the people, the matrilineal linkages pertaining to most material wealth do give women more influence than might be expected in patrilineal societies (see Eirola et al, 1990).

Another important factor giving influence to women is that even before the era of migrant and absentee male labour men were customarily only involved in agriculture for land clearing, fencing and infrastructure maintenance. They otherwise concentrated on livestock, such that production and control of staple food supplies always was, and still is, mainly in the hands of women. This has significant ramifications for farmer training, agricultural extension and research. Customarily mutual help in agricultural work is sought from the mother's extended family and may be repaid with drinks and/or food although often it is offered free so that only external family members would expect "payment".

There has been almost no farming systems research in the communal areas and furthermore very little relevant detailed historical, sociological or economic data exist.

6.5 Circumstances of Bushmen

In addition to the mixed dryland cropping and transhumant pastoral agricultural systems typical of Ovamboland and Kavango, the Bushmen by historic agreement used south-eastern areas of Ovamboland and southern areas of Kavango for hunting and gathering. Despite periodic minor conflicts, the Bushmen's presence was generally tolerated by permission
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of the king of Ondonga. Historically the Bushmen tended to utilise areas least grazed by the Ovambo herdsmen.

One consequence of the expansion of grazing areas (and some associated hunting by the Ovambo) has been the depletion of wildlife relevant to the Bushmen. This was due to the extended presence of cattle, and dogs used for herding assistance, which in recent decades has frightened away much game hunted by the Bushmen. Other reasons include extensive hunting with modern weapons by whites and others, and the enclosure of the Etosha Park, which was another traditional hunting area.

Bushmen have therefore faced steadily worsening conditions for survival by traditional means and many have been subverted and employed for low wages both by whites and other groups. Because of their traditional way of life and because of the conditions under which many are employed, few have benefitted from modern education and in general they have little opportunity to improve their lives in present circumstances. Some 300 unemployed Bushmen, mostly women, currently reside on FNDC's Mangetti West ranch and many others, both employed and unemployed, may be found in scattered locations throughout Kavango and Ovamboland and in nearby commercial ranches to the south. As a largely neglected and subverted minority group they merit special attention.
7. Priorities for Further Studies

7.1 Public Expenditure and Administrative Restructuring for Rural Development

A review of public expenditure and administrative restructuring with special reference to rural development in the communal areas is considered a priority. A study by NEPRU, with the assistance of an external consultant, is proposed[^4].

7.2 Sample Socio-Economic/Demographic Survey - Communal Areas

There has been no substantial socio-economic or demographic data collection in the communal areas. The Academy's National Institute for Social and Economic Research (NISER) have conducted limited single visit surveys in Ovamboland, directed mainly at questions of land tenure. The FNDC has also conducted a limited number of surveys but these have been project-specific. Therefore a systematic sample survey should be designed and implemented as soon as resources can be made available, preferably for each communal area of the country. It would not be appropriate to attempt a large scale survey for reasons of time, cost and manpower. Priority should be given to collecting data which is specifically relevant to feeding back into development planning and research and at the same time to information which can be reliably collected during a single visit to particular households. A pre-survey to test questionnaire design and interviewee response would be essential and different questionnaires may need to be designed to suit different areas.

It is therefore suggested that sample size should be less than 5% of estimated total number of households and that the survey should be conducted over time, using the same core staff, on a district by district basis, starting with Ovamboland as first priority, mainly because the population pressure and total population is greatest. Although the main focus would be on the rural communities, selected urban areas should also be sampled.

Basic information to be collected as priority might include:
- Size and age structure of household
- Absentee/migrant employees from household
- Number of household members actively working in agriculture/livestock
- Education and attendance
- Areas cultivated and crops grown
- Livestock ownership
- Locations of customary grazing
- Most intensive/busiest times of year
- Crop and livestock sales
- Use and sources of inputs
- Use of employees and/or contract labour
- Perceived constraints on production/output

[^4]: Appendix B in the original, but omitted here.
Priorities for Further Studies

- Other occupations/business interests etc

Clearly this list is by no means exhaustive but certain technical information is intentionally omitted, for example meaningful data on crop yields is notoriously difficult to obtain through a single visit survey. Other more general information, for example on land use rights and other sociological data, is better collected through other means: long duration open ended discussions.

7.3 Comparative Study of Regional Agricultural Extension and Research Programme

There is currently a lack of skills and experience in agricultural extension and research activities in Namibia. At the same time there is a need to establish such activities aimed at small scale farmers in communal areas. It is recommended that as part of the proposed consultative process to be undertaken by the proposed planning and management unit for extension and research within the Ministry of Agriculture (see Section 4.3), a comparative study of regional agricultural extension and research programmes should be undertaken. This study should involve a tour of countries such as Botswana, Zimbabwe, Zambia, Tanzania, and Kenya, and visits to relevant government Ministries and NGO activities concerned with extension and research. Results of such a study would be useful in familiarising Ministry of Agriculture staff in aspects of extension and research, so as to enable them better to decide on appropriate approaches for Namibia. Such a study could be funded and otherwise assisted by donor agencies.

7.4 Farming Systems Research

It is recommended that farming systems research (FSR) be carried out by the agricultural extension service which is to be created (Section 4), rather than as a separate research study or project carried out by traditional multidisciplinary diagnostic and design teams independent of extension. FSR which is carried out to provide researchers with information to help them define farmers needs, leading to a programme of on-farm research and "research recommendations", which the extension service is then expected to transfer to the farmer through the passive innovation diffusion process, is not recommended. Rather, FSR should be the responsibility of the extension service. Indeed, following limited training, extension agents may be expected to carry out FSR at an early stage in the development of the new extension service.

Such FSR should be considered as an important element in the Ministry's information generation and communications system, and should be of relevance to many users including researchers. After initial collection of a database, FSR should become part of the process of monitoring technology adoption and modification by farmers. Such an approach is in keeping with the "farmer first" approach advocated in this report, in
Priorities for Further Studies

which the process of innovation generation and adoption starts with the farmers' problems, and leads to the provision of technological options which are modified and refined by farmers as they are adopted.

7.5 Marketing

There has been almost no research on economic marketing issues relevant to small farmer production. Farmers are aware of limited access to markets but it is not known to what extent marketing issues restrict incentives to produce surplus or adopt new crops, as compared to various other constraints on production. There are a wide range of marketing related issues which need to be investigated, embracing transport and trade, processing, import substitution and export potential, possible requirements for protection or subsidies. It is proposed that a crop marketing and trading consultant is contracted through NEPRU[5].

7.6 Water

In Ovamboland water, whether surface or underground, is a scarce commodity and a constraint on resettlement potential. Access to it is also directly connected with over-grazing in certain areas. Protection of existing water resources for future use by the human population should be given highest priority. Appropriate technology for recycling of waste water (e.g. Pauly, 1989) could also be investigated.

In Kavango and Caprivi research is required to determine the most appropriate ways of exploiting river water to the benefit of small farmers. Water is not limitless and any major extractions could have serious repercussions downstream, including in Botswana. As in Ovamboland, use of deep underground water in Kavango needs to be tightly controlled and monitored to prevent over-exploitation in the future.

7.7 Bushmen Survey

The Bushmen, probably more than any other ethnic group, have largely lost the means to live by traditional methods and many are in very low wage employment in both commercial and non-commercial areas, and many others are semi-destitute. Hearsay evidence suggests that significant numbers are employed in very poor conditions in rural communities in Kavango and in Rundu as well as elsewhere in the country. The 1981 Population census counted a total of 30,000 Bushmen in Namibia, of whom only 2,500 (8%) were living in Bushmanland, while the remainder were distributed as follows:

5. Appendix C in the original, but omitted here.
Priorities for Further Studies

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FNDC's Mangetti West Ranch accommodates approximately 300 unemployed Bushmen, mostly women, who, according to FNDC, cannot live by traditional means, and suffer from a high incidence of disease, alcoholism and other problems. Some of the women are apparently only able to survive by earning money through prostitution. FNDC have therefore proposed a joint venture community development programme for these 300, in co-operation with the Lutheran Church.

Environmentally, Bushmanland offers little if any potential for resettlement or survival. It is unlikely that Bushmen can regain their traditional lifestyle but they merit special attention to bring them within the scope of educational and health facilities to assist with integration into a more settled way of life. Therefore it is recommended that a survey should be undertaken to ascertain total numbers and whereabouts, their economic circumstances, literacy, and educational and health status.

In commercial agricultural and ranching areas such a survey could easily be broadened, if thought appropriate, to cover other disadvantaged groups as well because the data can be more readily collected through registered owners than it could be from the many unregistered subsistence farming communities.
Reference List


Department of Agriculture and Forestry, Administration for Ovambo, *Concerning movement of the cordon fence*, Ondangwa, 1989.


Principal Persons Interviewed

L. Botha - Project Manager, FNDC’s Mangetti West Ranch.


Sue Brown - Economist and Researcher.

Deon van Dyk - Chief Agriculturalist, FNDC.

Hangula Fanuel - Economist and Eastern Sector Co-ordinator, SWAPO Office, Oshakati.

Gert Hanekom - Minister of Agriculture, Fisheries, Water and Rural Development.

Marco Hausiku - Minister of Lands, Resettlement and Rehabilitation.

Peter Horn - Chief Agricultural Development Officer, Directorate of Agriculture and Forestry, Kavango.

Rev. Haikali Katalula - Pastor at Oshakati and Member of "Kauluma" Resettlement Project Management Committee.

Erastus Karola - Agriculturalist, SWAPO, Rundu.

Werner Lechner - Project Manager, Rössing Foundation's Agricultural Training Centre, Okashana, Ovambo.


Malan (Mr) - FNDC, Oshakati office.

Dr Kaire Mbuende - Deputy Minister of Agriculture and a Trustee of NEPRU.

Bob Meiring - Chairman/Managing Director, FNDC.

Keith Morrow - Chief Agricultural Officer, Directorate of Agriculture and Forestry, Ovambo.

Webster Muchibone - Agriculturalist, SWAPO, Rundu.

Pieter Mudge - Manager of FNDC's Musese farm, Kavango.

Sikuna T. Negumbo - Livestock Production Specialist, SWAPO Office, Oshakati.
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<td>David Rinner</td>
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<td>Fr Bernard van Rooemalan</td>
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Sources: Population Census 1981 (Namibia); Population Census 1980 (South Africa).
# NEPRU Publications

**Updated: 24 September 2001**

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<td>NB6</td>
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<td>Henning Melber, Hopolong Phororo, Bruno Venditto, Dirk Hansohm, Peter Manning, Klaus Schade, Wolfgang Werner, Thomas Hastings</td>
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| **NAMIBIA ECONOMIC REVIEW & PROSPECTS** |                                                                      |                                                                        |              |                |      |            |              |
|--------------------------------------|----------------------------------------------------------------------|------------------------------------------------------------------------|              |                |      |            |              |
| NERP1                                | Overview of the Namibian Economy                                     | Dirk Hansohm Moono Mupotola and Daniel Moltinga                        | 10           | 1998           | N$25.00 | N$3.75     | N$28.75      |