

NetWise

Overview of Four Northern Regions of Namibia

Ohangwena, Omusati, Oshana And Oshikoto

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August, 1997

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NORTH-CENTRAL REGIONS OF NAMIBIA

Introduction

The Northern-Central part of the Republic of Namibia has been comparatively neglected in terms of social, agriculture, economic and infrastructure development. This is mainly the result of the prolonged-armed struggle that took place in the region before Namibia gained independence. Currently, many of Namibia's decision-makers are originally from those regions although many were in exile in areas with higher rainfall and associated productivity. Educational materials and other information sources available to people in Namibia are mainly from countries with higher rainfall. As a consequence there is little appreciation or understanding, on the part of the decision-makers, of the realities of living in a naturally arid environment. Moreover, with independence people had great expectations of improved livelihoods and government has reinforced these expectations. Because of inappropriate policies, regulations and institutional structures, the local population, while understanding the environmental problems, does not have adequate tools or framework to satisfactorily manage their resources.

Namibia's Programme to Combat Desertification (NAPCOD) is a partnership programme involving the Ministry of Environment and Tourism, the Ministry of Agriculture, Water and Rural Development and an NGO, the Desert Research Foundation of Namibia (DRFN). The programme is active on national, regional and local level within Namibia. On the local levels NAPCOD is concentrating its activity in communal, small-stock farming areas in the west, southern Kunene Region (former Damaraland), and in the mixed crop and large-stock farming areas in the north-Ohangwena, Omusati, Oshana, and Oshikoto Region (former Owamboland). This review highlights the status of the natural resources, population distribution, water, agriculture and social aspects on a regional basis.

OHANGWENA REGION

Boundaries description

The boundaries of the Ohangwena Region are as follows. Beginning, at the a point in the middle of the Shakambebe oshana on the international border between Namibia and Angola proceed eastwards along the border to longitude 18° E, and southwards along the Meridian to a point at latitude $17^{\circ} 45'$ S. Thence, proceed in straight line at grid direction 89° to the middle of the new Okongo-Okankolo road. From there proceed in the general north-east to the south-west direction along the middle of the said road until it intersects a line between the church at Okankolo to a point at latitude $17^{\circ} 41' 29''$ S and longitude 16° E. From this point of intersection proceed in a straight line in an approximate northwesterly direction to the point with the said geographical co-ordinates; thence approximately westwards in a straight line to the point in the middle of the Shakambebe

Oshana with approximately system 22/15 co-ordinates y-69500 and x-479000. From this point follow a general northerly direction along the middle of the said oshana to the point of beginning. (Delimitation Commission, 1991)

Rationale

Ohangwena Region includes former Oukwanyama district and a small portion of the northern part of Ondonga. The northern and western part of the region are the most populated of this essentially subsistence agricultural region in which small-scale mahangu cultivation and keeping of cattle form the predominant activities. Although the Region depends on rainfed mahangu agriculture, other crops can be established under intensive cultivation.

Ohangwena Region comprises an area of 10 582 km² with a perimeter of 599.09 km and is one of the most populated Regions in the north. It has a population of about 179,634 people of which 55.4% are women and 44.6% are men (Greifenstain, 1997). The population density varies from 0-5 people / km² in the eastern part of the Region to 25-50 people / km² in the west. The eastern part of the region possesses good grazing areas but the shortage of water and poor communication make it sparsely inhabited.

The Region consists of ten constituencies, each with a population of about 18 000. They are Ohangwena, Oshikango, Ongenga, Endola, Engela, Ondobe, Eenhana, Epembe, Omundaungilo and Okongo. Eenhana is the capital of the Region and recently proclaimed as a town, the first ever to be located in the woody vegetation area of the former Owamboland. Other main centers are Ohangwena, Omundaungilo and Okongo. There are about 29 villages in the Ohangwena Region and two hospitals: Engela and Eenhana Hospital, 19 clinics and 128 schools. The means of communication is very poor. The tarred road from Ondangwa to Oshikango is the only one of that kind, associated by gravel roads.

Rainfall and Water resources

The rainfall in Ohangwena region is variable. Engela was the only station that recorded rainfall data in the whole Ohangwena region. The amount of rainfall recorded at Engela Mission Station, from 1952/3 to 1980/3 shows high fluctuation of rainfall, with average rainfall of 599.4mm (Engela rainfall 1951-1981). The Ministry of Agriculture, Water and Rural Development (MAWRD) established Agricultural Development Centers (ADC) throughout the Region, which now also serve as weather stations.

The following table lists the new ADCs in the region with amount of rainfall for 1996/97 season.

ADC	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Total
Ongenga	*	*	*	*	*	*	*	*
Engela	0.0	33.5	31.0	140.0	117.5	92.2	18.0	431.2
Ongula	*	*	*	*	*	*	*	*
Endola	0.0	19.2	35.0	118.3	68.7	17.0	0.0	258.2
Ondobe	0.0	14.8	35.8	180.9	90.1	108.9	0.0	430.5
Enhana	0.3	41.7	108.0	152.0	142.0	58.0	0.0	502.0
Epembe	*	*	*	*	*	*	*	*
Omundaungilo	*	*	*	*	*	*	*	*
Okongo	5.5	84.9	105.4	303.2	209.7	95.8	0.0	804.7

*Note: * data not received/recorded*

The majority of people in the region depend on rainwater, which is retained by shallow pans (oshanas) during rain season. During the dry season they dig deep wells and shallow wells and extract water for domestic consumption as well as for their stock.

The permanent water in the region is supplied from Kunene river by the main system running from Ondangwa to Oshikango, called Ondangwa – Oshikango Component (figure 5.8). A number of pipelines branch off from this water in westerly and easterly directions. There are two main branches from Omafo ground level reservoir one to Eenhana in the east and the other to Omungwelume in the west. This layout is supplying water to an area of 3,880km², which is about 37% of the whole Region. The water is used by humans and livestock, as there is no irrigation practiced yet. People living in remote areas away from the main system walk very long distances to the water points. This makes some people move and settle closer to the permanent bulk water supply, which results into nuclear settlement along the pipeline leading to degradation of natural resources.

The Directorate of Rural Water Supply is now engaged in drilling boreholes to provide water to the people in rural areas. The boreholes seem to have environmental impacts, due to convergence of animals at one point (borehole), leading to overgrazing and degradation of natural resources. It is also found that domestic water consumption in remote areas is very low compared to the standard.

The Water Supply Project under the auspices of Diocese of Namibia drilled a number of boreholes in Ohangwena Region. Some of these boreholes have been misused due to lack of proper management and in some cases no Water Point Committee has yet been established.

The Water Supply and Sanitation Project in Ohangwena Region (WSSPOR) has been operating in the region since 1992. The project was prepared jointly by Namibian and

Finnish Governments, with an emphasis on sustainable technologies and approaches, community involvement and institutional and human resources development.

The project operates in an area of 3,880 km² comprising the western part of Ohangwena Region and includes the Constituencies of Ongenga, Endola, Ohangwena, Engela, Oshikango, Ondobe and Eenhana. The project has constructed 18 boreholes, 24 shallow wells with windlass and 27 shallow wells with handpump. But, only 48 Water Point Committees (WPC) were established amongst 69 water points (Water Supply and Sanitation Project, 1995 (Draft))

In the fifties and early sixties, the building of excavation dams by the Department of Water Affairs was initiated to provide surface water to the people. The Dams were built in the following villages: Okalongo, Okambebe, Ohandjombali, Opepela, Omhedi, Onangwe, Oukalala, Oshuli, Omakango, Eenhana, Enghandja, Onakalunga, Oninve and at Okongo. This practice was discontinued without a clear alternative policy being formulated. The following points could be the possible reasons for this:

- Due to flat nature of the terrain, no sites for major impoundments could be identified, due to establishment of the homesteads.
- The fencing around the dam basins has been removed, and cattle have free access to the dams so that there is a risk of water contamination.
- The lack of interest in maintenance may have resulted from the availability of potable water from the pipe water supply network, just in some areas.
- According to the available information, which is to some extent contradictory, there may be some drought years with no or little flow in the dams. The Oshanas would then receive water only from the local rainfall and runoff, and dams of insignificant size would then not fill up.
- Some of the excavation dams have partly or completely silted up, and the removal of the cohesive sediment, which is a difficult undertaking in the moist condition, has never been carried out in a systematic way.

The main role these dams still have is the supply of water for stock drinking and for human consumption when no other sources are available. Even in the present conditions the augmentation of the water supply need to be promoted with specific merit, especially in areas where neither pipelines nor boreholes provide an adequate water supply (Department of Water Affairs, 1991).

Vegetation

The vegetation of the Ohangwena Region can be broadly classified according to two physiographic regions, namely the Oshigambo-Niipele Drainage Basin in the west and the Kalahari to the east. The western half of the region is mainly covered by palm savanna. It is characterized by open grassy drainage depressions lined by Makalani palms with mopane trees and shrubs dominating on higher ground. The Kalahari's vegetation is

mostly dry woodland on the deep aeolian sand. Acacia species are dominant and scattered with *Lonchocarpus nelsii*, *Boscia albitrunca*, *Terminaria prunoides* and *Combretum species*.

Large areas of natural vegetation have been cleared for cultivation and most of the trees have been cut for building and fencing looming material, leading to severe deforestation. Desertification is a definite hazard over part of the region. No proclaimed conservation areas exist in the region. Because of high human population and heavy hunting pressure, few large mammals and only small population of antelope survive and occasionally move through the east of the region. However, the community of Okongo Constituency has proposed a "forest conservancy" located 49km east of urban settlement Okongo, with Angola -Namibia border to the north and the Okavango Region to the east. The size of the proposed area is about 750km².

OMUSATI REGION

Boundary description

Omusati region begins at beacon 5 on the Namibia /Angola borders and proceeds eastward to the point where the Shakambebe Oshana crosses the border. Thence follow the middle of the said Oshana in the general southerly direction to a point with approximately co-ordinates y-69500 and x-479000 on system 22/15. Thence, proceeds in a straight line in an approximate south-westerly direction to a point in the middle of the Etaka -Oshana at latitude 18° 02' S. It then goes in a general south-easterly direction along the middle of the said oshana to its intersection with a north-south road near Uuvudhiya water point. Proceed then in a general southerly direction along the road to the northern boundary of the Etosha National Park, thence in a general westerly direction along the said boundary to the north-western corner of the park. Then follow straight-line northwards to the point of beginning.

Rationale

Omusati Region includes the existing Kolonkadi, Kwaluudi, Ombalantu, Ongandjera and small portion of the western Oukwanjama. The northern part of this region is far more densely populated than the south, where the grazing is of poor quality and the water generally saline. This is predominantly an agricultural region in which mahangu is cultivated successfully. Non-agricultural employment opportunities will need to be created, however. Potential for this does exist with the availability of some water from the canal and the expansion of the electricity grid to Ombalantu and surrounding settlements.

Omusati Region comprises an area of 13 637 km² with a perimeter of 526.79km. It has a population of about 189 919 people all living in rural areas of which 54% are women and 44% are men. Population density is 13.92 people/km². Mopane tree is the dominant species, Makalani palms decrease rapidly westwards from the border with Oshana. The

change in vegetation type reflects ecological conditions forming a natural boundary between the two regions (Grifenstein, 1997).

The Region consists of nine constituencies, each with a population between 17 000 to 18 000 people. They are Onesi, Tsandi, Uutapi, Anamulenge, Ogongo, Okalongo, Oshikuku, Elim and Okahao. Uutapi is a capital of the Region and is now proclaimed a town, other main centres are Tsandi, Nakayale and Anamulenge. There are 35 villages in the Omusati Region served by four hospitals (Oshikuku, Uukwaluudi, Okahao, Kamaku) and 15 clinics. There are also eleven health care centres (11) including Nakayale Sanatorium. There are seven secondary schools and 111 primary schools in the region.

Rainfall and Water Situation

Rainfall data in the Omusati Region has been recorded since 1941/2 rain seasons at Ombalantu Missionary Station and Oshikuku, as well as at Ogongo Agriculture College which started in 1975/6 rain seasons. The data shows highly variable distribution of rainfall from place to place (rainfall chart of Ombalantu, Ogongo and Oshikuku). The average rainfall at Ombalantu is 432.1mm, Ogongo is 380.0mm and 506.4mm at Oshikuku. The Ministry of Agriculture, Water and Rural Development established nine Agricultural Development Centres (ADC) throughout the Region, which serve to intensify agricultural activities and record rainfall data for future planning. The following tables are the new ADCs with the amount of rainfall recorded during 1996/7 rain seasons.

ADC	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Total
Etayi	0.0	21.2	28.0	14.0	195.9	48.0	0.0	307.1
Okalongo	0.0	52.4	18.2	110.4	151.3	165.3	0.0	497.6
Outapi	0.0	10.8	14.0	79.8	144.5	126.0	0.0	375.1
Eunda	0.0	13.5	6.5	127.5	148.4	108.0	0.0	403.9
Onesi	0.0	4.2	37.5	131.2	142.1	79.8	0.0	394.8
Tsandi	0.0	9.2	53.8	115.4	120.4	23.0	0.0	321.8
Okahao	0.0	2.0	50.0	101.5	61.0	146.0	0.0	360.5
Onaada	0.0	2.0	21.0	93.5	130.9	42.0	0.0	289.4
Oshikuku	0.0	7.0	23.8	109.8	121.0	80.0	0.0	341.6

In the past, the people of the Omusati region relied on ephemeral surface water and on open wells for their water supply, but neither of these sources are reported to have an adequate reliability in periods of drought. Since the early fifties development of the water supply has been initiated by different organizations using the various available sources. The Department of the Water Affairs Bulk Water Supply System (BWSS) built a canal to

carry water from Cunene River to the central areas of the former Owamboland. The main supply line runs from Calueque Dam to the purification works at Ogongo. This system gives people and livestock free access to water and enhances domestic water consumption to the people who live in the vicinity of the system. However, people remote from the canals walk long distances to get water from the canal. There are Pump Storage Dams and Excavation Dams in the Region. The following villages Tsandi, Ombalantu, Nakayale, Okahau, Onaanda, Elim and Oshikuku have pump storage dams while Okalongo and Kialeaana has excavation dam. However, more water points or pipelines are still needed in the Omusati Region to the enhance domestic water consumption, of poor rural people.

Vegetation

The vegetation of the Omusati Region can be broadly be classified according to four distinct regions. Firstly, the Etaka-Cuvelai Drainage Basin is located in the north. It is mainly covered by a palm savanna characterized by open grassy drainage depressions lined with Makalani palms with mopane trees and shrubs dominating on higher ground. Secondly, the Western Sandveld covers the greater western part of the Omusati Region. Mopane woodland and grassveld over the southern part becomes composite northwards towards Ruacana woodland. Mopane species are predominant over the whole area. Thirdly, the Ekuma Grassveld vegetation of the southeastern part consist of seasonally flooded grasslands with patches of acacia and mopane species, which increase in the south. Fourthly, the Kalkveld covers the extreme southeastern and northwest corners of the region respectively. The vegetation is open shrub savanna with good edible grass cover with variegated shrubs, mainly acacia and mopane species. The vegetation has been severely modified by man over the past century, with the rate of change having accelerated over the past two decades as a result of population pressure and consequently the growing numbers of domestic stock. The areas most affected are those supporting the highest concentrations of people, which are the area adjacent to the drainage channels, and along roads. Large areas of natural vegetation have been felled for building and fencing material, leading to severe deforestation. Probably the only factor that has prevented very serious degradation of the environment is the water of Efundja, which regenerates the environment in most years.

OSHANA REGION

Boundary description

The boundaries of the region are as follow: commencing at a point in the middle of the Shakambebe oshana with approximate co-ordinates on system Lo 22/15 of y-69500m and x-479000m proceed in a straight line in an approximately easterly direction to a point with geographical co-ordinates longitude 17° 41' 20" S and longitude 16° E, thence in a straight line southwards to the north-easterly corner beacon of the farm Ondangwa Town and Townland no.882 then still southwards along the farm boundary to the south - easterly beacon. From this beacon proceed due southwards in the straight line to

approximately latitude 18° 01'S where it running approximately southwest to northeast is reached. Thence follow the road north-eastwards for approximately two kilometers to a T-junction with a road running approximately north-south. From the road junction proceed in a general southerly, south –westerly and southerly direction along the middle of the road until an X co-ordinate of 4000000 on system 22/15 is attained. Thence proceed westwards in grid direction 90° to the middle of the Ekuma Oshana then follow the middle of the oshana in a general southerly direction to the northern boundary of the Etosha National Park. Continue in a general westerly, southerly and again westerly direction following the boundary of the park up to the eastern boundary of the Omusati Region. Thence proceed in a general northerly, northwesterly and northeasterly direction along the boundaries of the Omusati Region to the point of beginning (Delimitation Commission, 1991).

RATIONALE

Oshana Region includes Uukwambi, the south-western part of Oukwanyama and the north-western portion of Ondonga. The name Oshana lends itself well to this Region as it describes the most prominent landscape feature in the area, namely the shallow, seasonally inundated depressions which underpin the local agro-ecological system. The southern portion of the region is extensive Savannah plain stretching as far as the Etosha Pan, but salinity of soil and water render it unsuitable for grazing or cultivation purposes. The Oshakati-Ongwediva-Ondangwa complex has experienced urban growth in recent years and forms an important commercial and potential industrial focus. Oshana forms the second largest populated region in Namibia after Khomas (Windhoek), but because of its bantustan history, still lacks basic infrastructure, and most of the services and facilities normally found in urban areas.

The Region consists of nine constituencies, each with a population of about 18 000 people. They are Oshakati, Ongwediva, Okaku, Okatana, Ondangwa, Ompundja, Uukwiyu, Okatyali and Uuvudhiya constituency; they occupy surface area of 5291 km², and a perimetres of 338 km. The total population of Oshana region is estimated about 159 thousands of which 56.4% are women and 45.4% are men (Greifenstein, 1997). Oshakati is the capital of the Region and the biggest urban centre in the whole northern Region. Other main centres are Ondangwa and Ongwendiva. There are only eight villages in the Region and two hospitals (Oshakati and Okatana), supported by nine clinics and nine health care centres. Education level in the Oshana Region is the best compared to the other regions in the north central areas in Namibia. The region comprises of 55 primary schools and five secondary schools. There are also tertiary institutions such as Valombola Technical School, Eluwa Handicapped School and Ongwediva Teacher Training College.

Rainfall and Water Situations

The rainfall pattern in Oshana Region is similar to that of Omusati Region. Ondangwa is the oldest weather station in the whole, former Owamboland. It started recording rainfall data, temperature and evaporation since 1905/6 rains season. The amount of rainfall recorded at Ondangwa from 1905/6 to 1988/9 shows high fluctuation of rainfall, with average rainfall of 473.9mm (see chart). The Weather station at Oshakati has been

operating since 1967/8 rain season and it shows the average rainfall of about 402.8mm Mean monthly temperatures at Ondangwa ranges from 26.1° C in December to 17.5° C in July (Marsh and Seely, 1992). The Ministry of Agriculture, Water and Rural Development (MAWRD) established eight Agricultural Development Centers (ADC) throughout the region to promote agricultural activities in the region and serve as weather stations.

The following table lists the newly established ADCs in the Oshana Region with amount of rainfall for the year 1996/7 rain-season.

ADC	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Total
Uukwangula	0.0	8.5	19.1	154.0	188.0	90.0	0.0	459.6
Ongwediva	0.0	10.0	13.0	145.8	53.5	65.8	0.0	288.1
Okaku	0.0	0.0	23.5	164.9	92.5	144.5	0.0	425.4
Ondangwa	0.0	9.0	13.0	128.0	160.0	139.0	0.0	449.0
Ompundja	0.0	4.0	2.0	145.0	110.1	173.0	0.0	434.1
Uukwiyu	0.0	-	-	-	58.8	81.2	0.0	140.0
Okatyali	0.0	-	104.0	168.0	100.0	-	0.0	+372.0
Uuvudhiya	0.0	5.0	15.0	73.3	76.1	-	-	+169.4

Note: A + Precedes incomplete Figure and a – stand data note received/record

Vegetation

The vegetation of the Oshana Region is broadly classified according to three physiographic regions: The Cuvelai Drainage Basin is located over the entire northern half of the region and is mainly covered by a palm savanna. It is characterized by open grassy and drainage depressions lined by makalani palm with mopane trees and shrubs dominating on the higher ground. The Ekuma -Grassveld of the southern part of the region is predominantly covered by seasonally flooded grasslands with patches of acacia and mopane species, becoming more dense in the southwest. The Kalkveld covers the extreme southwestern corner of the region. The vegetation can be described as an open shrub savanna with a good edible grass cover with variegated shrubs, mainly acacia and mopane species. The natural vegetation been severely modified by man over the past century with the rate of change having accelerated over the two decades as a result of population pressure and consequently the growing number of domestic stock. The areas most affected are those supporting the highest concentration of people which are the areas adjacent to the drainage channels, e.g. the central area of the Cuvelai system. Large areas of natural vegetation have been cleared for cultivation and most of the surviving trees in these areas face a looming hazard. Probably the only factor that has prevented a

very serious degradation of the environment is the waters of Efundja, which regenerate the environment in some years. The water of Efundja is essential for the recharging of fresh water aquifers, rejuvenating the pastures in the multitude of the drainage depressions and brings down fish from Angola.

OSHIKOTO REGION

Boundary description

The Region comprises the 1979 Magisterial District of Tsumeb, excluding that part thereof falling within the borders of the Etosha National Park, and that part of former Owamboland which lies west of Longitude 18° E. It is bounded on the west by the Oshana Region, and on the north by the Ohangwena Region and on the South by the Kunene Region.

Rationale

The region comprises the remainder of Ondonga and the existing magisterial district of Tsumeb. The northern part of the Region is dominated by agriculture, where omahangu is the principal crop, while the main economic activities in the southern part are cattle rearing *eg.* Mangetti cattle farms and mining in Tsumeb district. The region comprises an area of 26 607 km² with a perimeter of 914.14 km. The population is estimated at about 176 000 people of which 48.1% are men and 51.9% are women. Population density is 4.8 people / km² and rural population makes up 87% of total population.

The Oshikoto Region consists of ten constituencies, each with a population between 15 000 to 20 000 people. They are Oniipa, Onayena, Olukonda, Omuntele, Okatope, Okankolo, Omuthiyagwiipundi, Engodi, Guines and Oshikoto constituency. Tsumeb is the capital of the Region, and only urban centre with normal municipality services in the four northern regions. There are 14 villages in the Oshikoto Region served by two hospitals (Tsumeb and Onandjokwe hospitals) and seven clinics, 65 primary schools and two secondary schools (Delimitation Commission, 1991).

Rainfall and Water Situation

The historical rainfall data available for the Oshikoto Region, recorded at Oshigambo and Tsumeb Weather Stations do not give an accurate rainfall distribution pattern within the region, due to the large distance between the two stations. The amount of rainfall recorded at Oshigambo Mission Station as from 1939/40 to 1992/2 rain seasons differ from year to year with the average rainfall of about 436.9mm. Tsumeb which is more than two hundreds kilometers away from Oshigambo has been recording rainfall data since 1911/2 rain season. The mean rainfall at Tsumeb from 1911/2 to 1996/7 is 507.5mm (See Chart). The Ministry of Agriculture, Water and Rural Development established seven new weather stations within the Region.

The following table lists the old and new weather station in the Oshikoto Region, with amount of rainfall for 1996/7 rain-season.

ADC	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Total
Oshigambo	0.0	21.1	-	189.2	62.4	196.0	0.0	468.8
Tsumeb	0.0	42.3	113.0	158.5	85.8	-	-	+399.6
Onayena	0.0	20.3	81.0	215.0	112.7	228.1	0.0	657.1
Onankali	0.0	48.8	68.6	258.4	193.9	175.3	0.0	745.0
Omuntele	0.0	-	70.0	16.8	140.2	149.0	0.0	+376
Okashana	0.0	64.5	103.5	319.0	73.2	84.0	0.0	644.0
Onyuulaye	0.0	-	78.0	187.0	138.8	-	-	403.8
Okankolo	-	80.0	211.5	-	-	-	-	+291.5
Okapya	0.0	58.0	100.0	177.0	129.0	42.0	0.0	506.0

Note: A + precedes incomplete figure and a – stands for data not received/ recorded

Vegetation

Oshikoto Region is one of the most vegetated regions in the central northern Namibia. The vegetation can be classified into five groups according to physiographic regions. The Oshogambo Niipele Drainage Basin is located over the northwestern corner of the region. It is mainly covered by palm savanna (Makalani palms) that line open grassy drainage depressions, while higher ground is dominated by mopane trees and shrubs.

The Ekuma Grassveld of the extremely flat southwestern part is seasonally flooded and consists of grasslands with patches of acacia and mopane shrubs and trees. To the east, the Kalahari is physiographically predominant. Its vegetation is characterized by dry woodland that changes to a dry bush savanna on the longitudinal dunes.

The Kalkveld covers the great part east of the Etosha Pan between the Omulamba Owambo and Karstland. The vegetation could be described as mopane-acacia-savanna. The Karstland accommodates the only mountain savanna of Namibia. It is dominated by mopane and acacia species. The mountain slopes are densely vegetated with trees and shrubs while the plains are covered by with edible grass species.

Over the past two decades population and domestic stock growth have adversely affected the vegetation especially in areas adjacent to the main trunk road in the north. Large areas

of natural vegetation have been cleared for cultivation and most of the trees have been cut down for building and fencing material, leading to severe deforestation. Selective grazing has led to bush encroachment on commercial farmland – an environmental issue that needs to be addressed.

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