THE AGRICULTURAL SECTOR OF NAMIBIA:
A BRIEF ASSESSMENT

This sector assessment was undertaken in conjunction with the Southern Africa Development Analysis Project and has been used extensively, but not totally, in the Main Report and Country Papers

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Preface

The purpose of this paper is to provide information on the current status of agriculture within Namibia's economy and to provide a framework for analyzing needs and potential contributions to the develcpment of agriculture in an independent Namibia. The constraints and potentialities of agriculture, however, can not be analyzed in isolation from the greater economy and socio-political setting. Thus, it has been necessary also to provide a scmewhat broad-brush treatment to these areas.

Because the government of South Africa discontinued publishing separate statistics for Namibia in 1966, recent published data are available only from unofficial sources, including the judgements and analyses of various individual researchers. The result is, inevitably, conflicting estimates of such fundamental statistics as Gross Domestic Product, exports, value and quantity of production, etc. Despite efforts to reconcile conflicting data, there remain some inconsistencies in the paper.

Throughout the paper, the country is referred to as Namibia rather than South West Africa, although in historical context the latter terminology is the more common. The South African terms--blacks, whites, coloreds--are used since this is the way in which most available data are presented. However, when the term "black" is used in the text, it refers to Namibia's non-white population unless specific reference is made to the "coloreds" as well.

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R.H.B.

GLOSSARY OF TERMS AND ACRONYMS

ASOKOR	Afrikaanse Sake - Ontwikkelings - Korporasie (a corporation)
GDP	Gross Domestic Product
ICSEAF	International Commission for the South East Atlantic Fisheries
ILO	International Labour Organization
SECID	South East Consortium for International Development
SWANLA	South West Africa Labor Assistance
SWAPO	South West Africa People's Organization
SWAWEK	South West Africa Water and Electricity Corporation
UN	United Nations
USAID	United States Agency for International Development

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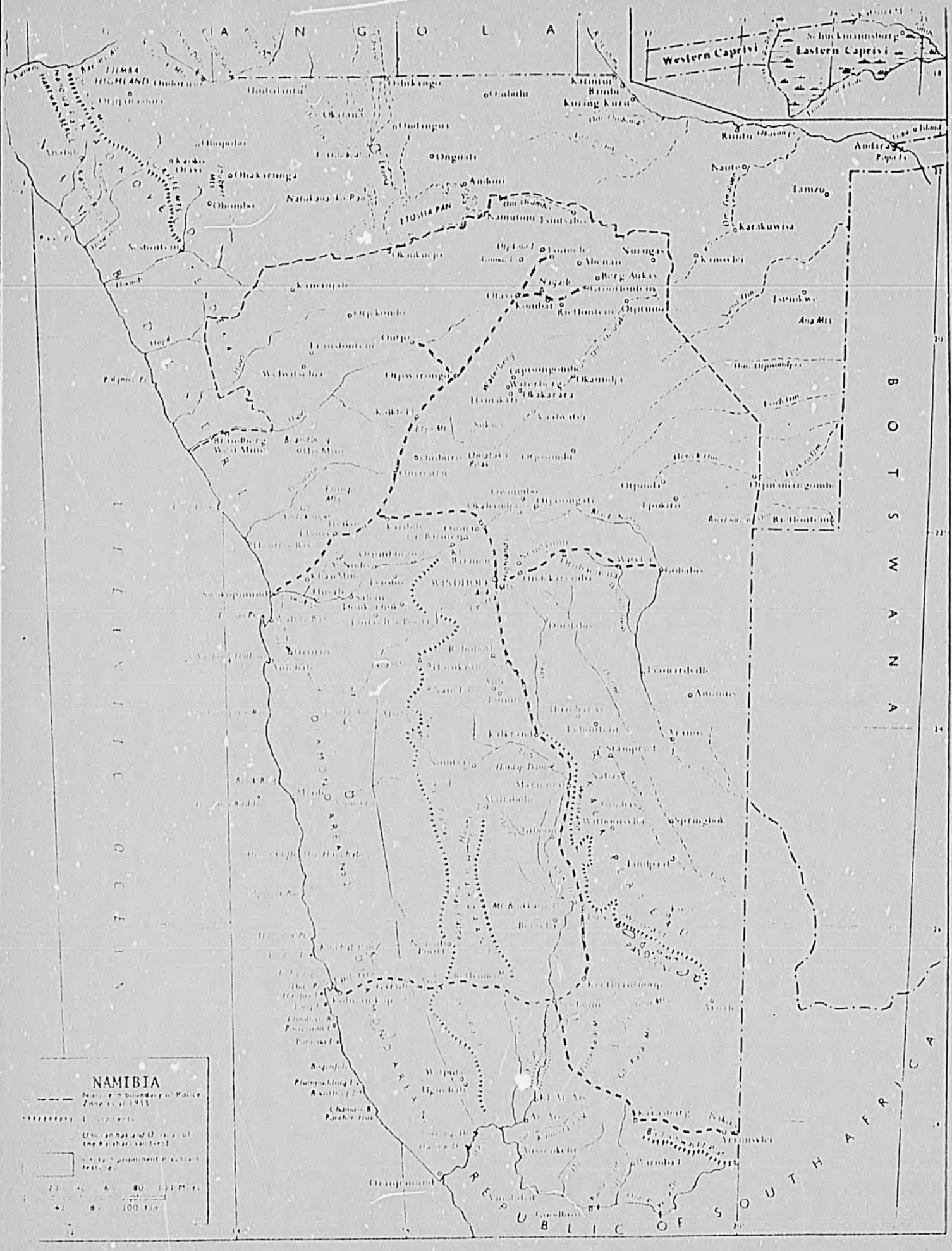

Map 1. General locality map. The sign ○ indicates not only a town or village, but often a police post or store.

I. GEOGRAPHICAL SETTING AND POPULATION

A. Land. Namibia (formerly South West Africa) is located south of the equator between the 17th and 29th parallels. On the north it is bordered by Angola and Zambia, on the east by Botswana, and to the south and southeast by the Republic of South Africa. The South Atlantic ocean comprises the entire western border. A small strip of land in the extreme northeast portion of the country, known as the Caprivi Strip, constitutes a corridor some 425 kilometers long and 35 kilometers wide which protrudes into the border area between Botswana and Zambia.[1/] Another peculiar feature of the political geography of Namibia is Walvis Bay, an 1124 square kilometer port enclave on the Atlantic which is geographically an integral part of Namibia, but politically a part of the Republic of South Africa.[2/]

Including the Walvis Bay enclave, the land area of Namibia is approximately 824,269 square kilometers--nearly four times the size of the United Kingdom and about one-fifth again as large as Texas. Three distinct geographic regions of the country can be delineated: 1) the Namib, 2) the Central Plateau, and 3) the Kalahari.

The Namib, which constitutes between 15 and 20 percent of the country's total land area, is an inhospitable desert strip which stretches from north to south along the entire western coast of Namibia. Ranging in width from 80 to 130 kilometers, it rises rapidly in altitude as one moves eastward towards the escarpment of the Central Plateau. A short-grass steppe, supporting large herds of wild

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1/ The Caprivi Strip was established in 1890 under an agreement whereby the British permitted German access from South West Africa to the Zambesi River.

2/ Walvis Bay was annexed in 1878 by the British Colony of the Cape of Good Hope. When this colony subsequently became one of the four provinces comprising the Union of South Africa, Walvis Bay was included as part of the Union.

game, is found along the eastern reaches of the Namib. The agricultural potential of the Namib is virtually zero at the present time.

Also running from north to south over the entire length of Namibia is the Central Plateau. Comprising over 50 percent of the country, this region ranges in altitude from 1,000 to 2,000 meters and offers a diverse landscape of gently undulating plains, rugged mountains, rocky outcrops, and valleys. The dry southern portion of the plateau is the major production area for karakul sheep (Persian lamb pelts). Moving from south to north, rainfall increases, permitting the raising of beef and dairy cattle and in some areas maize and other row crops.

The third region, the Kalahari, makes up the eastern, northeastern, and northern areas of Namibia. This region is characterized by thick layers of terrestrial sands and limestone, and an absence of surface water. In some parts, however, sub-artesian pressure forces the ground water close to the surface where it can be easily tapped. Although the major agricultural enterprises are beef and dairy production, some irrigated areas produce wheat, maize, oats, alfalfa, and vegetable crops.

B. Soil Types. The soils of Namibia are generally immature and the three main broad soils groups correspond to the geographic regions discussed above, i.e. 1) the desert soils of the Namib 2) the plateau hardveld group and 3) the Kalahari soils. Detailed soils surveys for Namibia are not available, but those data which are available suggest that most of the soils are low in both organic matter and fertility. The soils with the greatest natural fertility and the highest cropping potential (if sufficient water is available) are the heavy calcareous soils found in a relatively small area in the northern part of the country.[1/]

C. Water. For the most part, Namibia is characterized by a low average annual rainfall, a high degree of variability and high

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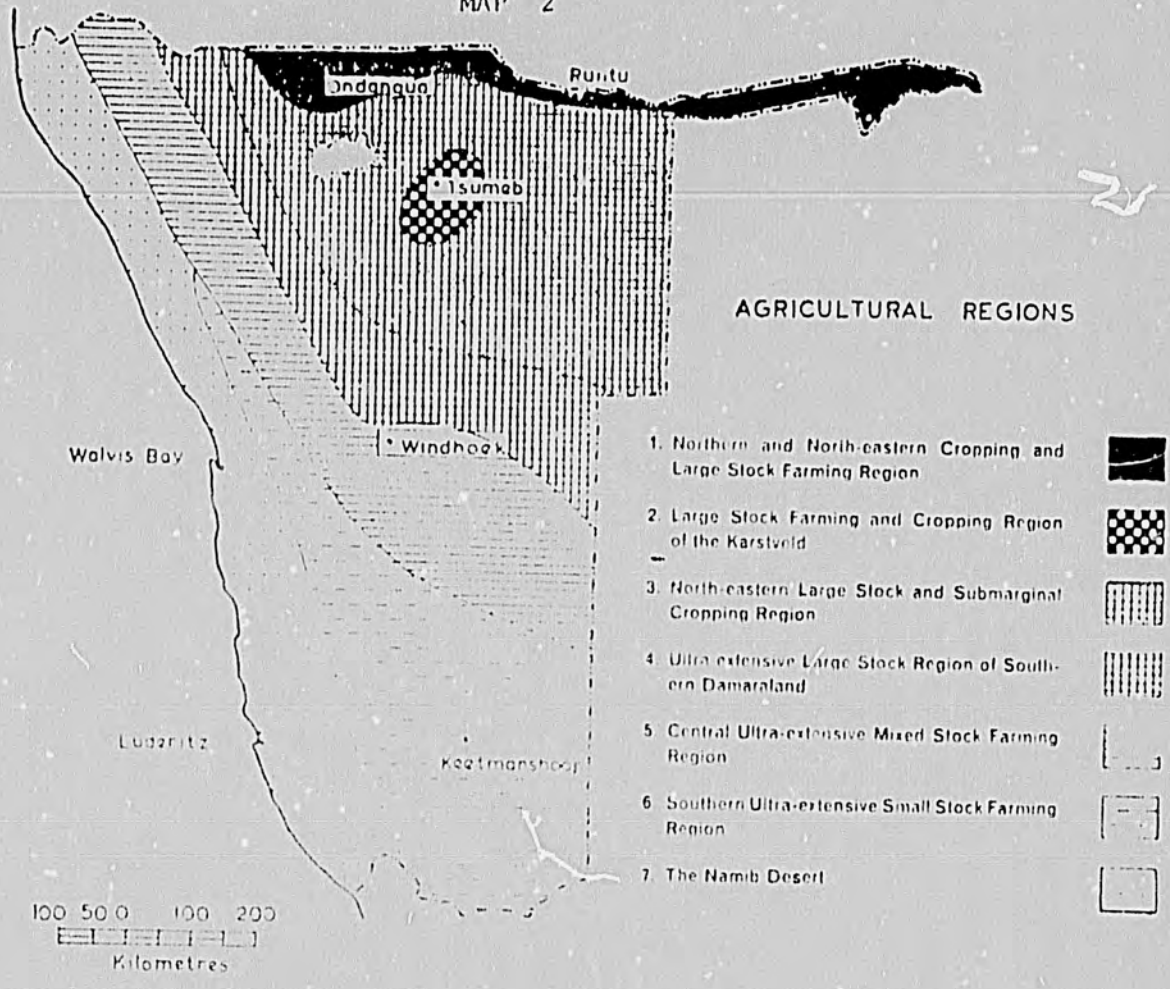
1/ For additional detail, see John H. Wellington, South West Africa and Its Human Issues (Oxford: Clarendon Press, 1967), pp. 62-69 and FAO/UNESCO Soil Map of the World as reproduced in UN/FAO, Namibia: A Preliminary Note Towards a Country Development Brief, March, 1976, p. 7.

MAP 2

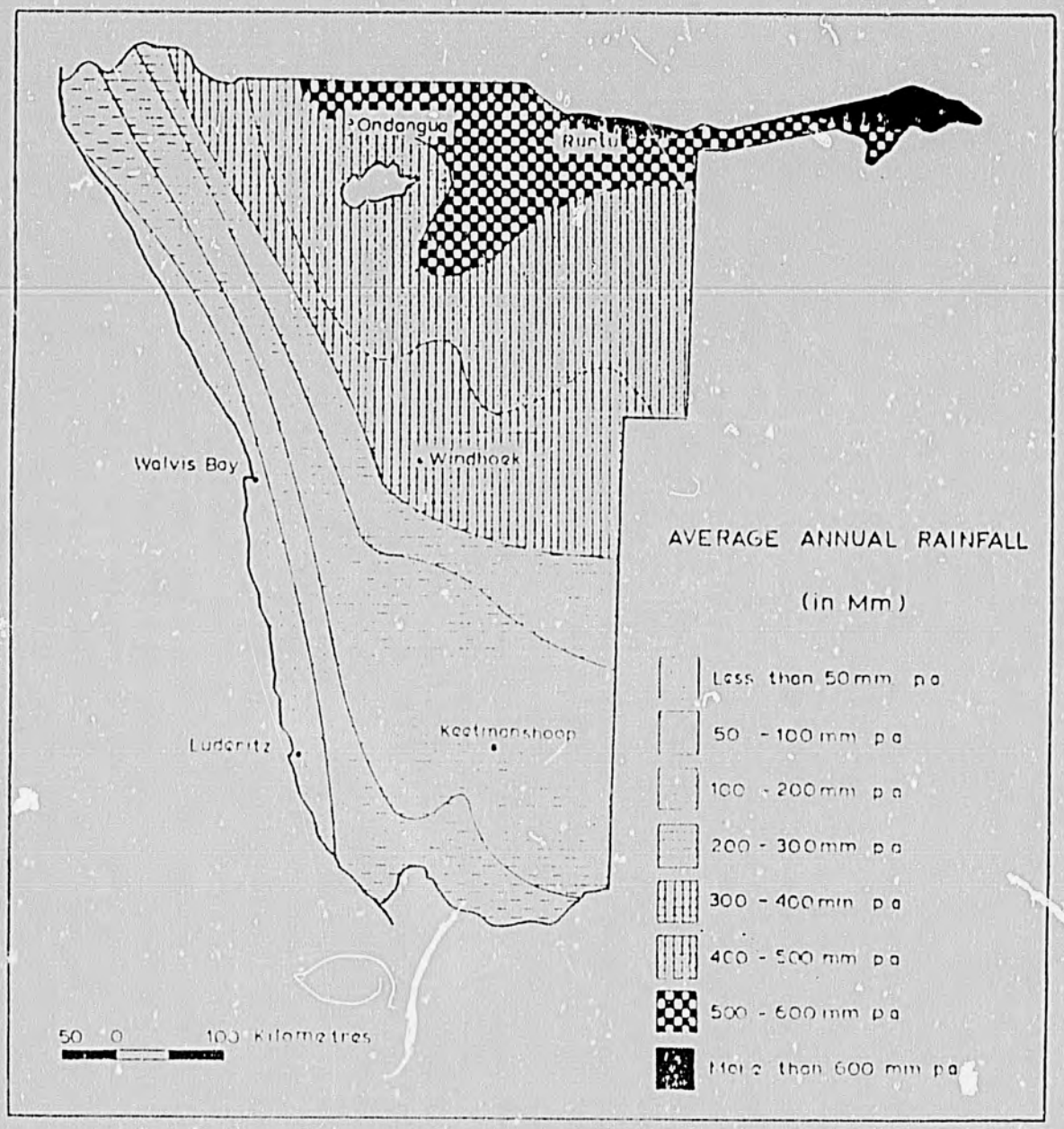


Region	Dry land Cropping*	Irrigation	Stock Farming[1]	Timber
1	Normal to marginal; soil fertility low to moderate	Good	Large stock, extensive	Extensively exploitable
2	Marginal; soil fertility moderate	None	Large stock, extensive	Some exploitation possible
3	Submarginal; soil fertility low	None	Large stock, extensive	Extensively exploitable
4	None	Extremely limited	Large stock, ultra-extensive	Negligible
5	None	Extremely limited	Large stock, and small stock, ultra-extensive	None
6	None	Limited	Small stock, ultra-extensive to marginal	None
7	None	Extremely limited	Marginal small stock farming in better parts	None

[1]The following limit values are applied in describing the potential intensiveness of pastoral land-use in Southern Africa (*vide* Wellington, J.H. "A Tentative Land Classification of Southern Africa", *The South African Geographical Journal*, Vol. XXXV, (1953), p. 17):

Intensive: One large stock unit to 2 Ha. or less. *Semi-intensive*: One large stock unit to 2-4 Ha.
Extensive: One large stock unit to 4-8 Ha. *Ultra-extensive*: One large stock unit to 8 Ha. or more.
One large stock unit equals 1 cattle unit or 5 sheep or goat units.

MAP 3


Ondangua
Rundu
Walvis Bay
Windhoek
Lüderitz
Keetmanshoop
AVERAGE ANNUAL RAINFALL
(in Mm)
Less than 50mm p.a
50 - 100 mm p.a
100 - 200mm p.a
200 - 300mm p.a
300 - 400mm p.a
400 - 500 mm p.a
500 - 600 mm p.a
More than 600 mm p.a
50 0 100 Kilometres

evaporation rates, thus limiting agricultural potential. Generally, rainfall tends to increase from west to east and south to north, with the most favorable rainfall conditions--both in terms of total precipitation and distribution--being found in the extreme north and northeast. Only about one-third of the country receives an average annual rainfall in excess of 400 mm., considered to be the minimum for non-irrigated agriculture. Because of the low and erratic rainfall, it is estimated that dry land (non-irrigated) cropping is carried out on only one percent of the land in the entire country.

Surface water is quite scarce throughout most of the country. The only rivers with a year-round flow (the Orange, the Kuene, and the Okavango) originate outside of Namibia's borders and, for the most part, constitute part of the country's boundaries rather than traversing it. The Orange River, in the south, flows in a 1,000 meter deep gorge which limits its potential for irrigation; furthermore, n 1890 agreement between Great Britain and Germany establishes the north bank of this river as the international boundary, thus placing the river entirely within South African territory. Utilization of the irrigation potential of the Kuene may be limited by salinity conditions in some of the soils of Owambo and by the need for international agreement on use of the water. Studies suggest an irrigation potential of 50,000-60,000 hectares if a dam were constructed at a suitable site on the Okavango River. Although there are some springs, they are relatively few in number; some reports indicate only 40 of any significance in all of Namibia.

In much of the country ground water supplies are also limited and obtainable only through the drilling of deep wells. This is particularly true of the central and southern areas of the country. In the mid-60's it was estimated that there were some 35,000 boreholes in Namibia, approximately 50 percent of which were successful. Throughout most of the country, boreholes are the principal source of water for both farm and municipal use. The most favorable geological formations for ground water are found in the artesian area of eastern Namaland and the Otavi karstveld.

D. Population. The estimated population in 1974 was 852,000 of which approximately 82 percent were classified as African, 12 percent white, and 6 percent of mixed heritage. A single tribal group, the Owambos, constitutes some 46.5 percent of the population. Table 1 provides a breakdown of the population.

It should be noted that there is considerable difference of opinion as to what the total population, and particularly the ethnic distribution, actually is. The U.N. Council for Namibia has put forth an estimate of 1.5 million for 1970, thus virtually doubling the estimated size of the black population.[1/]

Geographically, 56.5 percent of the population (the Owambos, the Kavangos, and the East Caprivians) are located in the northern area and another 32 percent in the central area. Some 80 percent of the white population resides in or in the vicinity of the seven largest towns, but is spread fairly widely among the districts of the country.

Although perhaps not reliable, the estimated figure of 2.9 percent per year population increase is frequently cited. This would be a reasonable estimate for a less developed country which as yet has not established a family planning program.

1/ As cited in Wolfgang H. Thomas, "Towards Acceptable Development Strategies for Independent Namibia," November, 1977, draft report, p. 5. He views this as a "gross exaggeration." More recently an estimate of 1.2 million has been widely used.

Table 1. Ethnic Distribution of the Population of Namibia: 1970 and 1974

Population Group	Number		Percentage of Total	
	1970	1974	1970	1974
African	626,440	702,000	82.2	82.4
Owambos	352,640	396,000	46.3	46.5
Damaras	66,291	75,000	8.7	8.8
Hereros	50,589	56,000	6.6	6.6
Kavangos	49,512	56,000	6.5	6.6
Namas	32,935	37,000	4.3	4.3
East Caprivians	25,580	29,000	3.3	3.4
Bushman	22,830	26,000	3.0	3.0
Kaokalanders[1/]	6,567	7,000	0.9	0.8
Tswanas	4,407	5,000	0.6	0.6
Other	15,089	15,000	2.0	1.8
Whites	90,583	99,000	11.9	11.6
Mixed Bloods	45,161	51,000	5.9	6.0
Coloreds	28,512	32,000	3.7	3.8
Rehoboth Basters	16,649	19,000	2.2	2.2
TOTAL	762,184	852,000	100.0	100.0

Source: Constructed from data contained in South West Africa Survey 1974, Republic of South Africa Department of Foreign Affairs, 1975. The 1970 data are from the 1970 census and the 1974 data represent estimates by the RSA Department of Statistics.

[1/] In 1975, the official estimate of Kaokalanders was increased to 60,000, reflecting underenumeration in 1970.

II. POLITICAL HISTORY

As early as the latter part of the fifteenth century, Portuguese sailing vessels explored the Namibian coast, but no settlements were established. Subsequent visits were made by fishermen and whalers of various European nations enroute to their traditional fishing waters. It was well into the 1800's, however, when British and German missionaries began to establish residence in the area.

Following the annexation of Walvis Bay by the British in 1878 and its incorporation into the Cape Colony, negotiations between Great Britain and Germany established in 1884 the boundaries of today's Namibia--with Germany exercising control over all of the area except Walvis Bay.

During World War I, armed forces of South Africa occupied Namibia. At the conclusion of the war, and under terms of the settlement, Germany ceded rights to its former colonies to the Allied Powers (Article 119 of the Versailles Treaty). These former colonies were granted international status under Article 22 of the Covenant of the League of Nations, and the administration of Namibia was mandated to South Africa in 1920.

Following World War II, the League of Nations was dissolved (1946) and the United Nations created--presumably assuming those supervisory responsibilities formerly held by the League. South Africa, however, did not accept the U.N. authority as successor and refused to place Namibia under U.N. trusteeship. Instead, South Africa requested (1946) that the U.N. General Assembly concur in its proposed annexation of Namibia as a fifth province. This request was in turn rejected by the U.N., and over the past 30 years South Africa has from time to time been involved in international political and legal disputes over administrative responsibility in the area.

In 1949, an Act was passed by the South African parliament which provided for representation of Namibia in the South African Parliament.

In 1950, the International Court of Justice ruled that while South Africa could not be compelled to enter into a trusteeship agreement with the U.N., neither could it unilaterally alter the international status originally granted Namibia by the League of Nations. Following several years of debate, the U.N. Assembly, in 1966, passed a resolution terminating South Africa's mandate for failure to fulfill its responsibilities. This action placed Namibia under direct U.N. supervision; there was, however, no enforcement mechanism.

In 1967, a U.N. Council for Namibia was established as the administering organization for Namibia--but without providing any effective administrative machinery for accomplishing this mission. South Africa again refused to accept this directive of the U.N. and continued with programs designed to integrate Namibia into South Africa.

The U.N. Security Council, in 1970, declared South Africa's presence in Namibia to be illegal, and the International Court of Justice in a 1971 advisory opinion upheld this view. All nations were subsequently called upon to recognize this illegality in their relations with the Republic of South Africa. A 1972 U.N. Security Council resolution authorized the Secretary-General to undertake efforts to bring interested parties together to establish conditions for the exercise of the right of Namibian self-determination. As a result of these initiatives, the South African government, in 1973, agreed to consult the Namibian population regarding constitutional development, to cease efforts to divide Namibia into independent ethnic (tribal) entities,[1/] and to permit progress toward self-determination.

1/ The South African government had spelled out in 1964 in its Report of the Commission of Enquiry into South West Africa Affairs (the Odendaal Report) its policy of encouraging the creation along ethnic lines of ten "African Nations" which would gradually become self-governing. These "nations" would be created out of the areas designated as "homelands" of the various tribal groups of Namibia. The bulk of economic activity and 2/3 of the land were reserved for white areas. The longer term plan included the close linkage of the white areas of Namibia to "white" South Africa as the ethnic "nations" gained their independence.

In 1975, South Africa granted "self-governing" status under local tribal leadership to Owamboland and Kavangoland, two of the "nations" specified in the Odendaal Report. South Africa, however, retained direct control over police, defense, foreign affairs, railways, mining, etc. Also in 1975, South Africa initiated in Namibia constitutional discussions which became known as the Turnhalle Conference.[1/]

On September 23, 1975, participants in the Turnhalle Conference released a "Declaration of Intent" which called for independence from South Africa within three years and for the participation of all ethnic groups in the new government. The delegates to the conference, however, were not representative of the different Namibian interest groups, being made up primarily of political conservatives, and thus had no mandate from the electorate. Nevertheless, a Constitutional Committee was formed and a constitution drafted by March, 1977. Plans were made for an interim government to be installed by the latter part of 1977. This government was to be established according to an ethnically-based formula which would result in under-representation of the Owambos, over-representation of the smaller ethnic groups, and white representation about proportional to their percentage of the population. It was also agreed that the selection of a prime minister and the decisions of the Cabinet Council would be by consensus--thus assuring a weak system of government.

The five western powers represented in the U.N. Security Council (the United States, Canada, France, Great Britain, and West Germany) indicated in 1977 to the South African government their dissatisfaction with the outcome of the Turnhalle Committee which continued to stress ethnic representation, a weak form of government, and the

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1/ The discussions were begun in a building in Windhoek by the name of Turnhalle. Although sponsored by South Africa, she was not officially a member of the discussion group. Both the U.N. and foreign powers were excluded. Namibian political parties were permitted to participate only if they represented specifically the interest of one of the ethnic groups.

exclusion of a major political force, SWAPO.[1/]

Discussion ensued between the five western powers, the South African government, and the Turnhalle Committee. Various informal exchanges were also conducted with SWAPO and other political leaders. The outcome was a decision to shelve the draft constitution. The South African Parliament, in June 1977, passed enabling legislation providing for appointment, by the President of South Africa, of an Administrator-General to administer Namibia until arrangements can be worked out for the holding of free elections on a non-ethnic basis.

At the present time the two leading political factions vying for leadership in Namibia appear to be SWAPO, supported by the various black nationalist groups, and the black moderates and multi-racial groupings clustered around the white moderate, Dirk Mudge.

1/ SWAPO (the South West Africa People's Organization), made up largely of Owambos, has emerged as a major force and has been responsible for continued political and military activities designed to hasten independence. SWAPO has strongly opposed the Turnhalle Constitutional Conference and most of South Africa's proposals. Both the United Nations and the Organization for African Unity have recognized SWAPO as the legitimate representative of the Namibian people. SWAPO was founded in 1960 by Sam Nujoma, its current president in exile, and Herman JaToivo, who has been held in South African detention since 1968.

III. AN OVERVIEW OF THE ECONOMY AND NAMIBIAN DEPENDENCE UPON SOUTH AFRICA

A. Introduction. Both historically and currently the modern sector of Namibia's economy has been so closely linked to, and dependent upon, the South African economy that it functions more in the role of a colony than as a viable economic unit. This dependency is manifested in South Africa's control of the bureaucratic and administrative machinery, power, transport and communications, trade, investments, taxation, budget, and internal and external security forces. Some of these areas are examined in subsequent sections.

B. Dual Economy. Namibia's economy represents a classic dual structure, with a relatively small percentage of the population employed in the modern, capital using, productive, export-oriented sector and a large percentage in the labor-intensive, low technology, low productivity, subsistence agriculture sector. In Namibia, however, this sectoral dichotomy is further complicated by the fact that the modern sector is largely white owned and operated (white Namibians, South Africans, and multi-national corporate interests), whereas the subsistence sector comprises a black population of some ten separate ethnic groupings--many of which have historically had rather serious tribal animosities.

The modern sector is composed of mining (primarily gem diamonds lead, copper, and zinc), fishing (primarily crayfish, pilchards, and anchovies), agriculture (primarily cattle and karakul sheep), plus commercial enterprises located in the larger cities. Livestock produced in the subsistence sector are principally cattle, sheep, and goats along with a few poultry and swine. Subsistence crops include grain sorghum, millet, maize, and vegetables. Data on quantities produced, value, or yields in the subsistence sector are virtually non-existent.

C. Gross Domestic Product. Namibia's GDP in 1975 was estimated at 718.6 million rand (1 Rand = 1.36 U.S. $) calculated at current market prices.[1/] The estimated sectoral contributions for the same year are: primary sector (mining, fishing, and agriculture) 43 percent; secondary sector, 17 percent; and tertiary sector, 40 percent.[2/] A further disaggregation of the primary sector suggests that mining constitutes about 28 percent of GDP, with the fishing industry and agriculture each contributing approximately 7.5 percent.

Table 2. Gross Domestic Product, 1970-76 (Million Rand)

	1970	1971	1972	1973	1974	1975	1976
GDP in current prices	370.7	377.9	463.9	609.1	635.4	718.6	826.4
Percentage change	-2.8	2.0	22.8	31.3	4.3	13.1	15.0
GDP in constant prices	288.0	287.1	298.1	299.2	310.0	326.7	338.1
Percentage change	0.1	-0.3	3.8	0.4	3.6	5.4	3.5

Source: Wolfgang Schneider Barthold, op. cit., Table I, p. 63. Barthold has estimated these figures on the basis of incomplete official data. The base year for calculating GDP in constant prices was not identified.

Numerous studies point out the fact that Namibia's Gross Domestic Product during the 1960's annually exceeded the Gross National Product by 20-40 percent, thus suggesting large capital flows abroad. A more recent estimate (for 1973) places this gap at 41.7 percent.[3/]

Assuming a population of approximately 876,700 in 1975[4/] and a GDP of 718.6 million Rand, the per capita GDP for that year would have

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1/ Wolfgang Schneider Barthold, "Namibia's Economic Potential and Existing Ties with the Republic of South Africa," Berlin, German Development Institute, undated (but published either in 1977 or 1978), p. 63.

2/ Ibid. p. 64.

3/ W. C. J. van Rensberg and D. A. Pretorius, South Africa's Strategic Minerals: Pieces on a Continental Chessboard, Johannesburg, 1977, p. 152 (as cited in Barthold, op. cit., p. 38).

4/ Population derived from the Republic of South Africa Department of Statistics estimate of 852,000 for 1974 and increased by 2.9 percent.

been 819.7 Rand (U.S. $1,119.71). This figure would place Namibia among those countries of Africa having the highest per capita GDP. Comparable 1975 figures for other selected African countries are: Republic of South Africa $1,339; Botswana (1973) $424; Kenya $234; Nigeria (1973) $223; Tanzania $170; and Ethiopia $98. However, the relatively high per capita GDP masks the existence of highly skewed patterns of income distribution, with the relatively small white population receiving a disproportionately large share of the total. Thomas has estimated that in terms of national income in 1975, the per capita income of whites was R3,150 and for all "non-whites" only about R335.[1/] Furthermore, the previously mentioned gap between GDP and GNP suggests that a large share of the GDP is not available for use in Namibia.

D. Trade. Since there have been no official trade statistics published for Namibia since 1966, those recent figures which are available represent simply educated guesses which knowledgeable observers have arrived at based upon various official and unofficial sources. Table 3 presents one such set of estimates.

Table 3. Exports, By Commodity, 1968-1973 (Thousand Rands)

Commodity	1968	1969	1970	1971	1972	1973
Karakul pelts	19,200	21,900	20,100	27,500	32,500	32,000
Livestock	25,100	24,600	29,000	30,000	35,000	40,000
Fish products	40,000	36,000	33,000	36,000	45,000	65,000
Diamonds	80,000	90,000	75,000	80,000	90,000	127,000
Other minerals	40,700	45,500	42,900	41,500	35,500	46,000
Total Exports	205,000	218,000	200,000	215,000	238,000	310,000

Source: Economic Commission for Africa, "Summary of Economic Data: Namibia, 1973", Publication No. N75-9, December, 1974, p. 11.

1/ Wolfgang H. Thomas, op. cit., p. 24.

Most of Namibia's exports go out as raw products or with only very little initial processing. Thus, local producers are not able to capture the value added by processing, nor is the employment generated by the processing industry available to Namibians. Of total exports, over 50 percent each year go to South Africa. Some of these (particularly diamonds and karakul pelts) are reshipped by South Africa to other foreign destinations.

Data on imports are even more scarce, and in terms of individual commodity groups totally unavailable. It is known, however, that Namibia must import virtually all of her petroleum, coal, iron and steel, electrical equipment, manufactured consumer goods, transport and construction equipment, plus considerable amounts of food. This results in imports equalling annually approximately 50-60 percent of GDP.

During 1972/73 30,455 tons of maize and maize products were imported and 14,704 tons of wheat flour.[1/] The southern region of the country regularly depends upon imports of maize and wheat from South Africa, and the northern areas must do so in those years when domestic production is inadequate to meet local demand.

Barthold estimates that approximately 65 percent of Namibia's imports originate in South Africa and another 15 percent are brought in by South African import firms, with the remaining 20 percent being imported directly via Walvis Bay by Namibian trading companies.[2/]

Putting together estimates of imports and exports for recent years, Thomas has derived rough estimates of Namibia's trade balance. These are presented in Table 4.

E. Sectoral Employment. Estimates of employment by sector, for 1975, indicate that the primary sector is the major employer (56.9 percent), followed by the tertiary sector (22.6 percent), and the secondary sector (8.7 percent).[3/] Of particular interest is the fact

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1/ South West Africa Survey 1974, op. cit., p. 36.

2/ Wolfgang Schneider Barthold, op. cit., p. 36.

3/ Thomas, op. cit., p. 360. These estimates are based upon unpublished sources to which the author had access. The unemployed, unspecified, and other category comprises the remaining 11.8 percent of the labor force.

Table 4. Balance of Trade for Selected Years (Million Rands)

	1974	1975	1977
Imports	-360	-400	-450
South Africa	260	280	300
Foreign	100	120	150
Exports	+410	+415	+510
Agricultural Products	85	90	80
Fish Products	65	65	20
Mineral Products	250	250	400
Other (inc. tourism)	10	10	10
Trade Balance	+50	+15	+60

Source: Wolfgang Thomas, op. cit., p. 213.

that although mining contributed 28 percent of the GDP and over 60 percent of the value of exports, because of its capital intensity it accounted for slightly less than 6 percent of total employment. Agriculture is the major source of employment, providing slightly more than 48 percent of the jobs. Table 5 provides a breakdown of these employment estimates.

The contract migrant labor system, as practiced in Namibia, is worthy of special note since it has proven to be a particularly objectionable practice. Under this system, white mine operators, manufacturers, farmers, and even the government have contracted for migrant laborers (primarily Owambos) through a quasi-governmental central labor clearing house established in 1943 and known as SWANLA (South West Africa Labor Association). Laborers were required to sign contracts obligating them to one or more years of work with the specified employer, and were not permitted to cancel the contract, to change jobs, or to leave the specified employment area during the life of the contract. Furthermore, they were not permitted to take their wives or families along to their places of employment. One study estimates that in 1971, 43,000 contract laborers were recruited by SWANLA for the following employment: government services, commerce, and industry, 14,000; mining, 12,800; farming, 10,900; fishing, 3,000; and domestic services, 2,700. Of this number approximately 53 percent

Table 5. Estimates of Sectoral Employment, 1975

	White	Black	Total Numbers	Total Percent
Primary Sector:				
1. Agriculture				
modern	6,800	46,000	52,800	17.9
subsistence	---	90,000	90,000	30.5
2. Fishing	500	7,000	7,500	2.5
3. Mining & Quarrying	1,500	16,000	17,500	5.9
Secondary Sector:				
4. Mfg., elec. & water	4,600	8,600	13,200	4.5
5. Construction	2,900	9,600	12,500	4.2
Tertiary Sector:				
6. Transportation & Comm.	1,800	7,500	9,300	3.1
7. Commerce & Finance	4,100	6,300	10,400	3.5
8. Gov't & other services	14,300	14,000	28,300	9.6
9. Domestic (household) services	---	8,000	8,000	2.7
10. Self-employed in subsistence	---	11,000	11,000	3.7
Other:				
11. Unemployed & unspecified	---	29,000	29,000	9.8
12. Defense force/ resistance forces/ refugees	3,000	3,000	6,000	2.0
Total Labor Force	39,500	256,000	295,500	100.0

Source: Thomas, op. cit., p. 360.

were Owambos.[1/]

On 13 December 1971, growing dissatisfaction with this system culminated in a strike in the capital city of Windhoek in which over 5,000 Owambos walked off their jobs. The strike soon spread to other areas, including Walvis Bay where the entire Owambo labor force of 3,120 ceased work. Next, the Tsumeb mines and other mines were struck. By January, 1972, it was estimated that some 13,500 workers at 23 industrial sites (including 11 mines) were involved.[2/]

As a result of the strike some modifications were made in the contract labor system, including abolition of SWANLA and delegation of its responsibilities to decentralized labor bureaus in the reserves. Some other changes were also implemented, including the right to terminate the contract and to seek new employment (within 14 days). However, major problems of wage inequality, separation of families, housing and living conditions, employment security, and the right to live in urban areas were not addressed.

F. Government Revenues. Namibia's internal control over its revenues and expenditures was seriously reduced in 1969 with the passage by the South African parliament of the South West Africa Affairs Act. This act constituted one step in the implementation of the Odendaal Plan for creating ethnic "independent nations", and further integrating Namibia with South Africa.

The act largely eliminated the existing Namibian administration and transferred most responsibilities to the South African government. Under the terms of the Act, South Africa now collects directly all taxes on mines and mining, customs and excise taxes, corporate taxes, undistributed profits taxes, and fees for stamps, transfers, and rents.[3/] Since April 1, 1969, Namibia's administrative responsibilities

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1/ J. Kane-Berman, Contract Labour in South West Africa, Johannesburg, South African Institute of Race Relations, 1972, pp. 4-5 (as cited in International Labour Office, Labour and Discrimination in Namibia, Geneva, ILO, 1977, p. 55).

2/ ILO. Labour and Discrimination in Namibia, op. cit., p. 56.

3/ U.N. General Assembly, Special Committee on the Situation with Regard to the Implementation of the Declaration on the Granting of Independence to Colonial Countries and People, "Namibia: Working Paper Prepared by the Secretariat," A/AC 109/L. 1138, 9 February 1977, p. 33.

have been restricted to "...the education of whites, the health services with the exception of the reservations, roads, local authorities and public works within the so-called white area."[1/] In terms of tax collection, Namibia has authority only over personal income taxes, motor vehicle tax, entertainment tax, land tax, overseas shareholder profits tax, and certain fines. There are no current data on the amounts of revenue generated from these sources, but in 1964/65 they represented less than 10 percent of total Namibian revenue.

Two separate budgets exist for Namibia: 1) the Territory Revenue Fund (South West Africa Administration) and 2) the South West Africa Account of the South African budget. The latter is financed by those taxes generated from Namibian sources but collected by South Africa, plus a proportion (allocated by formula) of the South African budget accruing from customs and excise duties. This account is used primarily to fund expenditures of South African administrative offices in Namibia. The Territory Revenue Fund receives annually one-seventh of all corporate income taxes (except from mining companies) plus an annual amount transferred from the South West Africa Account which is calculated on a formula basis.

There is currently a great deal of rhetoric surrounding the question of whether, and the extent to which, South Africa subsidizes the Namibian budget, or exploits it by taking tax money out of the economy. Given the paucity and conflicting nature of the available data it is not possible to sort out revenues and expenditures with any degree of confidence. Barthold, for example, presents estimates for the SWA Account and the Territory Revenue Fund for 1973/74 which, when combined, suggest total revenues of R244 million and expenditures of only R240.5--representing a positive balance of R3.5 million.[2/] Thomas, on the other hand, presents data for 1976/77 and develops the argument that in that year, Namibia had a gross internal revenue of only R267 million and total public sector spending of R720 million--or

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1/ Barthold, op. cit., p. 43.

2/ Barthold, op. cit., Table II, p. 72.

a gross deficit of R450 million which was financed by South Africa.[1/]

Pointing out the indeterminacy of the situation, a recent publication states that, "...revenues collected from Namibia and expenditures on Namibia are to a large degree a matter of definition and accounting practice, and therefore subject to question and change. As currently defined, public expenditures in Namibia exceed receipts there and the deficit has been growing."[2/]

G. Transportation. Lacking navigable internal rivers or waterways, transportation depends primarily on a road and rail system. Major infrastructural investments have been made in transportation networks, and costs have been high due to the size and geography of the country. Distances between population centers are great, and population density in the countryside is low. Nevertheless, Namibia has a good transportation system--excellent by comparison with other developing nations of Africa. Primary emphasis has, however, been placed upon serving the needs of the white areas, the mines, the defense forces, and tourist areas, with much less investment directed towards building transportation systems in the areas of black population.

Between 1956 and 1971, an estimated R17 million was spent annually on road construction and improvement.[3/] All-weather roads (tarred or paved) have increased from essentially zero in 1953, to 447 kms. in 1963, to 2,772 kms. in 1973, and currently about 3,500 kms. Major roads link Walvis Bay, Windhoek, Tsumeb, Gobabis, Keetmanshoop, Luderitz, and ultimately South Africa. These are largely north-south roads, with east-west connections to Walvis Bay, Luderitz, and Gobabis. There are also some 30,000 kms. of gravel roads in the country.

1/ Thomas, op. cit., pp. 308-309. In arriving at these estimates, he imputes values for defense and police security and other central government functions such as research.

2/ Chester A. Crocker and Penelope Hartland-Thunberg, Namibia at the Crossroads: Economic and Political Prospects, Center for Strategic and International Studies, Georgetown University, Washington, DC, April 1978.

3/ Southern Africa Task Force, Transition in Southern Africa--Namibia, (prepared by Stephen C. Wilcox, Louis Berger, Inc., March 1977, for USAID Bureau for Africa), p. IV-44.

Namibia's 2,340 kms. of rail lines, and relatively small population, result in the highest per capita rail mileage on the continent--over three times as great as that of South Africa. The rail lines essentially parallel the major road arteries. The railways are owned and operated directly by the South African Railways and Harbors Administration. Outbound freight is composed primarily of unprocessed minerals and live cattle, and inbound freight includes manufactured products, coal, and food products. The railways are reportedly uneconomically operated and require annual subsidies.

Although the current layout of the road and rail system can be strongly criticized for its obvious bias in favor of development of white business enterprises, it will nevertheless constitute a major positive factor in the future development of agriculture as Namibia becomes independent. Additional investments in feeder lines can open up areas for increased agricultural production and facilitate the movement of necessary inputs as well as agricultural commodities.

The ports of Walvis Bay and Luderitz represent the third major area of transportation.[1/] Both are operated by the South African Railways and Harbor Administration. Walvis Bay is Namibia's only deep water harbor, the major center of the fishing industry and the terminus of the main railway line. Containing eight deepwater ship berths, it is the only important port between Cape Town on the south and Angola's Lobito on the north.[2/] In 1973, Walvis Bay handled over 95 percent of Namibia's ocean cargo shipments and receivals. Luderitz can not handle direct berthing by large ships because the harbor depth is inadequate, thus requiring off-loading onto lighters. Another port, Swakomund, was operational during the German colonial period and

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1/ On 31 August 1977, South Africa issued a proclamation which placed Walvis Bay directly under the administration of South Africa's Cape Province. SWAPO has argued firmly that Walvis Bay must remain an integral part of Namibia when independence is achieved. This dispute constitutes a major issue in current political negotiations. The United Nations and the United States government have both denounced the South African action.

2/ U.N. Departmer of Political Affairs, Trusteeship, and Decolonization, "Decolonization: Issue on Namibia," No. 9, December, 1977, p. 32.

right eventually be re-developed. A fourth possible port is Mowe Bay, located some 270 miles north of Walvis Bay.

Linkage to South Africa and to the outside world is also provided by South African Airways. Reportedly the air service is also currently a money losing operation and must be subsidized by the South African Government.

H. Communications. As is the case with transportation, Namibia's communication system is owned and operated by South Africa. In 1973, it was estimated that Namibia had 38,746 telephones, placing it second only to South Africa among African countries in terms of the ratio of telephones to population. The Government Post Office operates the telephone system, the postal system, and the telegraph. Planned expenditure for development and improvement of telecommunications between 1973 and 1978 was approximately R6 million. The white areas of Namibia appear to be quite well served by this modern communications system. The system, however, fails to break even and must be annually subsidized.

I. Power. There are no known petroleum or coal deposits in Namibia, and coal is imported from South Africa by rail over a distance of some 2,000 kms. Transportation charges result in a landed cost in Windhoek which is approximately 2.5 times the cost in Johannesburg. Recently (January 3, 1977) South African newspapers reported the discovery of natural gas off the coast of Namibia. According to the news reports, this is thought to be quite a large deposit and to contain "wet gas" which can be converted into petroleum.

Historically, Namibia has not had a comprehensive power grid. Individual consumers (i.e. mines, municipalities, etc.) have provided their own power supply. With the growth of the economy and the increased demand for power, however, it is now becoming feasible to consider construction of a national grid. One source estimates that demand increased by 25 percent between 1976-1978 and projects a further 40 percent increase by 1980.[1/] Growth has been particularly rapid in Windhoek, at the Tsumeb mines, and in the developed coastal

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1/ South Africa Task Force op. cit., p. IV-49, citing the Economic Intelligence Unit (no further citation).

areas.

The major utility operating in Namibia is the South West Africa Water and Electricity Corporation (SWAWEK) which was developed by South Africa's Industrial Development Corporation. At a 1967 conference, the municipalities of Windhoek, Walvis Bay, and Swakopmund agreed to purchase electricity from SWAWEK. Existing power stations were brought under SWAWEK, with the understanding that power would be supplied to six large consumers including the above mentioned municipalities and the Tsumeb corporation. In addition to consolidating existing power stations, a thermal power station (Van Eck) was established at Windhoek and since 1972 has been supplying power to the grid.

Of considerable potential, but fraught with problems, is the Ruacana water system and hydro-electric plant located on the Kunene River on the border between Namibia and Angola.[1/] The Ruacana Scheme was planned jointly by South Africa and the Government of Portugal prior to Angolan independence. South Africa financed the construction of the project through loans advanced to SWAWEK, with the understanding that SWAWEK would operate the power plant and royalties would be paid to Angola for the water used in Namibia. The water for the scheme rises in Angola, and although the power plant is located at Ruacana, on the Namibian side of the river, the main storage dam and pumping station is situated on the Angolan side at Calueque (some 40 kms. upstream). This project has been adversely affected by the political and military tensions in Southern Africa, and during 1977 the flow of water was repeatedly interrupted. The storage dam was damaged early in 1978.

Another possibility as a future source of power is nuclear energy. With the discovery of major uranium deposits at Rössing, and the large anticipated foreign exchange earnings to be derived from its

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1/ This is envisaged not only as a municipal water and power source, but also potentially for irrigation. With the use of power generated at Ruacana, the Calueque pumping station, and the Owambo canal scheme, water is for the first time being made available to the Owambos.

export, it may become feasible in future years to develop nuclear power plants in Namibia.[1/]

In summary, it should be noted that the power network, like that of transportation and communications, is controlled by South Africa and was developed with commercial (white) interests in mind. The primarily black areas have had little access to this resource. However, with independence and whatever restructuring occurs in the society and the economy, this infrastructure will be a highly positive factor in future development efforts in Namibia.

1/ One source estimates that by 1980 Namibia will be able to supply enough uranium to produce 10-15 percent of the energy requirements of the Western industrial nations. Barthold, op. cit., citing R. Murray "New Finds in Namibia Bring Uranium Bonanza," in New African Development, July, 1977, p. 624.

IV. AGRICULTURE IN NAMIBIA

A. Introduction. The key role of agriculture in Namibia's economy is readily seen by reviewing its contribution to GDP - 15 percent; its contribution to exports - 20 percent, and its contribution to employment - approximately 50 percent. Less than 2 percent of the agricultural sector's contribution to GDP is derived from commercial field crop and horticultural production, while 96.6 percent is derived from livestock production. Disaggregating the contribution of agriculture, fishing, and forestry, it may be seen that both forestry and fishing are relatively small by comparison to agriculture.

Table 6. Contribution of Agriculture, Fishing, and Forestry to Gross Domestic Product, 1970 (Thousand Rand)

Agriculture	52,753	
Livestock		(51,826)
Crops		(927)
Forestry	900	
Fishing	7,047	
TOTAL	60,700	

Source: Wolfgang Thomas, op. cit., p. 22.

Since 1968, the value of agricultural and fish product exports has increased steadily. To a large degree, this is due to increases in world prices for Namibia's exports. Between 1968 and 1975, these two industries contributed 37 to 47 percent of the value of Namibia's exports. About 75 percent of the livestock exports are live beef shipped to South Africa. Because of the rapid growth in total exports resulting from the opening of the Rössing uranium mine, and a declining fish catch due to overfishing, Thomas estimates a relative decline in

the contribution of agriculture and fishing in 1977 to 20 percent of the total.

Beef and karakul sheep production dominate the agricultural sector, between them accounting for over 80 percent of the gross value of agricultural production. The only other agricultural products which contribute more than 5 percent of the value of production are dairy products and slaughter sheep. Field crops and horticulture production provide less than 2 percent.

Table 7. Agricultural and Fish Product Exports, 1968-77 (Thousand Rand)

Year	Karakul	Other Livestock	Fish Products	Total Exports from Namibia
1968	19,200	25,100	40,000	205,000
1969	21,900	24,600	36,000	218,000
1970	20,100	29,000	33,000	200,000
1971	27,500	30,000	36,000	215,000
1972	32,500	35,000	45,000	238,000
1973	32,000	40,000	65,000	310,000
	All Livestock			
1974	85,000		65,000	410,000
1975	90,000		65,000	415,000
1976	NA		NA	NA
1977	80,000		20,000	510,000

NA = Not Available

Sources: 1968-75, Economic Commission for Africa, Summaries of Economic Data: Namibia, pp. 75-79, Sixth Year (No. Two), December 1974, p. ii.

For 1974, 1975, 1977, Wolfgang H. Thomas, "Towards Acceptable Development Strategies for Independent Namibia." Nov., 1977, draft report, p. 213. Thomas notes that his figures for 1974, 1975, and 1977 are only rough estimates.

Table 8. Estimated Gross Value of Agricultural Production, 1968-69
(Thousand Rand)

Commodity	Value	Percentage
Cattle		
Slaughter Stock	31,715	(54.1)
Dairy	3,521	(6.0)
Sheep		
Karakul	15,533	(26.5)
Wool	499	(0.9)
Slaughter Stock	3,894	(6.6)
Pigs		
Slaughter Stock	311	(0.5)
Other Animals	2,025	(3.5)
Field Crops	765	(1.3)
Horticulture	361	(0.6)
TOTAL	58,624	(100.0)

Source: International Labour Organization, op. cit., p. 31.

B. Appraisal of Existing Input Supply Characteristics

1. Land. The distribution of Namibia's land is very biased in favor of its white population. Namibia contains 82,432,000 hectares, of which 50 percent is held in white-owned farms. Native reserves (homelands) account for 25 percent; game parks and reserves, and nature reserves occupy 7 percent; and an additional 10 percent represents government lands. The remaining land is in towns, (1%), diamond production areas (7%) and the non-urbanized area of the Walvis Bay enclave.

Little land in Namibia is suitable for normal dryland agriculture (see map 4). Only in the northeast corner of the Caprivi strip are yields fairly stable and total crop failures virtually unknown. In the remainder of the Caprivi strip and along the Okavango River marginal dry land cropping is possible, but crop failures do occur from time to time. Any cropping is out of the question in 68 percent

Table 9. Land Utilization in Namibia, 1960 (Thousand Hectares)

Use	Area	Percent
Farms	41,091	50
Towns	474	1
Native Reserves	20,644	25
Game Parks and Reserves	5,952	7
Nature Reserves	126	-
Sperr (Diamond) Area	5,486	7
Government Lands	8,569	10
Walvis Bay	109	-
TOTAL	82,452	100

Source: Republic of South Africa, Report of the Commission of Enquiry into South West Africa Affairs, R.P. No. 12/1964, p. 29.

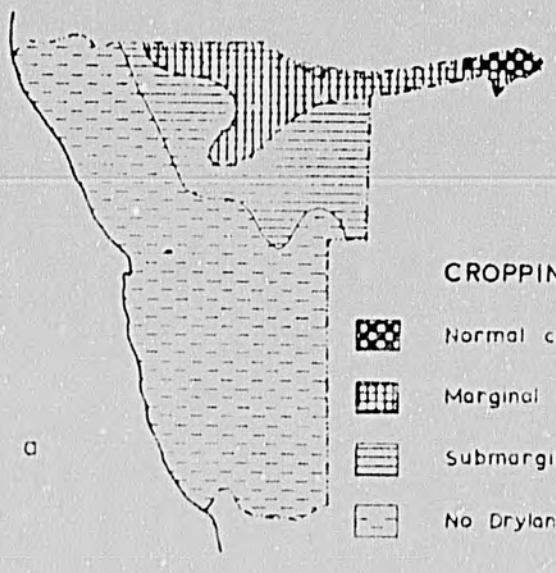
of the country; it must be utilized for grazing. Hence, most crop agriculture is found in Northern Namibia. Only small quantities of grain are grown in the South, and substantial quantities are imported annually.

Carrying capacity of livestock declines from the northeast to the southwest (see map 5). In the Namib desert, no agricultural activities are possible. Due to the dryer conditions and lack of grass only small stock may be kept in the far south, and this is the center of the karakul industry. In central Namibia, both small and large livestock are grazed, while the North is best suited to large animals.

Farmland in the white areas is privately held. In 1964, there were 6,821 white-owned farms, and these occupied 41,097,127 hectares. The average size was 6,025 hectares (14,888 acres or 23.3 square miles).[1/] The Land Bank of South West Africa provides whites subsidized mortgages to assist their purchase of land.

1/ Report of the Commission of Inquiry into..., op. cit., p. 25.

MAP 4



a

CROPPING POTENTIAL

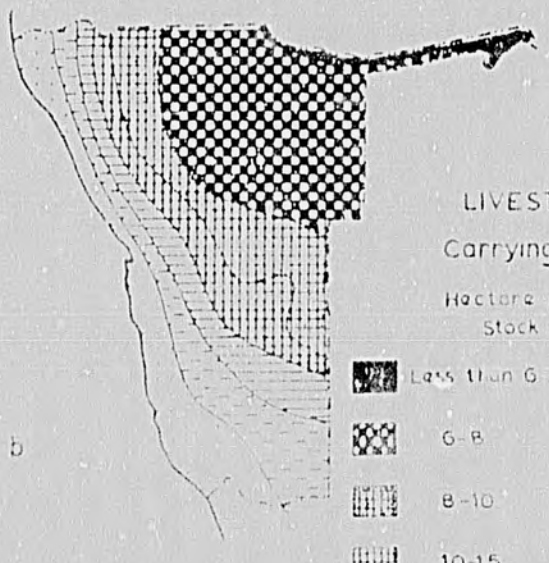
- Normal cropping
- Marginal Dryland cropping
- Submarginal Dryland cropping
- No Dryland cropping

Dry-land cropping is said to be normal when crop yields are fairly stable, the yearly variation in yield relatively small and *total* crop failures virtually unknown.

Marginal dry-land cropping. On account of a higher rainfall variability, crop yields are not only smaller in quantity than in the case of normal dry land cropping, but also liable to violent fluctuations. Total crop failures occur from time to time.

Submarginal dry land cropping. Both the amount and the reliability of precipitation are smaller than in the case of marginal dry-land cropping. Dry years do not only result in crop failures, but preclude the possibility of cropping altogether.

MAP 5



b

LIVESTOCK

Carrying Capacity

Hectare per Large Stock Unit

- Less than 6
- 6-8
- 8-10
- 10-15
- 15-30
- 30-45
- above 45

In the homelands, land is communally held and chiefs distribute it according to traditional practice. If all land in the homelands were cultivable, the 91,000 subsistence farmers would hold 227 hectares each.[1/] In fact, little land is cultivable and farms are small, probably not exceeding 10 hectares.[2/]

A major problem facing an independent Namibia, regardless of its eventual political complexion, will be to redress the inequity of land ownership resulting from colonization, without unduly disrupting Namibia's agricultural economy or fragile ecological balance. Because a large share of the population is dependent on imported food, purchased with the export earnings of agriculture, a major decline in production could have serious nutritional and economic consequences. Not only will the welfare of the white farm population be affected, but also the 30,000 blacks who work on the farms.

Numerous alternative approaches are available, ranging from uncompensated expropriation of the land of white farmers and redistribution to blacks as individuals or in groups--to the purchase of land from those whites wishing to sell. Although the ultimate decision will be based on political and ideological criteria as much as on economic, research to assess the likely economic and social impacts of the various alternatives would be very useful to decision makers.

2. Labor. The agricultural labor force is employed both in the subsistence sector of the homelands and in the modern agriculture of the white regions of Namibia. In 1977, almost a third of the national labor force was employed in subsistence agriculture (see Table 10). The modern sector employed 44,000 blacks and 6,500 whites. Approximately 30,000 blacks were contract workers, primarily Owambos.

Over the past decade, the number of blacks employed in the modern agricultural sector has declined as capital has been substituted for labor. The reasons for this are unclear, although several authors have speculated that it may reflect white farm owners' and managers'

1/ Calculated from the Commission's estimate of the areas in the homelands and Thomas' (op. cit., p. 248) estimate of the 1977 subsistence agriculture labor force.

2/ International Labour Organization, op. cit., p. 24.

Table 10. Agricultural Labor Force Estimates

	1969	1973	1975	1977
Farm Laborers (modern sector)	50,000	48,000	46,000	44,000
Subsistence Farmers	86,000	88,000	90,000	91,000
Total Labor Force	218,000	249,000	256,000	272,000

Source: W. Thomas, op. cit., p. 218.

concerns for their security in view of the political unrest in the nation. The decline in employment could also reflect the changing relative prices of capital and labor. However, insufficient data are available to permit analysis of this issue.

Published information on earnings of Namibian workers is mostly anecdotal. However, these scant data make it apparent that wages are inequitably distributed among regions, sectors, and races. A 1976 report indicates that the monthly wage in agriculture ranges from R12.50 to R27, while blacks in mining could earn as much as R112.[1/] Thomas cites a Turnhalle study reporting an average cash wage of R78 for unskilled blacks and R803 for skilled whites.[2/] Numerous other data are available, including South African sources[3/] which are generally consistent with these reports.

Black workers' willingness to leave their homes and families for much of the year to work in the modern sector is probably due largely to the differential in earnings possible in the two sectors. Thomas estimates that annual cash earnings in the homelands are probably not much more than R100 per person.[4/] An unskilled contract worker can earn that amount in a few months. For those who develop substantial skills, R100 may represent less than a month's salary.

1/ ILO, op. cit., p. 62, citing data contained in Economist Unit, Quarterly Bulletin on Southern Africa, No. 3, July, 1976, p. 17.

2/ Thomas, op. cit., p. 24.

3/ South West Africa Survey 1974, op. cit., pp. 58-59.

4/ Thomas, op. cit., p. 113.

Earnings of white farm families are much greater than those of black. Thomas estimates average annual net earnings before taxes to be approximately R4,800 to R7,500, or R2,000 per person.[1/] These estimates are exclusive of capital gains on land and are approximately equivalent to the earnings of white urban skilled workers.

When Namibia achieves independence, the new government must confront the issue of how to reduce current employment inequities without incurring out-migration of qualified whites of such a magnitude that the economy is severely disrupted. Because of past policies of discriminatory education and job reservation, few blacks have either the necessary training or the requisite experience to immediately step into administrative and technical positions. In the longer run, as training and educational opportunities are made available and as operating experience is gained, the wage differential can be eliminated. In the short run, however, it appears likely that if the new government wishes to retain skilled whites in key areas (or to attract new expatriates) it will be necessary to offer higher wages and other perquisites than it will be possible to pay to the majority of the work force.

3. Agricultural Institutions and Government Services. Namibia has an unusually well developed set of agricultural institutions for a country which has not yet achieved independence. It has at least three agricultural colleges, twelve agricultural research stations, an extension service, a veterinary service, and several organizations providing credit to farmers. The bulk of these institutions, however, provide services only to the white minority of the country. Following independence, they will provide services to the entire population. It was only in the 1960's that colleges serving the indigenous population were established, and the experiment stations and breeding stations serving the Northern region of the country were also recently established.

1/ Ibid., pp. 111-113.

Table 11 lists Namibia's colleges and research stations. Neudam Agricultural College near Windhoek, established in 1956, serves the white community. In 1964, it offered a two-year diploma course with specializations in animal husbandry and karakul breeding for a maximum of 32 students.[1/]

Table 11. Agricultural Colleges and Research Stations

Colleges:
Neudam Agricultural College - White
Ogongo Agricultural College - Black (Owambo)
Masari Agricultural College - Black (Okavango)
Research and Breeding Stations:
Neudam Experimental Farm - beef, sheep, stud farm
Omatjenne Experimental Farm - beef, goats, stud farm
Uitkomst Experimental Farm - beef, dairy, subtropical crops
Kalahari Experimental Farm - beef, sheep, stud farm
Gellap-Ost Experimental Farm - beef, sheep, goats, stud farm
Sonop Experimental Farm - beef
Mariental Experimental Farm - irrigated crops
Masari Experimental Farm - beef, stud farm
Ogongo Experimental Farm - beef, stud farm
Grootberg Experimental Farm - stud farm
Katima Mulilo Experimental Farm - stud farm
Mahanene Experimental Farm - crops
Veterinary Diagnostic Laboratories:
Windhoek
Kamanjab (Kaokoland)
Ondangwa (Owambo)

1/ Report of the Commission ..., op. cit., p. 301.

Ogongo Agricultural College in Owambo, and Masari Agricultural College in Okavango provide two-year diploma courses for students from the homelands of the North. Although designed for 120 and 25 students respectively, neither has been able to attract that many students. This reflects the small number of matriculants and reluctance to enter a course program which is designed to lead to eventual employment with the regime now governing Namibia.

The first seven research stations listed in table 11 were established prior to 1962. Neudam is the oldest, having been established in 1920 to conduct research on karakul sheep. These stations were all designed to meet the needs of commercial (white) agriculture in Namibia, particularly beef, dairy, and karakul production. Only Mariental Experiment Station, located on the Hardap Irrigation Project, conducts significant amounts of research on crop production.

Five experiment stations (Masari, Ogongo, Grootberg, Katima Mulilo, and Mahanene) were established after the release of the Odendaal Report, in the expectation that they would serve the homelands after their independence. Little published material concerning these stations' staffing, research programs, or facilities is available.

Substantial institutional, physical, and manpower resources have been invested in maintaining the health of Namibia's livestock population. Livestock diseases common to Namibia and its neighbors include foot and mouth disease, brucellosis, anthrax, east coast fever, and lungsickness. In order to control the spread of these diseases the Government conducts a vaccination program, has constructed and maintains 4,856 kilometers of fences to prevent diseases being spread by stock and wild game moving among the various regions of the country, maintains quarantine stations, and operates diagnostic stations. These programs are staffed by 28 veterinarians, 233 stock inspectors, and 300 other field workers.[1/]

1/ South West Africa Survey 1974, op. cit., p. 35.

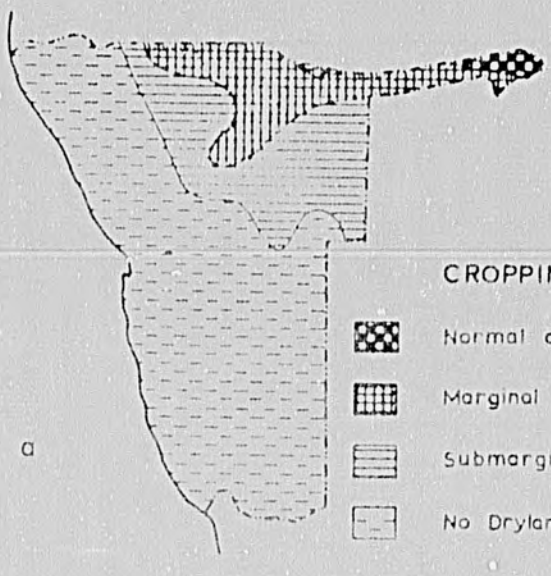
Veterinary services are very dependent on the resources of South Africa for provision of vaccines (over 1.4 million doses per year), research on diseases affecting Namibia's cattle, and personnel to assist local staff when epidemics break out which require more personnel than are available in Namibia.

Although little information is available concerning staffing of Namibia's institutions, the 1971 Manpower Survey does provide some insight into the adequacy of the national supply of professional agricultural manpower. In 1971, 146 professional agricultural and biological scientists (including only 14 blacks) were in Namibia. Because civil servants seconded by the government of the Republic of South Africa were included in the Survey, it is impossible to determine how many were Namibian. Among the 146 were 50 veterinarians (34%); 34 agronomists (23%); 26 biologists and related professions (18%); 28 agricultural technicians (19%); and 8 agricultural engineers (6%). Undoubtedly, these scientists served not only the research and training institutions of the country, but also the extension services, veterinary services and the Department of Agriculture. However, assuming that they only worked in the 15 research and education institutions and three diagnostic laboratories, and assuming that all vacancies were filled, the 18 institutions would average only 8.1 protessional workers, an inadequate number by any reasonable criteria.

4. Credit. Little has been written about the availability and use of agricultural credit in Namibia. However, there are at least three organizations that do provide some capital to agriculture. The most important is the Land Bank of South West Africa, which assists whites to purchase farms. This mortgage credit has been especially designed to attract white settlers to the country. In addition, the Rehoboth Investment and Development Corporation provides Basters with credit to buy breeding stock, fencing, land, and water supplies.[1/] However, the Development Corporation has little capital to lend. Between November, 1970, and March, 1973, it only lent R742,864 (an average of R24,762 per month). In addition, the cooperative movement of Owambo provides

1/ South West Africa Survey 1974, op. cit., p. 47.

MAP 4



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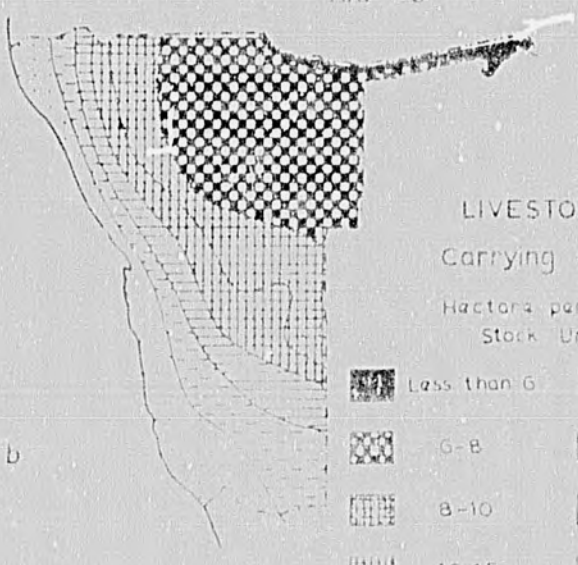
Dry-land cropping is said to be normal when crop yields are fairly stable, the yearly variation in yield relatively small and *total* crop failures virtually unknown.

Marginal dry-land cropping. On account of a higher rainfall variability, crop yields are not only smaller in quantity than in the case of normal dry-land cropping, but also liable to violent fluctuations. Total crop failures occur from time to time.

Submarginal dry land cropping. Both the amount and the reliability of precipitation are smaller than in the case of marginal dry-land cropping. Dry years do not only result in crop failures, but preclude the possibility of cropping altogether.

MAP 5



b

LIVESTOCK

Carrying Capacity

Hectare per Large Stock Unit

- Less than 6
- 6-8
- 8-10
- 10-15
- 15-30
- 30-45
- above 45

Table 12. Professional Agricultural Workers, Namibia, 1971

	White	Black	Vacancies
Agricultural Engineer	8	-	-
Agronomist, Horticultural Scientist, Forester	24	10	1
Biologist, Hydrobiologist, Microbiologist, Algologist, Botanist, Zoologist, Physiologist	26	-	6
Agricultural Technician	24	4	10
Veterinary Surgeon	50	-	6
Economist	-	-	-
TOTALS	132	14	23

Source: Republic of South Africa, Department of Labour. "Manpower Survey No. 9, All Industries and Occupations," April 30, 1971.

short-term credit for the purchase of agricultural inputs such as fertilizer, seeds, and chemicals.

5. Water. The supply of water is a major limiting factor in the development of Namibian agriculture. As previously noted, only in the northern reaches of the country is rainfall sufficient to support a crop agriculture. Except where irrigation is feasible, the remainder of the country must practice livestock production, and must import a substantial amount of food each year from South Africa.

Namibia's potentially usable domestic water resources are 500 million cubic meters from surface waters and 150 million cubic meters from ground waters.[1/] In addition, up to 68.6 billion cubic meters could be obtained from boundary rivers if appropriate international agreements can be negotiated. In 1970, an amount equivalent to about one half the domestic supply was already in use (see Table 13).

1/ Report of the Commission..., op. cit., pp. 396-7. The more recent South West Africa Survey 1974, indicates that the total is 500 million cubic meters rather than 650 million cubic meters. No data are available for resolving this contradiction.

Table 13. 1970 Water Consumption and Estimates to 2000 (million cubic meters)

Source of Demand	Year			
	1970	1980	1990	2000
Human Consumption[1/]	44	71	90	130
Large Livestock[2/]	88	95	106	117
Small Livestock[2/]	39	43	48	53
Irrigation[3/]	163	266	432	704
TOTAL	334	475	676	1,004

Source: USAID, Southern Africa Task Force, Transition in Southern Africa: Namibia, March, 1977, p. IV-40.

1/ Assumes a 2.8% population growth and a 1% usage growth per capita.

2/ Assumes a 1% growth rate.

3/ Assumes a 5% annual increase in irrigated area. The following areas are projected to be irrigated: 2,430 ha. in 1970; 3,969 ha. in 1980; 6,440 ha. in 1990; and 10,490 ha. in 2000.

It has been estimated that, without additional water supplies, national demand will exceed supply soon after 1990. By the year 2000, demand is expected to be almost double the domestically available supply. Hence, Namibia must seek ways to utilize the water of the rivers on its boundaries.

The government has spent a total of R138.75 million and expects to have spent a total of R2,000 million by the year 2000 to develop the full potential of the region.[1/] The total annual cost of operating and paying for this system will be R200 million. Included in the projection are plans for irrigation of 160,000 hectares in order to provide a food supply appropriate to the level of living anticipated for that period. Annual cost per hectare for irrigation in the northern region will be between R120 and R600. Assuming an average annual growth rate of 4 percent, GDP in the year 2000 will be R1,914 million. Thus, this development plan envisions committing 10 percent of GDP to operating water systems and retiring the debt accumulated in

1/ South West Africa Survey 1974, op. cit., pp. 48-51.

their construction. One must question whether this is realistic. A cost of R120 or more per hectare can only be afforded if the land is utilized extremely intensively in the production of high value crops. Given the current level of agricultural development in Namibia, it does not appear probable that this will be achieved.

The Government of the Republic of South Africa has estimated that the capital cost of developing surface water storage capacity in Namibia exceeds the cost of building similar facilities in a number of other countries by 30 to 500 times.[1/] If these estimates are correct, water must be reserved for uses which have very high value such as for human consumption, animal consumption, and irrigation of high value crops. Because of the cost of water, production of staples (maize, millet, wheat, etc.) is not likely to be economic except in those few localities where local water sources are plentiful. Rather, it would appear that in future years Namibia may be constrained to producing and exporting high value agricultural products and minerals while importing much of its food supply.

C. Appraisal of Existing Commodity Demand and Supply Characteristics

1. Cattle. Cattle raising is the single most important agricultural enterprise in Namibia. In 1968-69, cattle sales represented 54 percent of the value of total agricultural sales. Cattle are raised by commercial white farmers in the central plateau hardveld, and by black farmers throughout the country but particularly in Owambo and Kavango. Only in the very dry southern hardveld, and in the Namib, is it impossible to raise cattle.

White commercial farmers produce most of the cattle for market. For the past 20 years, their herd size has varied between 1.5 million and 2.1 million head (see Table 14). Average size for all white-owned farms varied between 220 and 300. Year-to-year variation in herd size is directly related to moisture conditions on the range.

1/ Ibid., p. 49.

Table 14. Cattle Numbers, Slaughter and Exports, 1968-76

(Thousand Head)

	White Owned[1]	Black Owned	Total Herd[2]	Local Slaughter[3]	Live Export to RSA[3]	Total Sales[3]
1968	1,500			57	259	317
1969	1,980			71	241	312
1970	2,130			104	312	417
1971	1,940	870	2810	130	371	502
1972	1,950			154	429	583
1973	1,500			182	325	507
1974	1,880			63	212	276
1975				76	250	326
1976				128	261	389

[1] Barthold, op. cit., p. 69.

[2] South West Africa Survey 1974, op. cit., p. 34.

[3] SWA Meat Trade Board Annual Reports.

The Government of South West Africa has not published recent statistics on the size of the black-owned cattle herd. However, the total herd size in 1971 is known, and the white-owned herd size has been estimated. Thus, it would appear that the black-owned herd size in that year was approximately 870,000 head. This is fairly consistent with the last published official data. Between 1962 and 1965, during years of continuing drought, the black-owned herd size decreased from about 804 thousand head to about 567 thousand.[1] Between 67 and 83 percent of these cattle were located in the northern region. Because the southern region is subject to much greater variability in rainfall, the variability of herd size in that region is much greater than in the north. This results both from increased cattle losses and deliberate reductions in herd sizes through increased sales. In spite of their better management practices, white farmers in the south

[1] South West Africa Survey 1967, op. cit., p. 64.

suffer proportionately higher cattle losses than do northern black farmers.

In an effort to control endemic cattle diseases in the north and to prevent their spread to the south, while at the same time permitting commercial sales of healthy animals raised in the north, a vaccination program has been conducted for many years. More recently, quarantine stations have been established and a combination abattoir and meat cannery has been built. The result has been increasing commercial sales in the north, rising from R238,856 in 1964 to R1,509,072 in 1972.[1/] Nevertheless, this constitutes a small proportion of total herd since traditional attitudes among northern blacks militate against the sale of cattle.

From 1968 to 1976 total cattle sales have varied from a low of 312,000 head to a high of 583,000 (see Table 14). In most years, approximately 75 percent are shipped live to South Africa. Annually, some 32,000 head are consumed locally, while the remaining marketed cattle are slaughtered in Namibia and then exported, primarily to South Africa.

The South West Africa Meat Trade Control Board has responsibility for grading and regulation of sales. It establishes cattle sale quotas for farmers and middlemen based on land size, carrying capacity, and distribution of marketing. Live sales are to three South African firms, Suid-Afrikanse Vleisprodusent (Centraal Kooperatief) Bpk; Vleissentrall, a cooperative; and Afrikaanse Sake-Ontwikkelings-Korporasie (ASOKOR), a corporation. These firms have re-exported small quantities to Europe, but the bulk remains in South Africa.

It appears that the Namibian commercial beef industry is one of the most efficient on the continent, marketing annually a relatively high proportion of the herd. Management standards are high on the white commercial farms. Nevertheless, improvements are possible through: (a) improved breeding to increase the rate of gain and sale weight of the livestock, (b) improved management practices, particularly among black farmers, (c) reduction of disease problems, particularly in the North, (d) expansion of markets.

1/ South West Africa Survey 1974, op. cit., p. 35.

South Africa claims that, because of high costs, the Namibian industry can not compete on the world market and must therefore sell in the subsidized South African market. Given the success of the much less efficient Botswana industry in establishing European markets, there is some basis for challenging this argument. Nevertheless, it is an issue which requires substantial study and can not be resolved on the basis of currently available data.

2. Karakul Sheep. Karakul pelt production is the second most important agricultural enterprise in Namibia in terms of sales. The industry had its origin in the importation of karakul sheep from Russia to Germany in 1902. In 1907, after it was found that karakul sheep could not prosper in the climate of Germany, they were sent to Namibia, then a German colony. The Namibian karakul industry grew quite rapidly, and by 1935 the number of karakul exceeded in number all the other breeds combined.[1/]

Adult karakul wool is coarse and of low value. However, the wool of the new-born lamb, known as Persian lamb, is relatively fine, highly curled, black, blue-black or occasionally gray or brown, and the entire pelt can be made into valuable fur coats. Since the wool loses its curl during the first ten to fourteen days after the birth of the lamb, it must be slaughtered almost immediately, usually within two to three days of birth. A ewe will lamb three times every 24 months.

The karakul is a dual purpose sheep since its meat, although not of the highest quality, finds a ready market in South Africa. As a result, during periods of depressed Persian lamb prices, the lambs may be kept for the mutton trade.

The major production region is the southern plateau hardvelt, a region with as little as two inches of rain annually. Here the karakul thrives on desert shrubs which cattle find unpalatable. Approximately 3,000 white farmers, employing 20,000 contract workers, raise karakul. In the early 1960's, the herd size numbered about 3 million, almost all on white owned farms. Sheep numbers have since increased rapidly, and by the mid-1970's there were reportedly about

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1/ John H. Wellington, op. cit., p. 97.

4.8 million head.[1] This probably represents the upper limit of sheep numbers.[2]

Exports have also increased rapidly. In 1960, slightly less than two million pelts were exported.[3] Ten years later over three million were exported.[4] Prices also have increased, from R4.38 per pelt in 1960 to R8.09 in 1971.[5] Almost all of the pelts are sold through three auction houses, two in Great Britain and one in Denmark. The largest markets are West Germany (60%) and Italy (20%). The South West Africa Karakul Board regulates the industry.

The major challenge facing the karakul industry is to find a means of maintaining herd size without damaging pastures through overgrazing. The industry must also address the changing demand toward light colored pelts relative to dark. Meeting this change in consumer preference will require increased research and breeding programs.

Table 15. Karakul Exports and Prices, 1968-71

	Pelts (million)	Average Price Per Pelt (Rands)	Total Value Million Rands
1968	3.4	5.58	27.2
1969	3.6	5.94	31.6
1970	3.3	5.78	29.8
1971	3.4	8.09	45.6
1972		9.63	
1973	5.6	9.18	51.4

Source: FAO, Namibia: A Preliminary Note Towards a Country Development Brief, March 1976, p. 45.

1/ FAO, op. cit., p. 45.

2/ Ibid., p. 46.

3/ South West Africa Survey 1967, op. cit., p. 66.

4/ FAO, op. cit., p. 45.

5/ Ibid.

3. Dairying. Recent published sources provide little information about the dairy industry, but it is clear that milk and dairy products are largely by-products of the beef cattle industry. In 1966, 113 million pounds of milk were produced. Of this amount, 82.9 percent was made into butter, with the remainder being consumed as fresh milk (14.9%) and cheese (2.2%).[1/] Dairy production appears to have declined over the past 20 years, in part because of droughts. The South West Africa Dairy Industry Control Board regulates the industry.

4. Food Supplies and Crop Production. The staple foods produced in Northern Namibia are kaffir millet and kaffir corn. Other products include maize, millet, sorghum, wheat, beans, tobacco, potatoes, groundnuts, pumpkins, cabbage, and melons. Most of these are grown by the northern tribes, as the southerners are largely herdsmen. On white-owned farms, maize and wheat are grown, primarily for home consumption and for feed. During favorable years the northern region is self-sufficient in food. However, the South normally must import a large proportion of its food supply, including grains, vegetables, and fruit. In 1970/71, 115,568 tons of maize and maize products and 13,621 tons of wheat flour were imported from South Africa.[2/] The following year, 30,455 tons and 14,704 tons respectively were imported. No reliable recent data are available for either production or imports.

It has been proposed that several additional crops can be grown under irrigation in the northern region. Research has been undertaken or suggested on rice, peanuts, jute, cotton, kenaf, and vegetables.

5. Fishing. The coastal waters of Namibia are regarded as a rich fishing area. Swept by the cold Benguela current and endowed with large concentrations of plankton, a major food source for schooling fish, this area has long been a favorite fishing area for such species as pilchards (a sardine type), anchovies, maasbanker, and mackerel. The pilchards and anchovies are taken primarily near the shore, within the Fisheries Protection Zone (12 miles) by boats operating out of Walvis Bay (see Table 16 for a breakdown of the catch for 1972-75).

1/ South West Africa Survey 1967, op. cit., p. 65.

2/ South West Africa Survey 1974, op. cit., p. 36.

Table 16. Pelagic Fish Catch 1972-73 (short tons)

	1972		1973		1974		1975	
	Tons	Percent	Tons	Percent	Tons	Percent	Tons	Percent
Pilchards	363,706	69.3	395,593	56.0	554,714	66.5	545,425	71.8
Maasbanker	16,016	3.1	6,895	1.0	25,115	3.0	8,909	1.2
Anchovy	144,558	27.5	301,104	42.7	252,840	30.4	194,367	25.6
Mackerel	564	0.1	2,345	0.3	942	0.1	10,524	1.4
Total	524,844	100.0	705,937	100.0	833,611	100.0	759,225	100.0
	-----Fish meal and fish body oil produced from the above-----							
Fish meal	112,294		143,141		161,165		151,845	
Fish body oil	28,116		46,811		28,300		37,961	

Source: Constructed from data contained in Barclay's National Review. Fish meal and fish body oil for 1975 are estimates by the authors, based on average processing percentages for previous years.

Farther out, in international waters, the deeper water bottom feeders are taken by ships of several nations including the U.S.S.R., Spain, Poland, Cuba, Bulgaria, Italy, Israel, and Japan. In 1974-76 the deep sea catch averaged annually about 500,000 tons. A recent estimate places the U.S.S.R. catch at about 40 percent of the total, followed by Spain with about 35 percent, Poland 8 percent, and Cuba 6 percent.[1/] South African boats take only about 4 percent of the total, and the remaining nations catch insignificant amounts. All of these nations are members of the International Commission for the South East Atlantic Fisheries (ICSEAF) and subscribe to a quota agreement on the catch. Only a very small percentage of the deep sea catch is processed in Walvis Bay.

After mining and agriculture, fishing is Namibia's most important industry, contributing in 1970 approximately 12 percent of Gross Domestic Product and accounting in recent years for 15-20 percent of the value of all exports. The industry also provides some 7,500 jobs (1975 estimate). The fishing industry is controlled by South African companies, and crews of the fishing boats have been restricted to white and coloreds (around 700 jobs) with migrant blacks filling most of the on-shore processing jobs.

There are nine[2/] commercial fishing companies registered in Namibia, and the processed fish (canned fish, fish meal, and fish oil) are largely exported. In 1975/76, about half of the canned fish were exported to South Africa and the remainder sold on the international market. An estimated 75 percent of the fish meal went to South Africa in 1976 where it was sold at fixed prices well below the prevailing world market price ($280 per ton vs. $320 per ton).[3/] Table 17 provides information on fish processing quantities and values for the period 1973-76. Reportedly, only very small amounts of fresh fish are

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1/ Barthold, op. cit., p. 20.

2/ These nine companies: SWAFIL, SEASWA, Lambert's Bay Company, Marine Products, Ovenstone Investments, Ltd., Kaap-Kuene, Suid Kuene Visserye, Buitasee Vistorporasie, and William Barendsz are very inter-connected through joint ownership, holding companies, directorships, subsidiaries, etc.

3/ Thomas, op. cit., p. 161.

made available through the marketing system for domestic consumption by the broad population groups.

Table 17. Production of Fish Processing Factories at Walvis Bay, Volume and Value, 1973-76

Year	Fish Meal		Fish Oil		Canned Fish	
	Quantity (metric tons)	Value (million rand)	Quantity (metric tons)	Value (million rand)	Quantity (million cartons)	Value (million rand)
1973	133,000	26.0	43,000	9.2	7.5	36.3
1974	146,000	31.0	25,500	5.8	10.0	51.2
1975	134,000	23.0	26,000	7.4	10.8	66.3
1976	97,000	19.8	17,400	4.6	9.7	64.4

Source: Constructed from data reported in Barclay's National Review June 1977, p. 25.

In recent years, there has been considerable concern expressed over depletion of the coastal fish resources as a result of over-fishing. During the period 1967-69 two South African factory ships operated off the Namibian coast, fishing primarily for pilchards which they processed at sea and landed at South African ports rather than in Namibia. The total annual catch in these three years averaged 1.41 million tons per year. In 1969, the South African Department of Industries assumed control of Namibian fisheries, banned the factory ships, and instituted stricter conservation measures including quotas and the establishment of "off-limits" areas. The previously mentioned ICSEAF was also set up, and some studies undertaken to assess the extent of damage to the fish population. Opinion remains mixed as to the severity of the damage inflicted by the fishing pressure and the extent of subsequent recovery. In recent years, the officially reported catch has not reached the allowed quota. Enforcement of fishing regulations appears to be a problem. It is widely anticipated that after independence Namibia will extend the boundary of the protection zone to 200 miles from the coast, consistent with Angola's and South Africa's boundaries. This will solve the over fishing

problem if adequate supervision can be established.

In addition to the fishing industry operating out of Walvis Bay, there is also a much smaller fishing industry based upon the catching and processing of rock lobster (crayfish) near Luderitz. The U.S.A. provides the major market for the rock lobster tails. In 1974, the value of rock lobster was estimated at R6.3 million compared to R88 million for canned fish, fish meal, and fish body oil.

V. CONSTRAINTS TO AND PRIORITIES FOR THE DEVELOPMENT OF THE AGRICULTURAL SECTOR OF AN INDEPENDENT NAMIBIA

A. Introduction. In the preceding sections, attention has been devoted to some of the constraints to development of Namibian agriculture. In this section, these constraints are summarized and categorized. In addition to many of the constraints common to most developing countries, Namibia faces those peculiar to the geographic location of the country, those emanating from the culture of its populace, and those which have been imposed upon it by two rather harsh colonial regimes. Rather than undertaking a comprehensive listing of development constraints, only the more critical are noted below.

B. Constraints Which are Also Common to Most Other Less Developed Countries

1) Minimal use and knowledge of modern agricultural technologies and inputs.
2) Weak institutional support systems, including education, research, extension, and credit.
3) Population pressure (both livestock and people) in some areas of the country, and high birth rates placing pressure on the resource capacity of the nation.
4) Low educational levels, particularly of the agricultural population.
5) Lack of electricity, water supplies, and other services in rural areas.
6) Shortages of trained professional manpower.
7) Poorly articulated marketing systems, particularly for domestically consumed products.

C. Natural Constraints

1) Soil of low fertility and subject to erosion.
2) Inadequate and undependable rainfall.

3) Lack of surface water except at the boundaries, a slow rate of replenishment of ground water, and underdeveloped irrigation systems.

D. Structural Constraints

1) Long distances to markets, and thus increased transportation costs.

2) Low population density, resulting in increased per capita costs for physical infrastructure investments.

E. Constraints Resulting from the Socio-Economic Character of the Indigenous Population

1) Cultural importance of cattle as a status symbol, resulting in low takeoff rates and overstocking.

2) Low prestige of crop agriculture.

3) A land tenure system which militates against the most productive use of the land.

F. Constraints Imposed by Colonial Regimes

1) Farmers in current Black areas lack access to public services (roads, utilities, water, extension, credit, veterinary services, etc.).

2) Inequitable distribution of land, wealth, and income.

3) Little research directed towards food crop production.

4) Lack of quality educational services for Blacks.

5) Poor transport and communication facilities to neighboring countries other than South Africa.

6) Little domestic processing of primary products.

7) Lack of control over budget, taxation, investment, or program development by the Black majority.

8) A contract labor system which prevents internal mobility, and perpetuates discriminatory employment practices.

9) Large capital flow abroad, and rapid depletion of mineral resources.

G. Goals of an Independent Namibia

A primary goal of an independent Namibia will be to restructure society in order to assure that Namibians control the economy and its resources, and are the primary beneficiaries of economic development. In order to achieve this goal, it will be necessary to:

1) assure equality of the races in all respects, including access to factor and product markets, labor markets, and public and private services and facilities;
2) redistribute wealth and control of resources, including land, to eliminate the distortions imposed during a century of colonial occupation;
3) establish public control of the national infrastructure including roads, railways, harbors (including Walvis Bay), communication systems, and schools;
4) establish Namibian control of the exploitation of the nation's natural resources, including minerals and fish, and assure that Namibia receives an equitable share of the proceeds from their exploitation.

The implementation of programs to achieve these goals will influence the agricultural sector, but the exact impact is impossible to predict without precise knowledge of the speed and methods with which they will be implemented. Some generalizations regarding priorities and problems are, however, possible.

H. Short Term Priorities for Namibian Agriculture

Upon accession to power, the first actions of the government must include assuring the immediate welfare and security of the population and the protection of national resources during the transition period. In the agricultural sector, this implies: 1) maintenance of adequate food supplies, 2) preservation of existing agricultural capital, and 3) maintenance of essential services.

1. Food Supplies. As previously noted, Namibia is dependent upon the importation of fruits, vegetables, and cereal grains from South

Africa. Since vegetables and fruits are currently consumed primarily by the relatively few well-to-do, an interruption in their importation would not cause severe and widespread hardship. However, continued importation of cereals, the current staple of the country's black population, is critical to general welfare. In years with favorable rainfall, relatively small quantities are imported to supplement available supplies in southern and central Namibia, but when the rains fail in the North, large quantities of grains must be imported from South Africa. If, after independence, trade links between Namibia and South Africa are broken, food shortages in Namibia may be acute unless alternate sources of food imports can be developed.

Food shortages may also occur as a result of disruption of the marketing system. Presently, wholesaling, transport, and much of the retailing of food is controlled and carried out by South Africans. If these setvices are interrupted or discontinued, major shortages may occur even if importation of food from South Africa is still politically feasible.

Finally, it can be expected that following independence the spatial distribution of demand for food will shift, and production of food in the Northern areas of the country may decline. The elimination of pass laws and the contract labor system will permit families of workers from the northern part of the country to migrate southward. This will, in turn, increase the dependence on purchased food as opposed to home-produced food, thus increasing required food shipments from Owambo and/or imports from abroad. Moreover, since the agricultural labor force is also likely to decline as a result, and some lands may be abandoned, total domestic food production may decline.

The Council for Namibia and the Food and Agriculture Organization of the United Nations have incorporated plans into the "Nationhood Programme" for addressing these problems.[1/] Their focus is to develop a system of food distribution to be implemented in the event that importation from South Africa is interrupted or that the internal

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1/ Food and Agriculture Organization of the United Nations, Project Proposals for the Nationhood Programme for Namibia, Rome, 1978.

marketing system breaks down. Proposed projects include planning a free food distribution system, estimating the quantities of food which may be required for distribution, prepositioning of minimal supplies outside of Namibia, and training personnel who will be responsible for distributing food.

2. Preservation of Capital in Commercial Agriculture. In addition to the possibility that agricultural capital may be lost through exportation or wanton destruction, if key public services are discontinued assets may also be lost through natural causes. Most critical of these is the possibility that the livestock herd may be decimated by disease if veterinary services are disrupted. Numerous serious animal diseases endemic to Namibia and its neighbors have been controlled in the past through vaccination programs, quarantine programs, etc. Most of the technicians responsible for these programs are employees of the South African government who have been seconded to Namibia. With independence, it is likely that they will be withdrawn. Unless replaced with veterinarians from other sources, the livestock industry will be endangered.

Similarly, contingency plans must be made to assure that herds are maintained and equipment protected in the event that the agricultural economy is severely disrupted by the departure of white managers and owners and the loss of markets. Arrangements must be made to assure continued payment of wages to workers, and efficient management of farms, during the interim between independence and reorganization of the sector. Finally, such semi-public functions as breeding records and registration must be continued in order to protect the purity of the herds. Contingency plans for protecting existing records and continuing these services are essential.

3. Maintenance of Services. A major problem in the maintenance of services will be the loss of individuals with critical skills necessary to the functioning of agriculture. Undoubtedly, South Africans and others committed to a racist or colonialist society will depart voluntarily or will be asked to leave. Few black Namibians have been able to obtain education and these will certainly be appointed to major policy and administrative positions. In the short run,

therefore, Namibia will continue to depend on resident whites and expatriates for most of its professional and skilled agricultural manpower. The Namibian government will probably encourage individuals with these skills to stay in the country so long as they are willing to cooperate with the new government and are willing to accept the new social, political, and economic structures created by that government. In order to encourage them to remain in Namibia, they must be provided economic incentives and physical security. Supplementation of specific critical skill areas through the provision of foreign specialists under various international technical assistance programs will likely be required. This should be coupled with a crash program to develop a pool of trained Namibians who can eventually replace the foreign specialists.

I. Long-Run Needs for Agricultural Development in Namibia

The natural, structural, and socio-economic constraints to agricultural development in Namibia will not be significantly altered by independence. Although independence and elimination of the colonially imposed constraints will create an agricultural economy which will be more equitable, and which ultimately may more efficiently allocate resources, its fundamental structure can not be changed. This structure results not from colonialism but from the other sets of constraints. A livestock producing, export economy will continue to exist in southern Namibia simply because there are no viable alternatives for the use of this land. Low rainfall and lack of sufficient ground and surface water renders a crop-based agriculture infeasible. Since this region can produce more livestock and animal products than can be consumed domestically, a large proportion of the annual output must be exported. At the same time, food and feed supplies must be imported from other regions of the country or from other countries. Thus, a major goal of independent Namibia will be to maintain and improve the productive capacity of the beef and karakul industries of southern Namibia.

Maintenance and strengthening of the livestock industry will entail:

a) Breeding programs to increase the rate of gain of beef cattle and to increase the proportion of light colored karakul pelts which are showing increased demand in the international market.

b) Investigating the feasibility of developing new markets for beef in Europe and North and South America.

c) Investigating the feasibility of expanding domestic cattle slaughter and processing facilities for producing chilled, frozen, and/or canned products for export.

d) Investigating the feasibility of developing karakul pelt processing facilities in Namibia and exporting pelts directly to markets in Europe, and possibly other areas.

e) Continuing and expanding research programs on pastures, including work on carrying capacities, grazing systems, and pasture improvement.

f) Establishing training programs in beef and karakul herd management, breeding, and marketing.

Just as southern Namibia will remain a livestock producing area, the north will continue to produce a combination of livestock and crops. However, because the North has greater agricultural potential, is relatively less developed agriculturally, and has had limited investment, the needs and opportunities are greater in this region. It is here that any independent Namibian government is likely to emphasize the development of new agricultural programs.

The North will continue to be the major food crop producing region of the country. It already produces adequate quantities to be self-sufficient in most years, but because of the constraints noted above, has never achieved its full potential. It appears likely that with an appropriate agricultural development program the North could supply much of the food requirements of the entire nation. Thus, a major goal of an independent Namibia may be the creation of a commercial agricultural economy in Northern Namibia, both as a means of improving the welfare of the residents of that region and to provide food for the remainder of the country.

Achievement of this goal will require programs which include the following elements:

a) Expansion of available water systems for agricultural use, including the drilling of bore holes and the construction of major irrigation systems;

b) Research programs for developing appropriate varieties and management practices for existing crops, and for introducing and testing new crops;

c) Strengthening of existing government services (extension and veterinary programs) and establishing currently non-existent ones (agricultural credit);

d) Construction of a functional farm-to-market road system;

e) Design of a marketing system and construction of appropriate sales, processing, transportation, and storage facilities.

In addition to agricultural development, there may be opportunities for improving the incomes and providing employment to the rural population by establishing rural industries in Namibia. There is a need to initiate a program of research and analysis to determine the feasibility of establishing such industries as karakul pelt processing, leather tanning and processing, oil seed extraction, textiles, and kenaf processing. Through the establishment of such industries, rural incomes and employment may be increased substantially.

The continued growth and development of both agricultural regions is also dependent upon the development of various other central government services. These include agricultural education, agricultural planning, and agricultural data collection, processing, and analysis. In the past, to the extent that these services have existed, they have been provided by South Africa. The new government will have to assume responsibility for these functions in the future.

J. Needs for Foreign Economic Assistance[1/]

Implicit in the previous discussion are numerous specific assistance needs and potential projects. Some of these are discussed below.

1. Professional Manpower. With independence, some professional agriculturalists and veterinarians will leave Namibia. The actual number that departs will depend to a large extent upon the kind of relationship which exists between the South African and Namibian governments, the attitude of the Namibian government towards whites in general, and the economic organization and salary policies of the new government.

If relationships with the South African government are poor, South Africa will probably withdraw all of its employees currently seconded to Namibia. Other South African citizens will probably leave voluntarily. If the Namibian government pursues anti-white policies, most of the resident whites are likely to flee, including virtually all trained professional manpower in agriculture. Similarly, if the government adopts strongly socialist policies, including uncompensated expropriation of land, large numbers of whites are likely to leave. Finally, if the salaries of white government officials are substantially reduced in order to eliminate inequity in the wage structure, many are likely to seek employment outside of Namibia.

Ultimately, Namibia can replace departing expatriate professionals with Namibians, but because few have been trained to date, foreign assistance will be required in the interim period. In particular demand will be veterinarians, animal and plant scientists to operate research and training programs, and lower level agricultural administrators to help develop and direct extension, training, and research programs.

1/ It should be noted that a number of international organizations are already doing contingency planning designed to address the development needs of Namibia during the transition period. Among these are the U.N. Industrial Development Organization, the World Health Organization, the Inter-Governmental Maritime Consultative Organization, the International Atomic Energy Agency, the U.N. Food and Agriculture Organization, and the International Labor Organization.

2. Research. The primary focus to agricultural research programs in colonial Namibia has been to service the white-operated commercial livestock sector. In this respect, an effective domestic research activity has been carried on, and this effort has been back-stopped and supplemented by research institutions in South Africa. However, little effort has been made to develop research institutions designed to serve crop agriculture, particularly in the North.

Namibia has a very limited reservoir of research data and basic information upon which to draw. The basic parameters of the agricultural sector are unknown, or at least unpublished. A critical need is to mount the necessary surveys to determine the availability and current use patterns of the basic agricultural resources of the country. Among the highest priorities are:

soil surveys
hydrologic surveys
cadastral surveys
socio-economic surveys
rural labor surveys
agricultural input-output studies
cattle and livestock censuses
human nutrition studies

After these baseline data are collected and analyzed, programs to develop alternative cropping patterns and practices, livestock management systems, market potentials, etc. must be carried out.

Because of the lack of trained Namibians, any initial expansion in research activities will depend upon the availability of the services of expatriate scientists. Moreover, construction and equipping of research facilities is very costly, particularly in terms of foreign exchange. Hence, there will be need for substantial foreign economic and technical assistance in this area.

3. Education and Training. At the present time, Namibia has three institutions for training middle level agricultural technicians, with a combined capacity of producing 100-125 graduates per annum. This is clearly insufficient to meet Namibia's needs. Foreign assistance could play an important role in assisting to expand the facilities of

these schools and to upgrade their professional staffs.

It would be premature for Namibia to plan to build an agricultural university since there are insufficient numbers of Namibians to staff such an institution, and the long term needs for such an institution are unclear. However, Namibia must expand its core of professional agriculturalists, and one alternative for doing so is to join with Botswana and Swaziland in operating the University of Botswana and Swaziland. This would provide Namibians with ready access to an agricultural university. Another alternative would be to send Namibians to other African universities or to European and American universities. Foreign assistance is likely to be required to adequately fund either of these alternatives.

4. Irrigation and Water. A major priority of Namibia will certainly be to continue to develop her water resources. This will entail drilling additional bore holes, building of catchment ponds, and construction of dams and canals to harness boundary river waters. The cost, both in terms of financial resources and manpower, will be tremendous. There will be substantial need for international assistance in funding the planning and construction of these facilities and providing expatriate professional expertise. It will also require developing plans for water use throughout the region, including the contiguous areas of bordering countries.

5. Other Infrastructure. In order to develop its agricultural economy, Namibia will need farm-to-market roads, particularly in the north, market and storage facilities, housing for agricultural workers and their families, rural electrification systems, rural household and farm potable water systems, extension of railway lines to the north, rolling stock for the railways, etc. All of these will require assistance from international donors.

6. Agricultural Planning. Agricultural planning and data collection are currently carried out by South Africa. With independence, Namibia will have to provide these services, but will lack the professional manpower to do so. Technical assistance provided by international organizations could render a great service in helping to develop these areas.

Literature cited

Barclays Bank. Barclay's National Review (various years).

Barthold, Wolfgang Schneider. "Namibia's Economic Potential and Existing Ties with the Republic of South Africa" (Berlin: German Development Institute, undated, but published in either 1977 or 1978).

Crocker, Chester A. and Penelope Harland-Thunberg. Namibia at the Crossroads: Economic and Political Prospects (Washington, D.C.: Georgetown University Center for Strategic and International Studies) April, 1978.

Economist Unit, Quarterly Bulletin on Southern Africa, No. 3, July, 1976.

Kane-Berman, J. Contract Labour in South West Africa (Johannesburg: South African Institute of Race Relations) 1972.

Murray, R. "New Finds in Namibia Bring Uranium Bonanza" in New Africa Development, July, 1977.

Rensberg, W.C.J. van and D.A. Pretorius. South Africa's Strategic Minerals: Pieces on a Continental Chessboard (Johannesburg, 1977).

Republic of South Africa, Department of Foreign Affairs. South West Africa Survey 1967 (Pretoria, 1968).

Republic of South Africa, Department of Foreign Affairs. South West Africa Survey 1974 (Pretoria, 1975).

Republic of South Africa, Department of Labour. "Manpower Survey No. 9, All Industries and Occupations," April 30, 1971.

Republic of South Africa. Report of the Commission of Enquiry into South West African Affairs, R.P. No. 12/1964 (the Odendaal Report).

South West Africa Meat Trade Board. Annual Reports (various years).

Thomas, Wolfgang H. "Towards Acceptable Development Strategies for Independent Namibia" (draft report, November, 1977, mimeographed).

U.N. Department of Political Affairs, Trusteeship, and Decolonization. "Decolonization: Issue on Namibia," No. 9, December, 1977.

U.N. Economic Commission for Africa. "Summary of Economic Data: Namibia, 1973," Publication No. N75-9, December, 1974.

U.N. Food and Agriculture Organization. Namibia: A Preliminary Note Towards a Country Development Brief (March, 1976).

U.N. Food and Agriculture Organization. Project Proposals for the Nationhood Programme for Namibia, Rome, 1978.

U.N. General Assembly, Special Committee on the Situation with Regard to the Implementation of Independence to Colonial Countries and People. "Namibia: Working Paper Prepared by the Secretariat," A/AC 109/L, 9 February 1977.

U.N. International Labour Organization. Labour and Discrimination in Namibia (Geneva: I.L.O., 1977).

USAID Bureau for Africa, Southern Africa Task Force. Transition in Southern Africa--Namibia (prepared by Stephen C. Wilcox of Louis Berger, Inc., March, 1977).

Wellington, John H. South West Africa and Its Human Issues (Oxford: Clarendon Press, 1967).