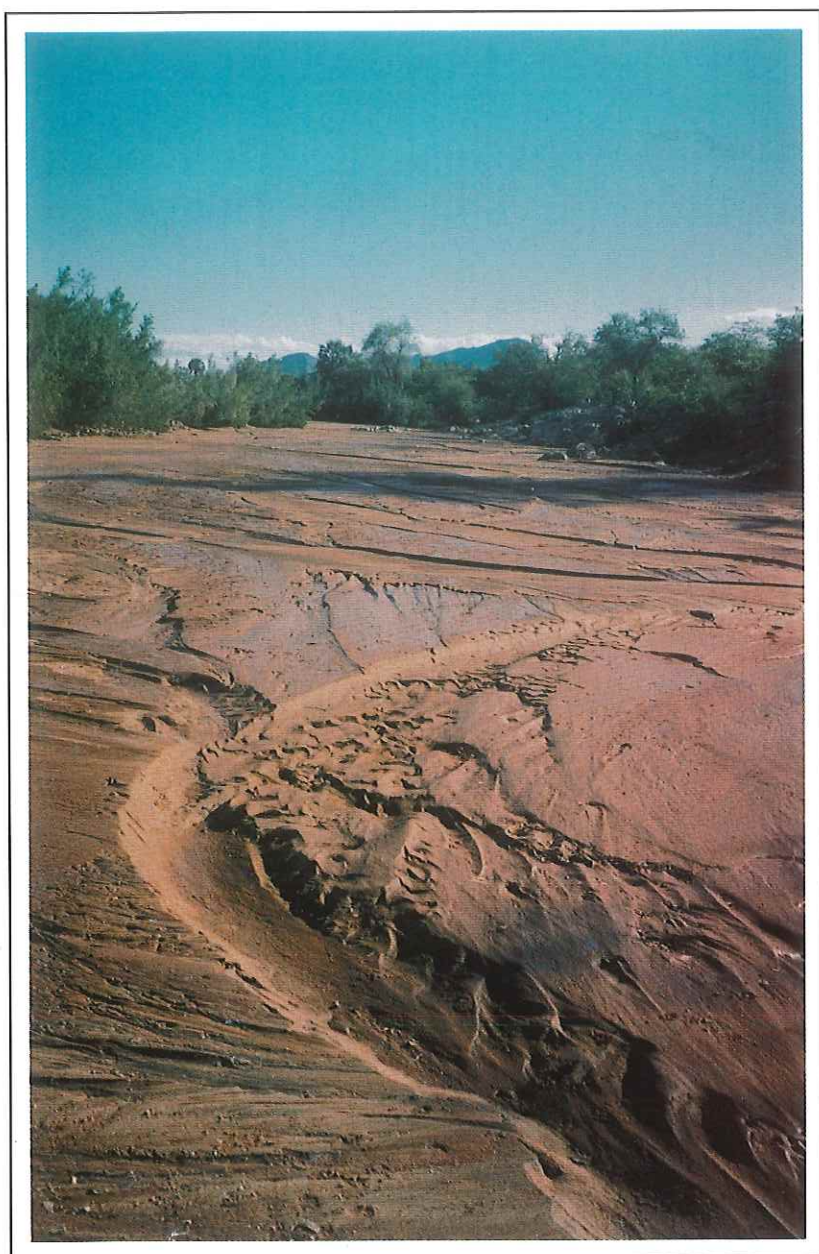




REPUBLIC OF NAMIBIA

MINISTRY OF AGRICULTURE, WATER AND RURAL DEVELOPMENT

FARMING SYSTEMS IN KUNENE NORTH A RESOURCE BOOK



Philippe TALAVERA
Julius KATJIMUNE
Andreas MBINGA
Carol VERMEULEN
Gerhard MOUTON

A major literature review initiated by the Kunene North Farming System Research and Extension Unit
August 2000



NOTE FROM THE AUTHORS

In a meeting held in Otjiwarango in June 2000 and attended by the Deputy Director of the Directorate of Extension and Engineering Services for the North West Division and the Deputy Director Livestock for the Directorate of Agricultural Research and Training (both within the Ministry of Agriculture, Water and Rural Development), decision was taken to undertake a major literature review in Kunene North in order to ascertain the information available.

The Kunene North Farming System Research and Extension Unit has been given the task to carry out the exercise, under the guidance of Dr TALAVERA.

The farming system comprises of all activities carried out at the farm level under the responsibility of one individual (farmer) or a group of individuals (homestead members). The farming system is obviously influenced by off-farm activities (social environment, off-farm inputs, markets, agro-ecological environment, etc.)

In order to understand the farming systems in Kunene North all documents available at the time of the review and related to the production systems, the agro-ecological environment and the socio-economic environment have been studied. 86 documents, 3586 pages and all annexes have been read through. All information regarding Kunene North has been extracted and compiled into a comprehensive resource book.

Some of the documents used have been written prior to independence and refer to Kunene North as Kaokoland, North Central Division as Owamboland and Opuwo as Ohopoho. It has been our choice to respect those authors and to keep the terminology that was in use at that time.

Furthermore, many authors have indicated the Otjiherero translation of important words referring to traditional ceremonies, plant species, characteristics of animals. Otjiherero names appear in this resource book between quotation marks.

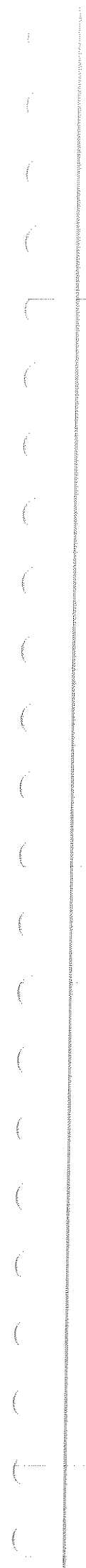
The ideas and opinion expressed in this resource book do not necessarily reflect the ideas and opinion of either the authors or the Ministry of Agriculture, Water and Rural Development. They are, however, the true reflection of the work done by previous authors and have been respected as such.

Such exercise is by nature never complete. For instance the authors knew about other references linked to work done in the region, but were not in a position to obtain them on time for the study. Furthermore, mainly document related to Kunene North have been scrutinised. Some more general information from other Northern Communal Areas, from Namibia or from other countries also valid under the regional context have not been gathered.

Besides, such exercise can never meet everybody's approval. Some readers will find that too much information has been gathered. Others, on the other hand, would have liked to read more detailed chapters.

However, we do hope that most of the readers will enjoy going through the document and will find valuable material for further work and studies in the region.

The Authors.



The authors wishes to thank

The Northern Regions Livestock Development Project (Ministry of Agriculture, Water and Rural Development) that has made the printing of this document possible,

The Deputy Directors of Extension and Engineering Services, North West Division and Agricultural Research and Training, Livestock Division, for trusting us and giving us the task to undertake such work

All persons in the various Ministries who have helped us gathering documents in order to prepare such resource book.

To all of you, we are most thankful.

Picture front cover: Philippe TALAVERA. The Hoarusib River after the rains.

Picture back cover: Philippe TALAVERA. A young OvaHimba girl around Okangwati.

Document printed in Windhoek, August 2000.

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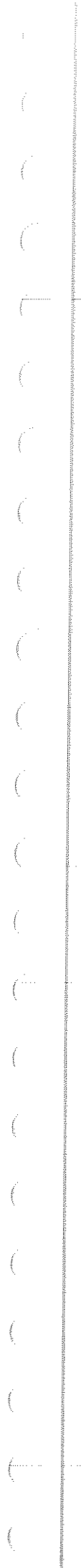


TABLE OF CONTENT

Introduction	1
CHAPTER ONE: WHAT IS KUNENE NORTH?	2
SECTION 1: Kunene Region and Kunene North	3
1. The Kaokoveld	3
2. The Kaokoland	3
3. The Kunene Region	4
4. Kunene North	4
SECTION 2: History	6
1. International and National key events – Period 1884 to 1991	6
2. Events linked to Kunene Region	7
3. Story within the history: the Omakange village	12
4. Story within the history: the Omuramba South village	12
SECTION 3: Infrastructures in Kunene North	14
1. Ministries and government organisations	14
1.1. Ministry of Foreign Affairs, Information and Broadcasting	14
1.2. Ministry of Regional and Local Government and Housing	14
1.2.1. Kunene Regional Council	14
1.2.2. Town Council	14
1.2.3. Community Development Centre	14
1.3. Ministry of Lands, Resettlement and Rehabilitation	15
1.4. Ministry of Trade and Industry	15
1.5. Ministry of Works, Transport and Communication	15
1.5.1. Government Garage	15
1.5.2. Directorate of Works Maintenance	15
1.6. Ministry of Justice	15
1.7. Ministry of Home Affairs	15
1.7.1. Department of Civic Affairs	15
1.7.2. Namibian Police	16
1.8. Ministry of Women Affairs and Child Welfare	16
1.9. Ministry of Environment and Tourism	16
1.9.1. Directorate of Forestry	16
1.9.2. Directorate of Resource Management	16
1.10. Ministry of Basic Education, Sport and Culture	16
1.10.1. Directorate of Sport	16
1.10.2. Directorate of Youth Development	17
1.10.3. Primary Schools	17
1.10.4. Teacher Resource Centre	18
1.10.5. Secondary Schools	18
1.11. Ministry of Agriculture, Water and Rural Development	19
1.11.1. Directorate of Veterinary Services	19
1.11.2. Directorate of Rural Water Supply	19
1.11.3. Directorate of Extension and Engineering Services	19

1.11.4. Directorate of Agricultural Research and Training	20
1.12. Ministry of Health and Social Services	20
1.12.1. Primary Health care Outreach Services	20
1.12.2. Clinics	20
1.12.3. Section: Social Welfare Services Opuwo	20
1.12.4. Section: District Hospital Opuwo (Opuwo State Hospital)	21
2. Non-Governmental Organisations	21
3. Community-based Organisations	22
3.1. Conservancy Committees	22
3.2. Water point Committees	23
3.3. Farmers Unions and Farmers Organisations	23
3.4. The Kaoko-Epupa Development Foundation	23
4. Other infrastructures in Kunene North	24
4.1. Electricity supply	24
4.2. Postal and telephone services	24
4.3. Shops and banks	24
4.4. Roads	24
4.5. Quarantine camps	25
5. Infrastructures in some communities	25
5.1. Ohandungu community	25
5.2. Otuari community	26
5.3. Omuhonga community	26
5.4. Enyandi community	26
SECTION 4: Policies and incentives in Kunene North	27
1. The Regional Councils Act of 1992	27
2. Sectoral policies and legislation of importance for Kunene North	27
3. The drought policy	28
4. The land reform	28
5. North-South incentive scheme	29
SECTION 5: Demographics	30
1. Population census in Kunene Region	30
1.1. Distribution of population per constituency	30
1.2. Distribution of population per sex and origin	31
1.3. Distribution of population per age group	31
2. Population census in Kunene North	32
3. The OvaHimba population	32
3.1. Population distribution per community	32
3.2. Population distribution per age group	36
4. The Epupa Basin	37
5. The Etanga area	38
SECTION 6: Agriculture in Namibia	40
CHAPTER 2: THE SOCIAL ENVIRONMENT	42
SECTION 7: Cultural groups	43
1. The Himba group	43
2. The Herero group	43
3. The Tjimba group or Tjimba-Tjimba group	43
4. The Tjimba-Herero group	44
5. The Ndamuranda group	44
6. The Zemba group	44
7. The Hakaona group	45

8. The Thwa group	45
9. The Owambo group	45
10. Other cultural groups	46
SECTION 8: The double descent	47
SECTION 9: the Matriclan	48
1. The “eanda” or matriclan	48
2. The origin of the genealogy	49
3. The “omuhoko” or kinsmen	50
4. The roles of the matriclan	50
4.1. Control of properties	50
4.2. Marriage	51
5. The adoption system	51
6. Religious activities linked to the matriclan	52
SECTION 10: the Patriclan	53
1. The various patriclans and their taboos	53
2. The patrilineage	55
3. The adoption system	55
4. Religious activities linked to the patriclan	56
4.1. The five generations involved	56
4.2. The patrilocality and the “okuruwo”	56
4.3. The way to god	57
4.4. Situations in which religious ceremonies are performed	57
4.5. The “okaue”	58
4.6. Roles and responsibilities of the other members of the “oruzo”	58
5. Naming of children	59
6. Relations between the heir and his matrilineal deceased	59
SECTION 11: Ownership and Inheritance	60
1. Ownership	60
2. Inheritance	60
2.1. The majority of cattle and other possessions	60
2.2. The sacred cattle	61
2.2.1. The “ozongombe ozomwaha zoviruru”	61
2.2.2. The “ozondumehupa”	61
2.3. A synopsis of the heritage system	62
SECTION 12: Political systems	64
1. Political authorities before the South Africa Government	64
2. Headmen under the South Africa Government	65
2.1. Creation of the Headmen system	65
2.2. The Headmen Council	65
3. The situation today	65
3.1. The senior Headman	66
3.2. The Headman	66
3.3. The traditional Councillor	67
3.4. Congregation of people	67
3.5. The regional and central authorities	67
4. Central power versus traditional power: the case of the Himba group	67
5. The Headmen at different time	68
5.1. Headmen and sub-headmen in 1951	68
5.2. Headmen in 1976	69
5.3. Headmen and senior headmen in 1996	70

SECTION 13: Organisation of Communities	72
1. Importance of the group	72
2. Role of the “owner of the land” or “omuni wehi”	72
3. Role of men and women	73
4. The “ovahona” and the “ovasyona”	74
5. The household in the community	74
SECTION 14: Housing and organisation of the household	76
1. The hut or “ondjuwo”	76
2. The kraal or household or “onganda”	77
2.1. The size of the household	77
2.2. The main hut or “otjizero”	78
2.3. The other huts	78
2.4. The division of space in the “onganda”	78
2.5. The case of homesteads with two kraals	79
3. The establishment of a new settlement	79
4. Settlements at the cattle post	80
SECTION 15: Main cultural traditions and beliefs	81
1. Physical appearance and dresses	81
1.1. Amputation of the middle incisors	81
1.2. Himba and Tjimba dresses	81
1.3. Herero dresses	82
1.4. Hakaona and Zemba dresses	82
2. Handicraft and utensils	82
3. The marriage in the tradition	82
4. The livestock in the tradition	83
5. Death in the tradition	83
5.1. The “okupirika” or mourning practices	83
5.2. Graves and grave yards	84
5.3. The “ombindi”	86
6. Medicine in the tradition	87
7. Impact of the Christian religion over the traditional beliefs	87
CHAPTER 3: THE AGRO-ECOLOGICAL ENVIRONMENT	88
SECTION 16: Climate, rainfall, precipitation and evaporation	89
1. Climate	89
2. Temperature	89
3. Prevailing winds	89
4. Rainfall	90
4.1. Isohyetal maps in Kunene North	90
4.2. Kunene North, a drought prone area	91
4.3. Rainfall records in Opuwo – 1941 to 1948	91
4.4. Rainfall records in Sesfontein and Opuwo – 1952 to 1990	92
4.5. The rainy season 1999/2000 in Opuwo	93
4.6. Monthly mean rainfall in Sesfontein	94
4.7. Rainfall and erosivity	94
5. Humidity	95
6. Evaporation	95
SECTION 17: Geology	96
1. The tertiary period	96
2. Major geographical features	97

2.1. The basement complex	97
2.2. The Kunene Basic complex	97
2.3. The Nosib-Mulden Episode	97
2.3.1. The Nosib group	97
2.3.2. The Otavi group	98
2.3.3. The Damara group	98
2.3.4. The Mulden group	98
2.4. The Karoo group	98
2.4.1. The Dwyka Formation	98
2.4.2. The Stormberg Formation	98
2.5. The Kalahari beds	98
3. Geological stratigraphy in Kaokoland	99
SECTION 18: Topography	100
1. The two main topographic regions	100
1.1. The interior Highlands	100
1.1.1. The Eastern Sandveld	101
1.1.2. The Highlands in the North	101
1.1.3. The Southern dolomite hills	101
1.2. The escarpment ranges and the western or pro-Namib plains	102
2. The six main land types in the Region	102
2.1. The Mountainous areas	102
2.2. The plateau region	103
2.3. The riverine and lacustrine areas	103
2.4. The coastal desert	103
2.5. The Karst area	103
2.6. The Etosha region	103
3. Topography of the Ohandungu area	104
SECTION 19: Soils and rocks	105
1. Soil formation in Kunene North	105
2. Description of soil types	105
2.1. General characteristics	105
2.2. Soil types in the rainfall area of 150 to 300 mm per annum	106
2.3. Soil types in the rainfall area of less than 150 mm per annum	107
3. Local classification of soil types	107
4. Mineral and semi-precious stones content of the soils in Kunene North	108
5. Soil erosion	108
SECTION 20: Rivers and catchments	110
1. The perennial rivers	110
2. The three major ephemeral rivers	110
2.1. The ephemeral Khumib river	111
2.2. The ephemeral Hoarusib river	111
2.3. The ephemeral Hoanib river	111
3. Other catchment systems and rivers	111
SECTION 21: Agro-ecological zones in Kunene North	113
SECTION 22: Land suitability and indigenous use of land units	114
1. Theoretical agricultural suitability of the various agro-ecological zones	114
2. Adaptation of the pastoral group to the environment	115
3. Some specific examples	115
3.1. Indigenous use of land units in Ohandungu	116
3.2. Indigenous use of land units in Enyandi	116

3.3. Indigenous use of land units in Otvani	117
3.4. Indigenous use of land units in Ouozonduombe	117
3.5. Suitability of some areas according to Page	117
SECTION 23: The use of trees in Kunene North	118
1. Main use of trees in Kunene North	118
2. Firewood collection	118
3. Veld fires	119
SECTION 24: Wildlife	120
1. Wildlife species and numbers	120
1.1. The wildlife before 1969	120
1.2. The game counts in 1966 and 1975	121
1.3. The decline at the beginning of the 1980s'	121
1.4. The elephant count in 1991	122
2. Wildlife areas and conservancies	122
CHAPTER 4: THE ENVIRONMENT IN A LIVESTOCK PRODUCTION SYSTEM PERSPECTIVE	124
SECTION 25: Pastures	125
1. Grazing areas in Kunene North	125
2. Perennial and annual species	126
2.1. Perennial species	126
2.2. The decline in the perennial species	126
2.3. The annual species	127
3. The theory of plant succession	127
3.1. From climax to pioneer species	127
3.2. Plants in Kunene North belonging to the pioneer stage	128
3.3. Plants in Kunene North belonging to the climax stage	128
4. Pastoral-ecological zones in Etanga	129
4.1. The "omundjandu"	129
4.1.1. The Etanga River	129
4.1.2. The Okamanga Mountain	129
4.1.3. The "omiramba"	130
4.2. The "oukoto"	130
4.2.1. The "okaanga"	130
4.2.2. The "ozongoto"	130
4.2.3. The "oviana"	130
5. Rangeland degradation	131
6. Grasses as indicator of soil types	131
SECTION 26: Movement of livestock and management of cattle posts	133
1. The risk minimising strategies	133
1.1. Mobility of the herds	133
1.2. Cattle and small stock are managed separately	134
1.3. Splitting up of the cattle herds	134
1.4. Case of the small stock	134
1.5. The use of cattle posts	134
1.6. Control of stock numbers	135
1.7. The existence of restricted grazing areas	135
2. The role of the community	136
2.1. The grazing Committee	136
2.2. The absence of a central authority	136
3. Management strategy in Etanga	137

3.1. Objective of the strategy	137
3.2. Seasonal movement of the herds	137
3.3. Maximising the use of resources	138
4. Management strategy in Ohandungu	139
4.1. A dual system	139
4.2. The cattle posts used by the Ohandungu community	139
4.3. The case of Okozondjiwo ine and Otjikuzu cattle posts	139
5. Management strategy in Ouozonduuombe	140
6. Management strategy in Purros	140
7. Management of small stock	140
SECTION 27: Nomadism or not?	141
1. Definition	141
1.1. Pastoralism and agro-pastoralism	141
1.2. Nomadism, semi-nomadism and sedentarism	141
2. The situation in Kunene North	142
2.1. The nomadism system at the beginning of the century	142
2.2. The sedentarisation of the populations	142
2.2.1. The trend observed in the 1970s'	142
2.2.2. The Herero group	143
2.2.3. The OvaHimba group	143
3. Conclusion	144
SECTION 28: Water resources, use and development	145
1. Surface water	145
1.1. Rivers and pools	145
1.2. Dams and Earth-dams	146
1.3. Springs	146
1.4. Quality of the surface water	147
1.5. Management of the surface water	147
2. Ground water	147
2.1. Boreholes	147
2.2. Maintenance of the ground water	148
3. Specific examples	148
3.1. Case of Otvani	148
3.1.1. Capacity and use of the borehole	149
3.1.2. Capacity and use of the Okatumba dam	149
3.1.3. Capacity and use of the Omuhinarindi dam	149
3.2. Case of Ouozonduuombe	149
3.3. Case of Omuhonga	149
3.4. Case of Etanga	150
SECTION 29: Plant species and use	151
1. Definitions	151
2. Plant species per area	152
2.1. General trends	152
2.2. Vegetation species in the interior Highlands- Eastern Sandveld	152
2.3. Vegetation species in the interior Highlands – Mountain savannah	153
2.4. Vegetation species in the interior Highlands – Woodland savannah in valleys	154
2.5. Vegetation species in the interior Highlands – Dwarf shrubs on calcareous soil	155
2.6. Vegetation species in the interior Highlands – Riverine woodland	155
2.7. Vegetation species in the pro-Namib – shrub steep on desert range	156
2.8. Vegetation species in the pro-Namib – grassland on superficial sand and desert pavement	156
3. Use of plant species	157

3.1. Utilisation of the indigenous flora 1 – Malan and Owen-Smith	159
3.2. Utilisation of the indigenous flora 2 – Malan and Owen-Smith	171
3.3. Utilisation of the indigenous flora 3 – Kunene North FSR-E Unit	183
SECTION 30: Drought and disasters	189
CHAPTER 5: LIVESTOCK PRODUCTION SYSTEMS	190
SECTION 31: Cattle production system	191
1. Number of cattle in Kunene North	191
1.1. Difficulty to obtain an accurate information	191
1.2. Cattle census in the 1940s'	191
1.3. Cattle census in the 1980s'	192
1.4. Cattle census in the 1990s'	192
1.5. Cattle census in 1999	192
1.6. Census in some villages	193
2. Structure of the herds	194
2.1. Survey of Paskin - 1990	194
2.2. Survey of Bollig - 1996	195
2.3. Survey of Bennison et al - 1998	195
2.4. Fertility, mortality and productivity of livestock herds	195
3. Off-take rates	196
3.1. Off-take rates in the Opuwo area	196
3.1.1. Herd composition and off-take rates for poor households	196
3.1.2. Herd composition and off-take rates for wealthier households	197
3.2. Off-take rates in the Okangwati area	197
3.2.1. Herd composition and off-take rates for poor households	197
3.2.2. Herd composition and off-take rates for wealthier households	198
3.3. Off-take rates in the Omuramba South area	199
3.3.1. Herd composition and off-take rates for poor households	199
3.3.2. Herd composition and off-take rates for wealthier households	199
3.4. Off-take rates in the Otjondeka area	200
3.4.1. Herd composition and off-take rates for poor households	200
3.4.2. Herd composition and off-take rates for wealthier households	200
3.5. Off-take rates in the Etanga area	201
3.5.1. Herd composition and off-take rates for poor households	201
3.5.2. Herd composition and off-take rates for wealthier households	202
4. Value of cattle	202
4.1. The social value	202
4.1.1. Recognition of wealth-fare	203
4.1.2. Payment of fines	203
4.1.3. Use during ceremonies	204
4.1.4. The sacred cattle	204
4.2. The economic value	204
4.2.1. Selling value	204
4.2.1.1. Prices obtained in Opuwo	204
4.2.1.2. Prices obtained in Okangwati	205
4.2.2. The exchange value	205
4.2.2.1. Exchange value in Opuwo	206
4.2.2.2. Exchange value in Okangwati	206
4.3. The nutritional value	207
5. Cattle products	207
5.1. Meat	207
5.2. Milk	208
5.2.1. Milk production	208

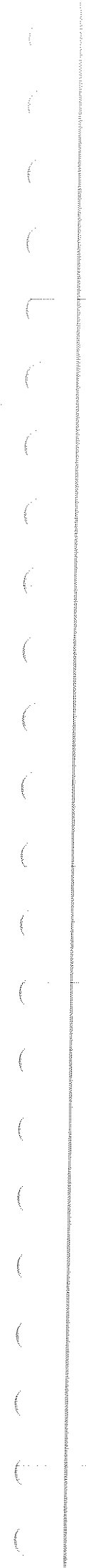
5.2.2. Butter and butter fat	209
5.2.3. Sour milk	209
5.3. Calves	209
5.4. Animal draft power	210
5.5. Manure	210
5.6. Hides	210
6. Cattle husbandry	211
6.1. Feeding	211
6.1.1. Grazing versus browsing	211
6.1.2. The diet according to the season	211
6.1.3. Supplementary feeding	213
6.2. Housing	213
6.2.1. Free roaming cattle	213
6.2.2. The kraaled cattle	213
6.2.3. Cattle at the cattle post	214
6.3. Castration and dehorning	214
6.4. Phenotype	214
7. Cattle diseases in Kunene North	215
7.1. The disease web	215
7.2. Main diseases in Kunene North	216
7.2.1. Contagious Bovine Pleuropneumonia	216
7.2.2. Foot-and-mouth disease	216
7.2.3. Botulism	217
7.2.4. Brucellosis	217
7.2.5. Anthrax	218
7.2.6. Rabies	218
7.2.7. Anaplasmosis	219
7.2.8. Sweating sickness	219
7.2.9. Bovine Ephemeral Fever	219
7.2.10. Black quarter	220
7.2.11. Internal and external parasites	220
7.3. Attitude of stock owners towards some diseases	220
8. Vaccination and treatment	221
8.1. Vaccination of animals	221
8.1.1. Vaccination campaigns organised by the Directorate of Veterinary Services	221
8.1.2. Vaccination at the expense of the stock owner	222
8.2. Treatment of animals	223
8.2.1. Veterinary drugs	223
8.2.2. Traditional remedies	224
8.3. Veterinary Extension	224
SECTION 32: Small-stock production system	225
1. Number of small stock in Kunene North	225
1.1. Difficulty to obtain an accurate information	225
1.2. Census in the 1970s'	225
1.3. Census in the 1980s'	225
1.4. Census in 1999	226
2. Herd composition and off-take rates	226
3. Value of small stock	227
3.1. The social value	227
3.2. The economic value	228
3.2.1. Selling value	228
3.2.1.1. Prices obtained in Opuwo	228
3.2.1.2. Prices obtained in Okangwati	230
3.2.2. The exchange value	231

3.2.2.1. Exchange value in Opuwo	232
3.2.2.2. Exchange value in Okangwati	232
3.3. The nutritional value	232
4. Small stock products	233
4.1. Meat	233
4.2. Milk	233
4.2.1. Use of the milk	233
4.2.2. Milk production	233
4.3. Hides	234
4.4. Manure	234
5. Small stock husbandry	234
5.1. Housing	234
5.2. Feeding	235
5.3. Phenotype	235
6. Small stock diseases in Kunene North	236
6.1. Mange	236
6.2. Pasteurellosis	236
6.3. Pulpy kidney	237
6.4. Foot abscess	237
6.5. External parasites	237
6.6. Internal parasites	237
6.7. Toxic plants	238
6.8. Predators	238
SECTION 33: Other animal productions	239
1. Horses	239
1.1. Number of horses	239
1.2. Use of horses	239
1.3. Feeding habits	239
2. Donkeys	240
2.1. Number of donkeys	240
2.2. Use of donkeys	240
2.3. Food preferences	240
3. Pigs	240
4. Chicken	241
4.1. Number of chicken	241
4.2. Feeding	241
4.3. Predators	241
SECTION 34: A mixed livestock production system	242
CHAPTER 6: CROP PRODUCTION SYSTEM	243
SECTION 35: Crop production system	244
1. Types of crops	244
1.1. Origin of the crop production in Kunene North	244
1.2. Species under cultivation nowadays	244
2. Seeds used	245
3. Season planted and methods to prepare the soil	245
3.1. Characteristics of the garden	245
3.1.1. Size of the gardens	245
3.1.2. Pool gardens	246
3.2. Growing periods	246
3.3. Season planted	247
3.4. Land clearing for cultivation	247

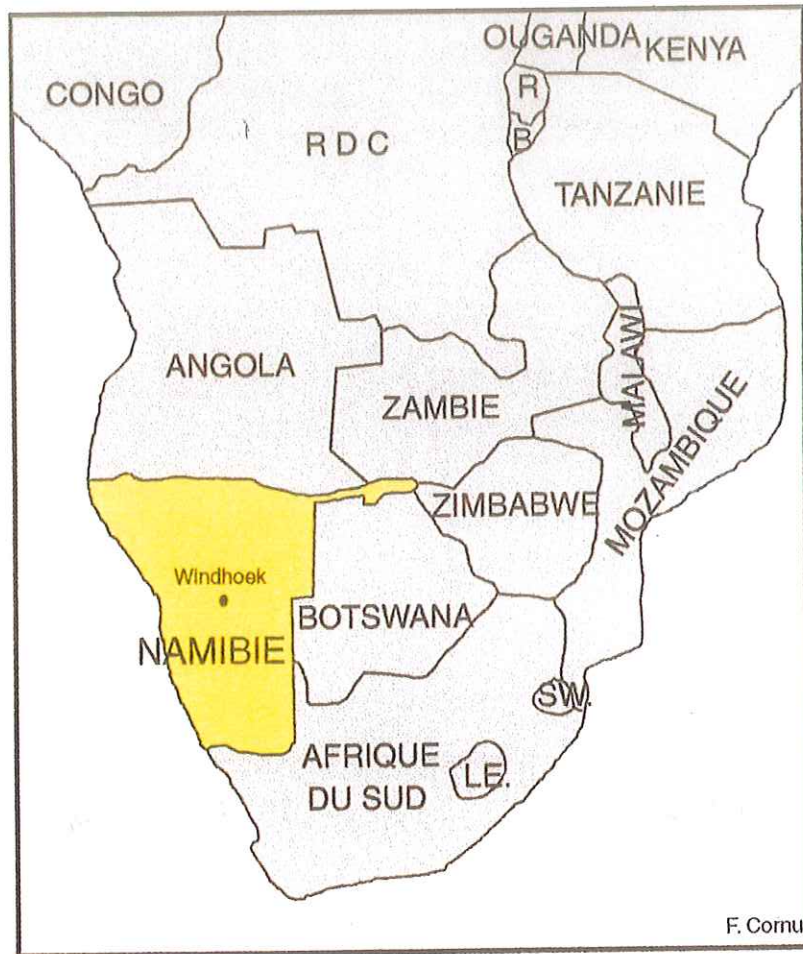
3.5. Soil preparation	247
3.5.1. Hand hoe and animal traction	247
3.5.2. Intercropping and temporary spacing of planting	248
3.5.3. Manure and fertilisers	248
4. Weeding	249
5. Harvesting	249
6. Storage	250
7. Pests and insects	250
8. Watering and irrigation	250
9. Use of products	251
CHAPTER 7: MARKETING OPPORTUNITIES	253
SECTION 36: The existence of two markets	254
SECTION 37: The livestock informal market	256
1. Basic activities in the informal meat marketing chain	256
2. Informal market in Opuwo	257
2.1. Opuwo, a synopsis of market conditions	257
2.2. Trading points in Opuwo	258
2.2.1. Permanent traders in Opuwo	258
2.2.2. Intermittent traders	259
2.2.3. Specialisation of traders	259
2.2.4. Typology of traders	259
2.2.5. People employed in the informal market	260
2.3. Economic analysis of the informal market in Opuwo	261
3. Informal market in Okangwati	262
3.1. Okangwati, a synopsis of market conditions	262
3.2. Trading points in Okangwati	262
3.2.1. Permanent traders in Okangwati	262
3.2.2. Typology of traders	263
3.3. Livestock traders and speculators	264
3.4. Economic analysis of the informal market in Okangwati	264
3.4.1. Number of animals sold	264
3.4.2. Price expectation of sellers	265
4. Comparison of the situation between Opuwo and Okangwati	265
5. The case of Ohandungu	266
6. Main supply lines for the informal livestock marketing	266
6.1. The Angola> Ombalantu> Oshana market	266
6.2. The Kunene (Opuwo)> Oshana market supply line	266
6.3. Supply areas and consumer areas	267
SECTION 38: The formal livestock market	270
1. The formal market prior to independence	270
2. Meatco	271
2.1. Meatco, a parastatal organisation	271
2.2. Meatco auctions	271
2.2.1. Auctions from 1995 to 1997	271
2.2.2. Auctions from 1998 to 1999	272
2.2.3. Description of an auction held in Okangwati	274
2.2.4. Description of an auction held in Omuramba South	274
2.2.5. Description of an auction held in Sesfontein	275
2.2.6. Description of an auction held in Otuan	275
3. The Oshakati abattoir	275
4. The quarantine system	276

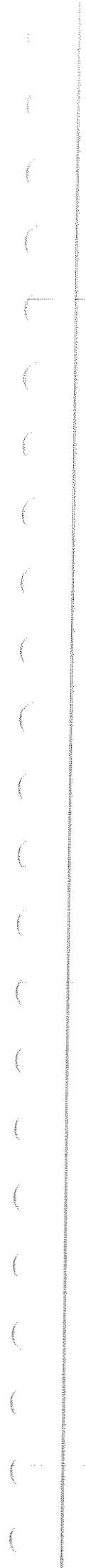
4.1. The Omutambo-Womane quarantine camp	276
4.2. Self quarantine	276
4.3. Carcasses from quarantined animals	277
4.4. The story of Etanga	277
5. The way farmers in Kunene North perceive the formal meat market	278
SECTION 39: The crop market	281
SECTION 40: Cash flow, banking and credit facilities	282
1. Income per capita in Kunene North	282
2. Cash and credit systems in Kunene North	283
2.1. A traditional system with no cash	283
2.2. The existence of informal credits	283
2.3. The monetarisation of Kunene North	284
2.4. The need for saving and credit services in Kunene North	285
3. The National Agricultural Credit Programme	285
SECTION 41: Labour division at household level	286
1. Gender analysis	286
1.1. The tasks under the responsibility of the men	286
1.2. The tasks under the responsibility of the women	286
1.3. The role of the children	287
1.4. Tasks under the responsibility of several gender groups	287
2. Seasonal calendars	288
2.1. Livestock related activities	288
2.2. Crop related activities	289
CHAPTER 8: NUTRITION, HEALTH AND LITERACY	290
SECTION 42: Nutrition	291
1. Nutritional status	291
2. The staple food	291
3. Meat and milk consumption	292
3.1. Meat consumption	292
3.2. Milk consumption	294
4. Other natural products	294
4.1. Game meat	294
4.1.1. Reptiles	294
4.1.2. Birds	295
4.1.3. Mammals	295
4.2. Fruits, berries and seeds	295
4.2.1. Bulbs and tubers	295
4.2.2. Fruits and berries	296
4.2.3. Grass seeds	296
4.3. Other products	296
SECTION 43: Human Health	297
1. Health status	297
1.1. Morbidity rates	297
1.1.1. Morbidity rates in under five years old	297
1.1.2. Morbidity rate in five years and older	298
1.2. Mortality rates (death)	298
1.2.1. Top five causes of death by age and by sex	298
1.2.2. Mortality rates	300
1.3. Case fatality rates	300

1.4. Disabilities	300
2. Social welfare status	301
3. STD/ HIV/ AIDS in Kunene North	302
4. Tuberculosis in the Kunene Region	303
5. Vector-borne control programmes	303
6. Immunisation days	303
SECTION 44: Education and literacy	304
1. Literacy in Kunene Region	304
2. Literacy in Kunene North	305
2.1. Attitude of inhabitants	305
2.2. Enrolment of OvaHimba and OvaZemba learners	306



Namibia in Southern Africa





Introduction

The present resource book is the result of a literature review initiated by the Kunene North Farming System Research and Extension Unit. It aims at giving a comprehensive picture of the farming systems in place in Kunene North, based on existing survey and research work undertaken in the area.

In the first chapter general information will be presented. This chapter aims at giving an idea of the importance of Kunene North within Kunene Region (from an administrative, a historical and a demographic point of view). Infrastructures present in Kunene North have also been listed. General data on agriculture are also listed.

The second chapter will present the social environment in Kunene North. The cultural groups are presented. The systems of double descent, ownership and inheritance are discussed. The political organisation and the role of traditional authorities are assessed. The main cultural traditions are summarised.

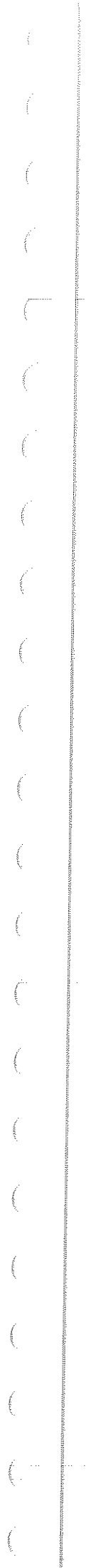
The third chapter will present the agro-ecological environment. Kunene North has got unique landscapes. Climate, geology, topography, soils and rocks, rivers and catchments are presented. Based on these information agro-ecological zones have been defined and land suitability is assessed. Furthermore, forest and wildlife management is also discussed.

Both the social and the agro-ecological environment have influenced production systems. A comprehensive management of pastures, together with a proper management of the cattle posts, have been put in place by the pastoral groups living in Kunene North. These systems will be presented in the fourth chapter. The question of nomadism versus semi-nomadism will be addressed.

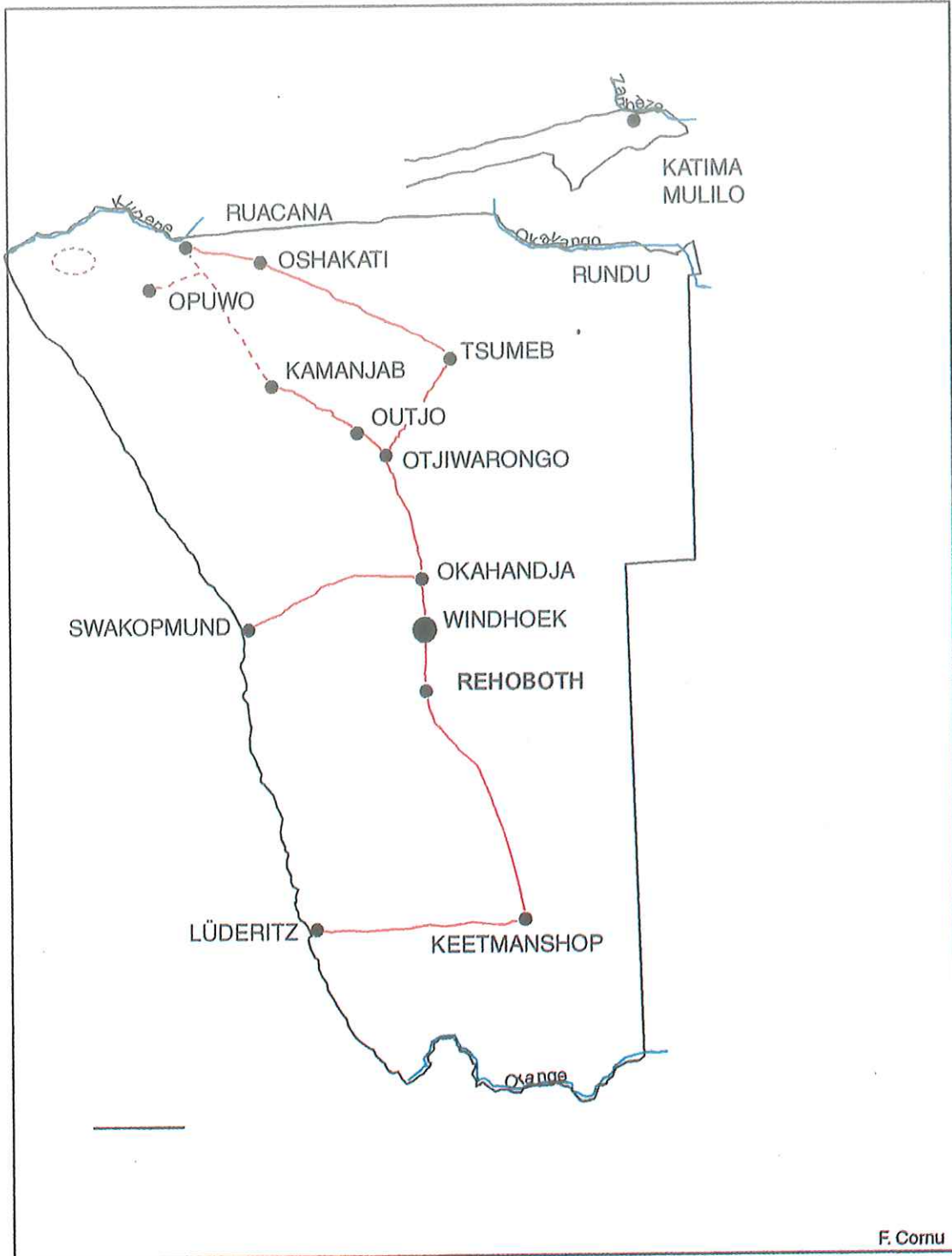
The fifth chapter will put emphasise on the livestock production systems in place, with special attention given to the cattle production system and the small stock production system. The sixth chapter will present the crop production systems in place.

The seventh chapter will present the marketing opportunities existing in Kunene North. Both informal and formal livestock markets will be presented and their efficiency assessed. The crop market being almost non existent, only mention will be made. The questions of cash flow, labour division, banking and credit facilities will be raised and discussed.

The last chapter will aim at presenting data about human nutrition, human health, education and literacy in Kunene North. Those factors are believed to have considerable importance in a farming system perspective and cannot be neglected.



Main towns and main roads in Namibia



Florent CORNU

In "A propos de l'espace, des lieux, du territoire, chez les pasteurs nomades Himba de Namibie, a l'exemple d'Otjihende"



Chapter One

WHAT IS KUNENE NORTH?



Section 1

Kunene Region and Kunene North

Formally known as Kaokoland, part of the Kaokoveld, Kunene North is nowadays part of the Kunene Region, an administrative entity created in 1992.

1. THE KAOKOVELD

What is called the Kaokoveld is Damaraland, Kaokoland and the Skeleton Coast Park. It has got similar agro-ecological conditions and a lot of mammals, such as elephant, black rhino and giraffe. (Jones, 1993)

The Kaokoveld covers a more or less trapezoidal shape of approximately 55,000 km². (in “investigation into the surface water resources of the Kaokoveld, file number 11/7/3/1, report number 2900/3/1/41”, 1991)

2. THE KAOKOLAND

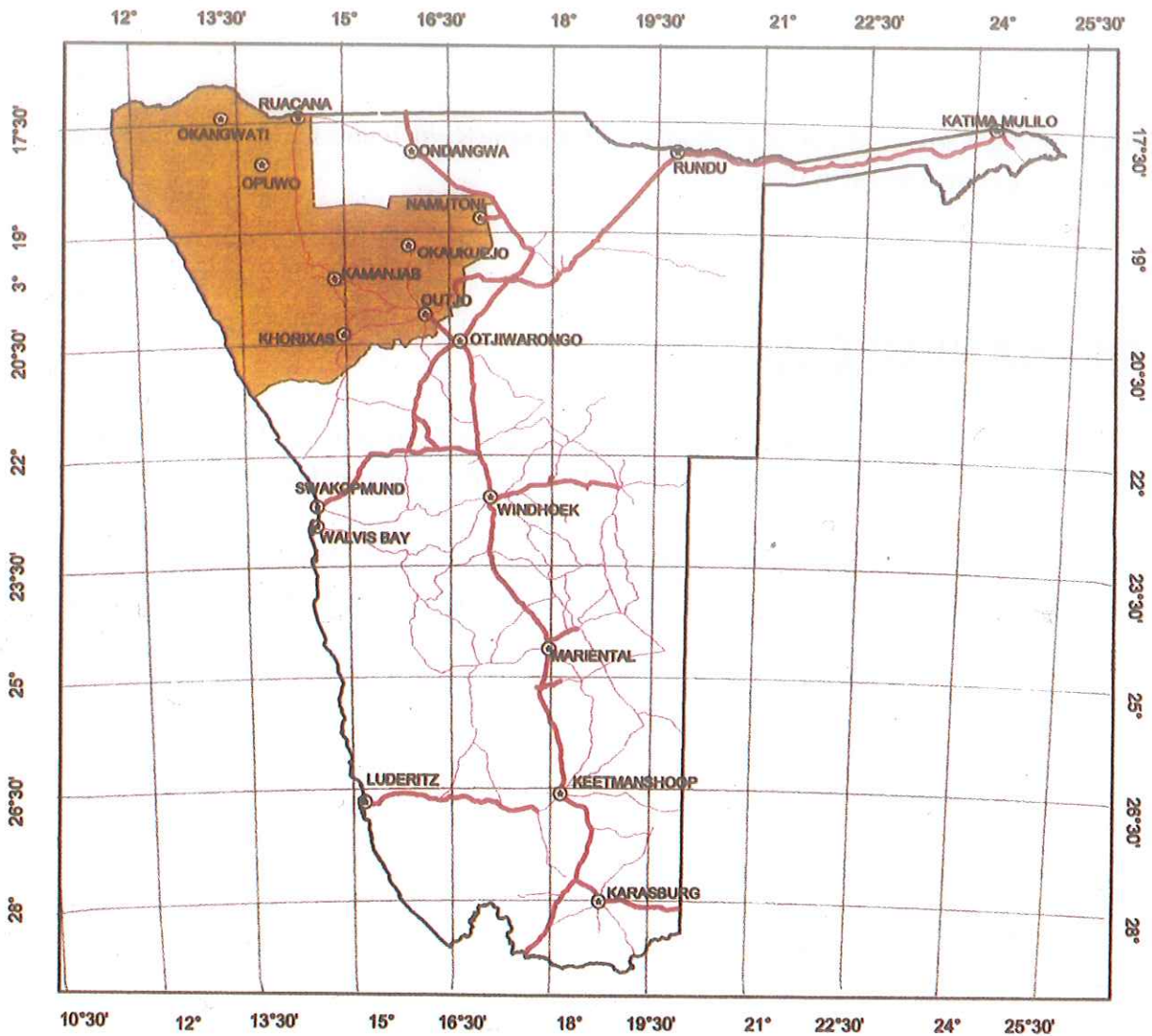
Kaokoland is the former name given to what is nowadays known as Kunene North. Geographical limits of Kaokoland and Kunene North are slightly different. (personal data, DEES)

There is a need to make a difference between the Kaokoland area, as geographical terms, and the district of Kaokoland, as administrative unit. In the South, the administrative border of Kaokoland district coincides greatly with the course of the ephemeral Hoanib River, except for the Sesfontein enclave that belongs to Damaraland. There are extensive areas of irrigable land on both northern and southern flood plains of the Hoanib river. The Hoanib basin is therefore part of the Kaokoveld, or Kaokoland area as geographical terms. (in “investigation into the surface water resources of the Kaokoveld, file number 11/7/3/1, report number 2900/3/1/41”, 1991)

Kaokoland has a surface area of 48 982 km². Most of the area is mountainous and inhospitable. The most western part of the area comprises the Namib Desert while the most eastern part is a sandy, gently undulating plain (Paskin, 1990)

KUNENE REGION

LOCATION MAP



200 0 200 400 Kilometers

Scale: 1: 8 000 000



LEGEND

-  Namibia
-  Kunene Region and constituencies
-  Major Towns
-  Main Roads
-  Secondary Roads

Produced by the NRSC, MET

Produced for the Ministry of Lands,
Resettlement and Rehabilitation (MLRR)

October 1998

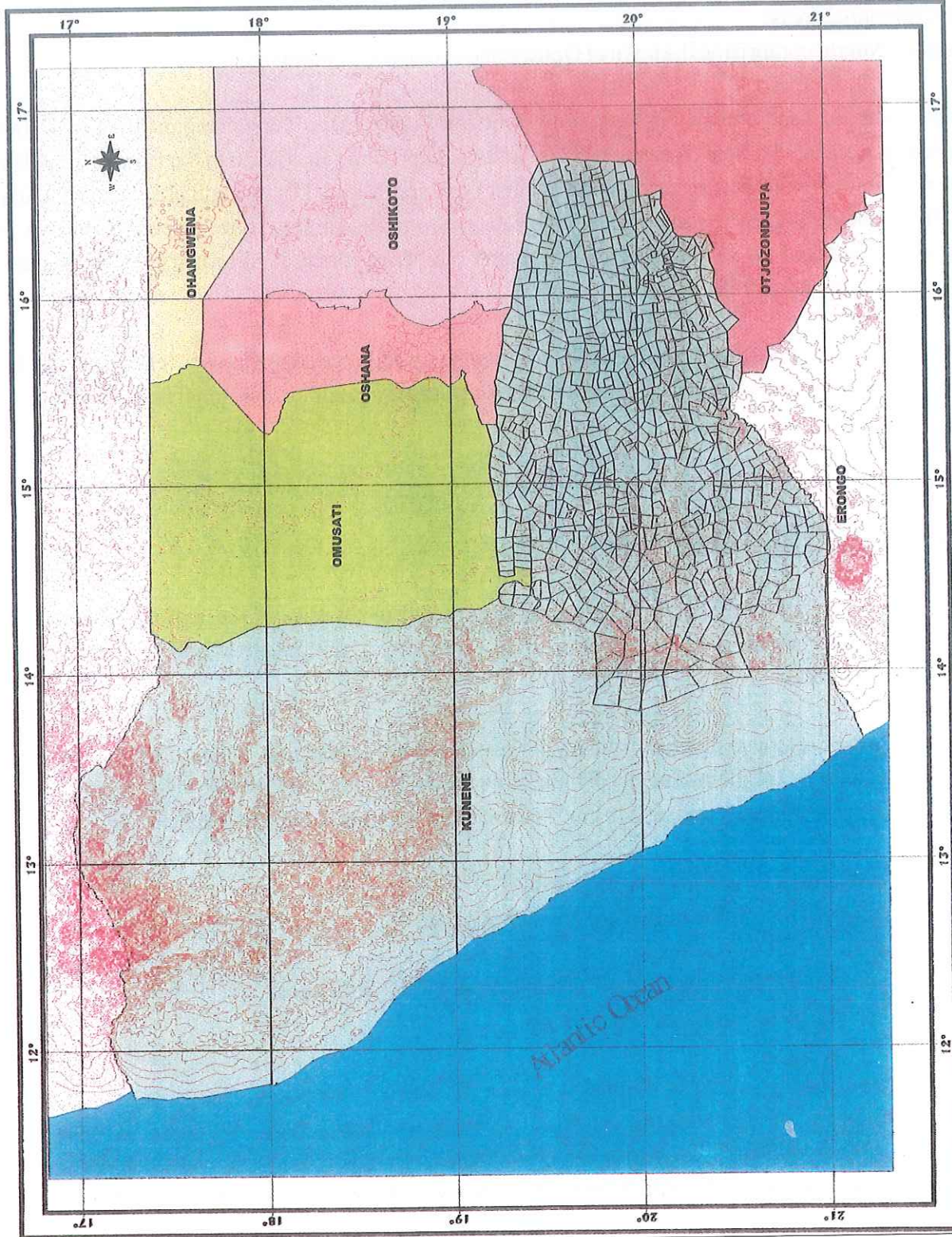


Legend

- Regions**
- ERONGO
 - KUNENE
 - CHANGWENA
 - OMUSATI
 - OSHANA
 - OSHIKOTO
 - OTJOZONDJUPA
- Contours**
- Background**
- Angola
 - Atlantic

Title: Kunene Contours

By: Gerhard Mouton
 NOLIDEP
 Tsumeb



3. THE KUNENE REGION

In 1992, Kunene Region was created after the promulgation of the Regional Council Act of 1992 and comprises the whole of former Kaokoland, the northern part of former Damaraland, the western part of former Ovamboland and the commercial farming area districts of Outjo and Kamanjab. (in “Kunene Integrated regional Land use plan”, 1998)

The Kunene Region is therefore an administrative unit divided into two sub-regions (personal data, Talavera):

- **Kunene South**, comprising the towns of Khorixas, Sesfontein and Outjo, large commercial farms and few communal areas;
- **Kunene North**, comprising the town of Opuwo and exclusively communal areas.

Both sub-regions are separated by the **Veterinary Cordon Fence**. In the Kunene region, the Fence stretches on a line going from the Atlantic Ocean to Etosha National Park. The zones north of the Fence are qualified as buffer zones (annual prophylactic vaccination against Foot-and-Mouth Disease and presence of Contagious Bovine Pleuropneumonia). The zones south of the Fence are qualified as free zone (absence of the two above-mentioned diseases and no vaccination against them). (in “Directorate of Veterinary Services, purposes, structures and functions”, 1995)

The Kunene Region is under the leadership of a governor, currently based in Opuwo. It has been subdivided into six constituencies, each under the responsibility of an elected councillor. (personal data, Talavera).

4. KUNENE NORTH

Kunene North is not an administrative entity, as it is linked to the rest of the region. However, it is a comprehensive unit characterised by common socio-economic, agro-ecological and production systems. (personal data, Talavera)

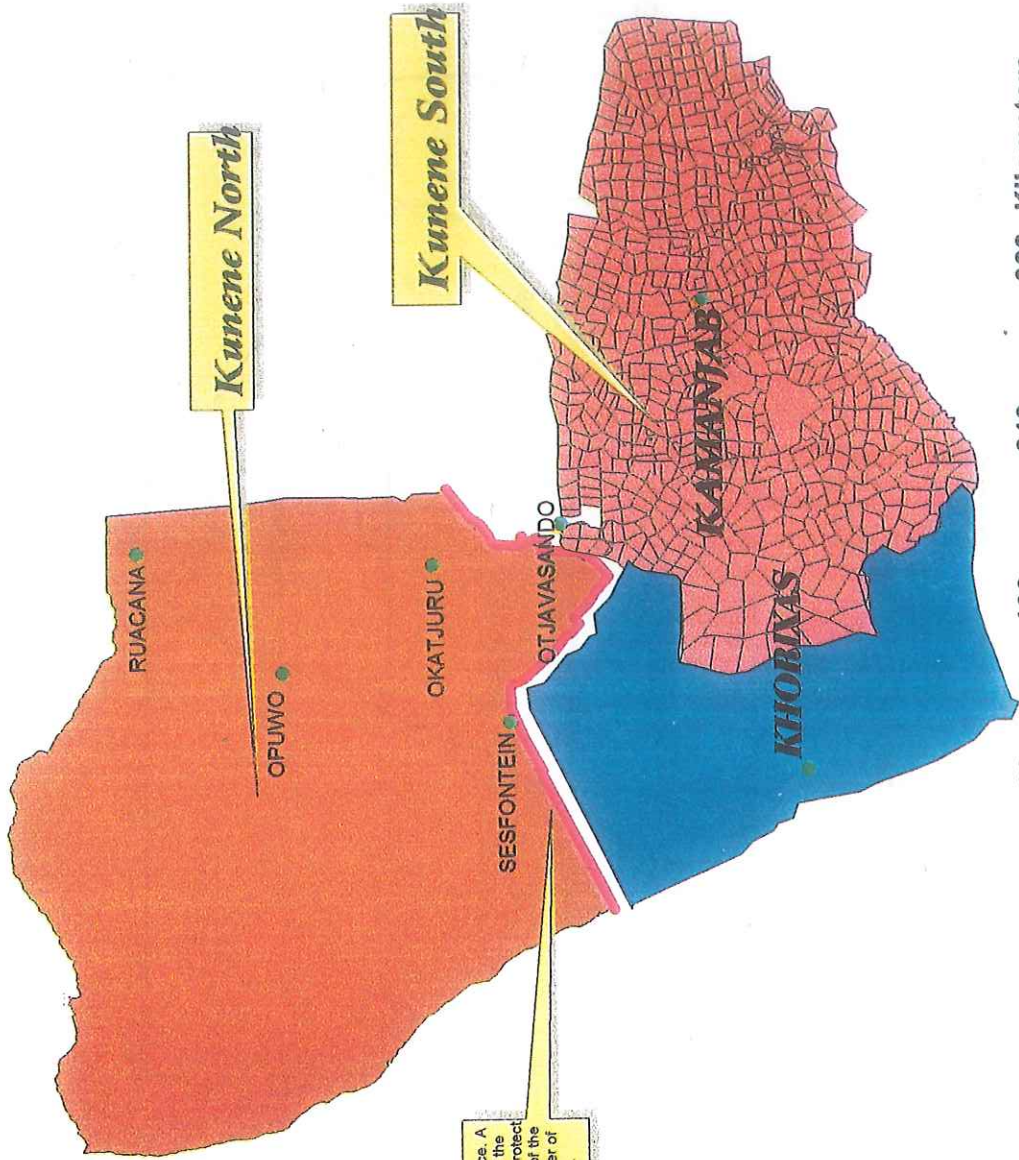
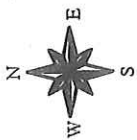
The northern Kunene region is situated in the north-western corner of Namibia. It is a remote region of rugged mountains divided by broad plains and deeply incised valleys. The greatest distance in the region from north to south is 265 km and from east to west 240 km. The total area is about 50 000 km² (Malan et al,)

Kunene North is an area delimited by (Hvidsten et al, 1997):

- The Kunene River in the north (border with Angola)
- The Atlantic Ocean in the West
- The gravel road from Kamanjab to Ruacana, route MR 67, in the East
- The Veterinary Cordon Fence in the South

Slight differences exist regarding the definition of Kunene North according to the institutions. For instance for a management point of view the Directorate of Extension and Engineering Services, within the Ministry of Agriculture, Water and Rural Development considers that Sesfontein belongs to Kunene South while the Directorate of Veterinary Services, within the same Ministry, considers it as part of Kunene North. (personal data, Talavera)

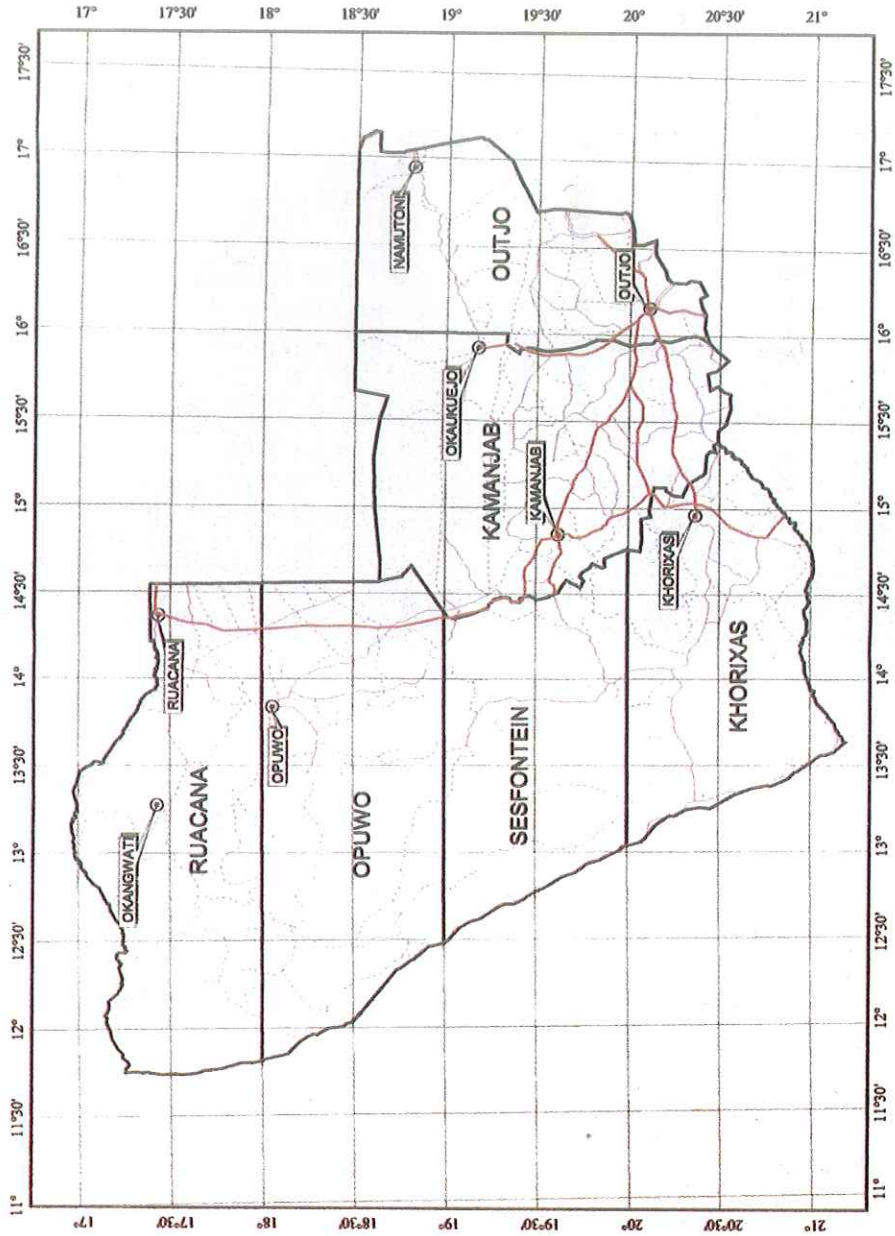
KUNENE REGION



By G. Mouton
Nolidep
Tsumeb
Tel: 067-220563

October 1999

**KUNENE REGION
CONSTITUENCIES**



LEGEND

- Main Roads
- Secondary Roads
- Other Roads
- Tracks
- Major Towns
- Constituencies



Produced by the NRSC, MET
 Produced for the Ministry of Lands
 Resettlement & Rehabilitation (MLRR)
 October 1998

In "Kunene integrated Regional Land Use Plan, 1998"
 Ministry of Lands, Resettlement and Rehabilitation

In the rest of the document, Kunene Region will refer at the whole administrative area, comprising both Kunene North and Kunene South and Kunene North will refer at the area north of the Veterinary Cordon Fence, unless otherwise specified.

Old references making use of the terms “Kaokoland” and “Kaokoveld” have been kept as such and refer to the areas as described in this section.



Section 2

History

1. INTERNATIONAL AND NATIONAL KEY EVENTS – PERIOD 1884 - 1990

Dates	Events
1884	Territory of Namibia is declared a Protectorate by Imperial Germany
1890	Germany declares its Protectorate a Crown Colony
<i>1914</i>	<i>Beginning of World War I</i>
1915	South African troops take over Namibia
<i>1918</i>	<i>End of World War I</i>
<i>1919</i>	<i>Treaty of Versailles: Germany is forced to give up its colonies</i>
1920	League of Nations confirms Mandate for South West Africa
1922	Walvis Bay is transferred to the South West Africa administration
1933	Permanent Mandates Commission objects to suggestions that South West Africa would become a fifth province of South Africa
<i>1939</i>	<i>Beginning of World War II</i>
<i>1945</i>	<i>End of World War II</i>
<i>October 1945</i>	<i>Creation of the United Nation</i>
December 1946	General Assembly rejects South Africa proposal to incorporate the territory and requests it to accept the trusteeship agreement.
December 1960	General Assembly adopts Declaration on the Granting of Independence to Colonial Countries and Peoples (Resolution 1514) and recognises for the first time that the territory of South West Africa has an inalienable right to independence (Resolution 1568)
December 1961	Committee on South West Africa recommends that the General Assembly should consider terminating the South Africa mandate
September 1962	South Africa establishes the Odendaal Commission to make recommendation on the “welfare” of the African population of South West Africa
May 1964	Odendaal Commission recommends the establishment of “homelands”
August 1966	SWAPO launches the armed struggle to achieve independence
October 1966	General Assembly terminates the mandate and declares that the territory comes under the direct responsibility of the United Nations (Resolution 2145)
June 1968	South West Africa is renamed Namibia by the General Assembly
March 1969	Security Council recognises the termination of the Mandate and calls upon South Africa to withdraw its administration from the territory. It also condemns South Africa’s policies designed to destroy the national unity and territorial integrity of Namibia (Resolution 264)

Dates	Events
June 1971	The International Court of Justice rules that South Africa has an obligation to withdraw from Namibia and that Member States of the United Nations are under obligation to recognise the illegality of South Africa's presence in Namibia
December 1973	General Assembly recognises SWAPO as the authentic representative of the Namibian people (Resolution 3111)
August 1976	Turnhalle Conference launched by South Africa agrees on the establishment of an interim government and decides that independence should be achieved by 31 December 1978
August 1977	South Africa issues proclamation annexing Walvis Bay
December 1978	South Africa holds elections for a "Constituent Assembly". Democratic Turnhalle Alliance (DTA) "wins" most of the seats.
January 1981	SWAPO declares its willingness to sign a cease-fire, but South Africa refuses on the ground that the United Nations is not impartial.
January 1983	South Africa dissolves the "National Assembly" and assumes all executive functions
April 1985	Conference of Foreign Ministers from 100 non-aligned countries condemns South Africa's announcement that it would install an 'interim government' in Namibia.
June 1985	South Africa establishes an 'interim government' in Namibia.
1 April 1989	United Nation Resolution 435 starts being officially implemented in Namibia. Under this arrangement all exiled Namibians freely return to Namibia.
7 to 11 November 1989	General elections for a constituent assembly, under the supervision of UNTAG. SWAPO wins 41 seats, the DTA 21, the UDF 4, the ACN 3, the NPF 1, the FCN 1 and the NNF 1.
1 February 1990	The 72 members of the Namibian Constituent Assembly unanimously adopt the Constitution of the Republic of Namibia
20 March 1990 midnight	Namibia becomes independent from South Africa and the Constituent Assembly is converted into Namibia's first National Assembly. Samuel Shafishuna Nujoma is sworn in as President of Namibia by Javier Perez de Cuellar, Secretary General of the United Nations.

(in: "Namibia, the demographic background, no date; in "the history of the Caprivi Region", 2000)

2. EVENTS LINKED TO KUNENE REGION

Note: for the time between 1960 and 1990 the information have mainly been found in Bollig' "resource management and pastoral production in the Epupa project area". He explains there that the information for this period rather relies on oral testimonies as the archival files are accessible until the mid-50's only

Hereros have been carrying out nomadic pastoralism since the XVI century. The people of Kunene North are linked to the Bantu language speakers, whose arrival in the region with the OvaHerero people occurred around 1550, shortly after the arrival of the Owambo and the Kavango people (Van Warmelo, 1951; Malan, 1973; Malan 1974, quoted in "working paper, preliminary site survey. Report Northern Regions Livestock Development report (section 3)", 1996)

The OvaHerero were then mainly pastoralists. They were migrating from their former base in the Mocamedes Province of Angola. The first steps into Namibia were reported to have been near Ruacana, when an opposing

Owambo group forced them to turn Westward into Kunene Region. (in “working paper, preliminary site survey. Report Northern Regions Livestock Development report (section 3)”, 1996)

The OvaHerero people sojourned there for approximately two centuries before moving into central Namibia. They elected a group from the tribe to remain in Kunene. (in “working paper, preliminary site survey. Report Northern Regions Livestock Development report (section 3)”, 1996)

The estrangement between the people was a major disadvantage in the 1850s, as the people could not form an effective defence against the invasion of Nama people from the South. The Nama established a base in Sesfontein and one in Fransfontein from which they rustled large numbers of cattle from most of the Kunene Region until 1870s. This cattle and others were later lost during the infamous rinderpest epidemic of 1896. (Malan, 1973; in “working paper, preliminary site survey. Report Northern Regions Livestock Development report (section 3)”, 1996; Bollig, 1996; Cornu, 1999)

The loss of cattle for the OvaHerero pastoralist had major implication, particularly upon their social and religious affairs. Most of the population was forced to cross the Kunene river and to seek refuge in south-west Angola. Only a fraction, those who have been deprived of their livestock wealth, turned to the inaccessible mountains of Kaokoland. By depriving parts of the population of their means of production the Nama raids not only brought about exile but also a process of ethnic differentiation (Bollig, 1996):

- The part that turned to the mountains was forced back to their “hunter-gatherer” way of life (Powel, 1993; in “working paper, preliminary site survey. Report Northern Regions Livestock Development report (section 3)”, 1996). They became hunters and gatherers and were known as Tjimbas (“those who have to dig for food”). They lived in small kinship groups in order to make a living in the hard areas they were living in. There is therefore little information obtainable of a historical nature. In the 1950s, there were no Tjimba headmen. There was no political grouping and, subsequently, no historical record (van Warmelo, 1951).
- The OvaHerero people fleeing from the Nama to southern Angola were known later as Ovahimba, meaning for some “people of the riverbanks” and for other “those who have to beg” (from “okuhimba”: to beg), as these people had nothing when they left Namibia. Later, these tribes returned to Namibia and retained their name “Ovahimba” Once in Angola, they sought refuge with the Ngambwe tribe (Malan, 1973; in “working paper, preliminary site survey. Report Northern Regions Livestock Development report (section 3)”, 1996; Bollig, 1996)

The first European expeditions were made into the Kaokoland interior after 1850 (Malan et al, 1974). Between 1879 and 1880 the first group of “Dorsland Trekkers” sojourned temporarily in Kaokoland on their long trek from the transvaal to the Humpata Plateau in Southern Angola (Malan et al, 1974)

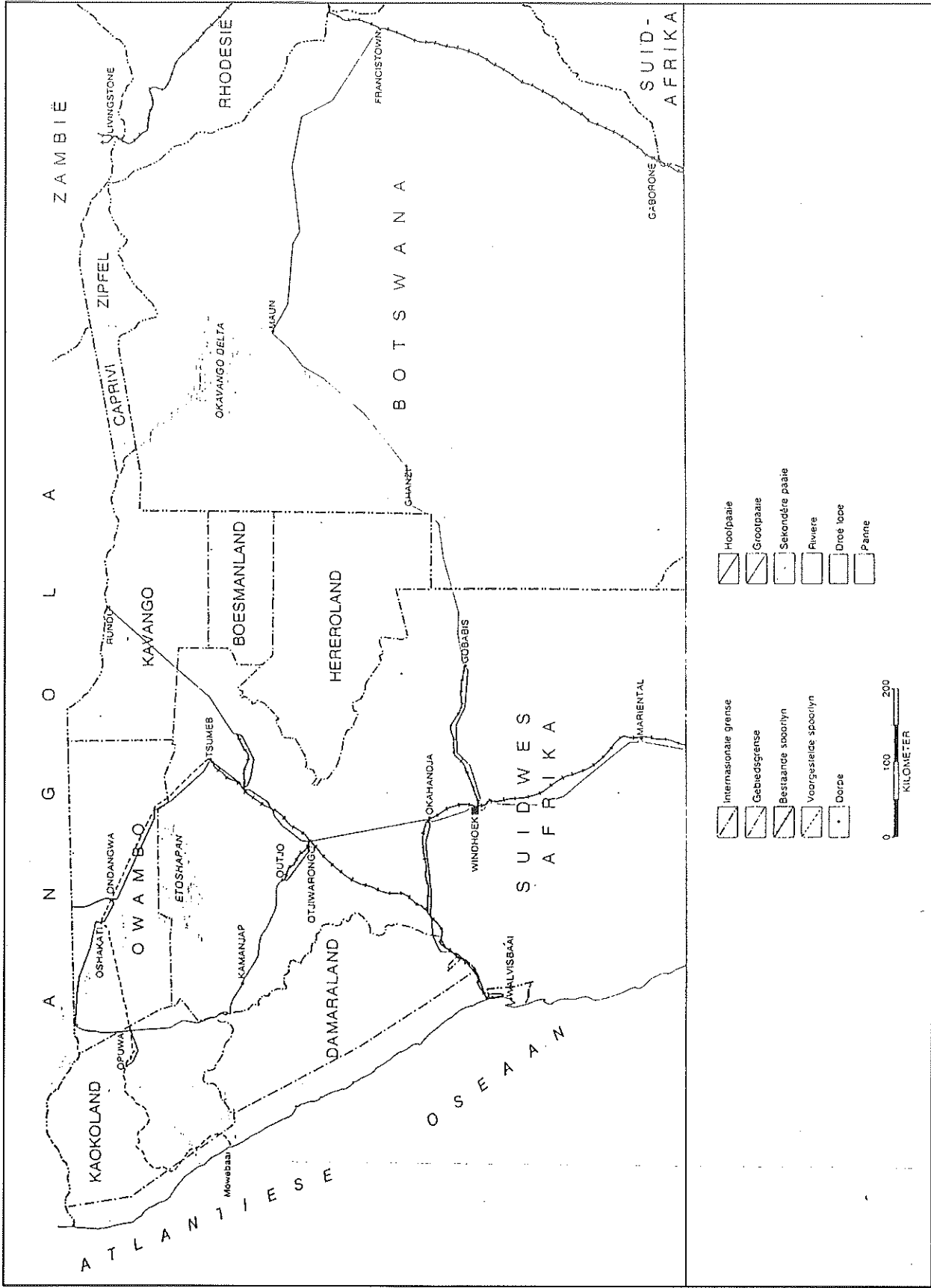
In 1863, “Vita” (Otjiherero name) or “Oorlog” (Afrikaans name) TOM, son of a Tswana man and a sister of Chief Manasse of the Herero, was born in Otjimbingwe. (van Warmelo, 1951; Malan, 1973; Bollig, 1996)

In the 1880s Oorlog started a long journey to the North and eventually found his father who had moved to Angola. In Angola, he met with the Tjimba-Herero refugees, already called Ovahimba. (Bollig, 1996)

In 1884 South West Africa was proclaimed a German colony. A small military outpost was established in Sesfontein (Malan et al, 1974; in “working paper, preliminary site survey. Report Northern Regions Livestock Development report (section 3)”, 1996)

In 1896 the German colonial government ceded part of its authority to the Kaoko Land und Minengesellschaft (Kaoko Mining Company), a private company based in Berlin and London (Bollig, 1996) However, this company never went beyond prospecting and planning. At that time Kaokoland expeditions were undertaken by Hartmann and Kuntz, both geologist, as well as by Baynes, an explorer, and Vedder, who studied the indigenous peoples. (Malan et al, 1974)

MULTINASIONALE VERVOERWESE



Later, the German governor Von Lindequist designated former Kaokoland as one of the several game reserves in the colony. (in “working paper, preliminary site survey. Report Northern Regions Livestock Development report (section 3)”, 1996)

End of the XIX century Tjimba foragers traded ivory and ostrich egg shells eagerly with Ovambo kings, mainly of Uukwaluudhi. In return, they received corn, iron and other commodities the Ovambo had obtained from white traders. They were not really integrated into a trade network with Angola. (Bollig, 1996; in “livestock marketing in the Northern Communal Areas of Namibia, 2000)

Himba in south-western Angola came into contact with the Portuguese colonial economy. During a period in which Angola’s south-west was integrated into the Cape-based trade network, they participated in commercial hunting, acted as scouts and worked on plantations directly to Portuguese authorities and traders or African middlemen. (Bollig, 1996). When the rinderpest epidemic of 1897 had deprived them of most of their cattle, the Himba served with the Portuguese as mercenaries against rebellious natives. (Bollig, 1996)

From 1903 to 1906 a number of Hereros from the central regions of South West Africa were involved in a destructive war with the German forces. German forces finally dispersed them and in 1907 the war was over. (Malan, 1973)

Early in the XX century a resistant movement led by “Oorlog” had formed in southern Angola, made up of OvaHimba and OvaHerero people. The movement was joined by more OvaHerero refugees in 1906 or early 1907 (Malan, 1973). Under the able leadership of Oorlog, these two groups were organised into a highly effective military force, which caused havoc in south western Angola from 1907 to 1917. Oorlog embarked on numerous punitive expeditions against the Ngumbi, Kwanyama, Kuvare, Ndonga and others, every time raiding as many cattle as possible. Large stocks were rapidly built up (Van Warmelo, 1951; Malan, 1973)

In the meantime the German administration has put an end to the Nama power. However, the Germans did not exercise any control in former Kaokoland as they did not venture further than their fort at Sesfontein. (in “working paper, preliminary site survey. Report Northern Regions Livestock Development report (section 3)”, 1996)

From 1910 fortunes changed in Angola. The liberalisation of the colonial administration made mercenaries redundant. Those who had previously assisted the Portuguese now became targets of scorn. The well-armed groups went on to harass neighbouring groups. (Bollig, 1996)

Contact with the German colonial power had always been very limited and the defeat of German forces in the First War period by South African forces meant little to the people of Kaokoland. German abandoned the area. (Bollig, 1996)

Many Himbas crossed the Kunene again between 1910 and 1920. In 1918, Oorlog decided to move back to South West Africa and went on an expedition reaching as far south as Sesfontein. In 1920, his Herero following and most of the Himba crossed Kunene back to Kaokoland (Van Warmelo, 1951; Malan, 1973) The OvaHerero people were joined after 1920 by Ovaherero people from the southern reserves and settling with relatives. (in “working paper, preliminary site survey. Report Northern Regions Livestock Development report (section 3)”, 1996)

The Tjimbas, former Hereros who still inhabited parts of Kaokoland at the time of Oorlog return, were mainly concentrated into the central and southern sectors of the region, around Ohopoho, Kaoko Otavi, Okorosave and Oruwanje (now Oruvandjai). They mixed with the Herero group and became known as Tjimba-Herero. The few of them who remained in the Mountains constitute the Tjimba Tjimba group. The OvaHimba remained in the north and southern Angola, becoming a third group. (Malan, 1973; in “working paper, preliminary site survey. Report Northern Regions Livestock Development report (section 3)”, 1996).

Oorlog was indisputably recognised as chief (“omuhona”) over the whole Kaokoland. Oorlog’s political position therefore further emphasised the close cultural and historical relationship between the Himba, the Herero and the Tjimba-Herero. A large kraal was established for him at Otjiyandjasemo. (Malan, 1973). This contradicts with the report of Van Warmelo: the Herero, under the leadership of Oorlog, at the beginning of the century, had no real organisation. They were a band held together by the force of character of one man. For a time he and his Herero followers certainly lorded it over the Himba and Tjimba groups in the then-called Kaokoveld, arrogating to themselves an authority never conceded to them by the other groups and sometimes over-stepping the bounds. (van Warmelo, 1951)

1912, 1913, 1916 and 1917 are qualified as years of violent conflict in Kaokoland (Gibson 1977 quoted in Bollig, 1996)

In 1917 the South Africa Administration confiscated guns on a large-scale including in Kaokoland and ordered Portuguese traders to stay out of Kaokoland. (Bollig, 1996)

In 1920 by Proclamation Number 40 the boundaries of the Outjo District are defined as including the whole Kaokoland. However, the Native Commissioner of Ovamboland usually controlled the northern parts of the area. The Secretary of South West Africa asked white farmers to move out of Kaokoland (Bollig, 1996)

1922: Kaokoland is proclaimed reserve (Bollig, 1996)

In 1923 Kaokoland was divided into three reserves with Vita TOM or Oorlog as Chief of the Herero, Muhona KATITI as Chief of the Himbas and KAHEWA-NAO as Chief of the Tjimbas. This is the time of new regulations. (Van Warmelo, 1951; Malan et al, 1974; Bollig, 1996)

In 1925 a police station is established in Swartbooisdrift to control poaching and livestock movement across the border (Malan et al, 1974; Bollig, 1996; Cornu, 1999) The Administration thought that previous trade regulations were not enough to protect white-owned livestock from infectious diseases. All people between Otjokavare and Ombombo were told to move north of the line Ombombo-Otjondeka, creating a buffer zone of more than 100 km in width between commercial farms and communal ranching areas. Another buffer zone was created between Kaokoland and Ovamboland, though it was smaller. (Bollig, 1996)

In 1925, 1926 and 1927 various conflicts arose in Kaokoland (Gibson, 1977 quoted in Bollig, 1996)

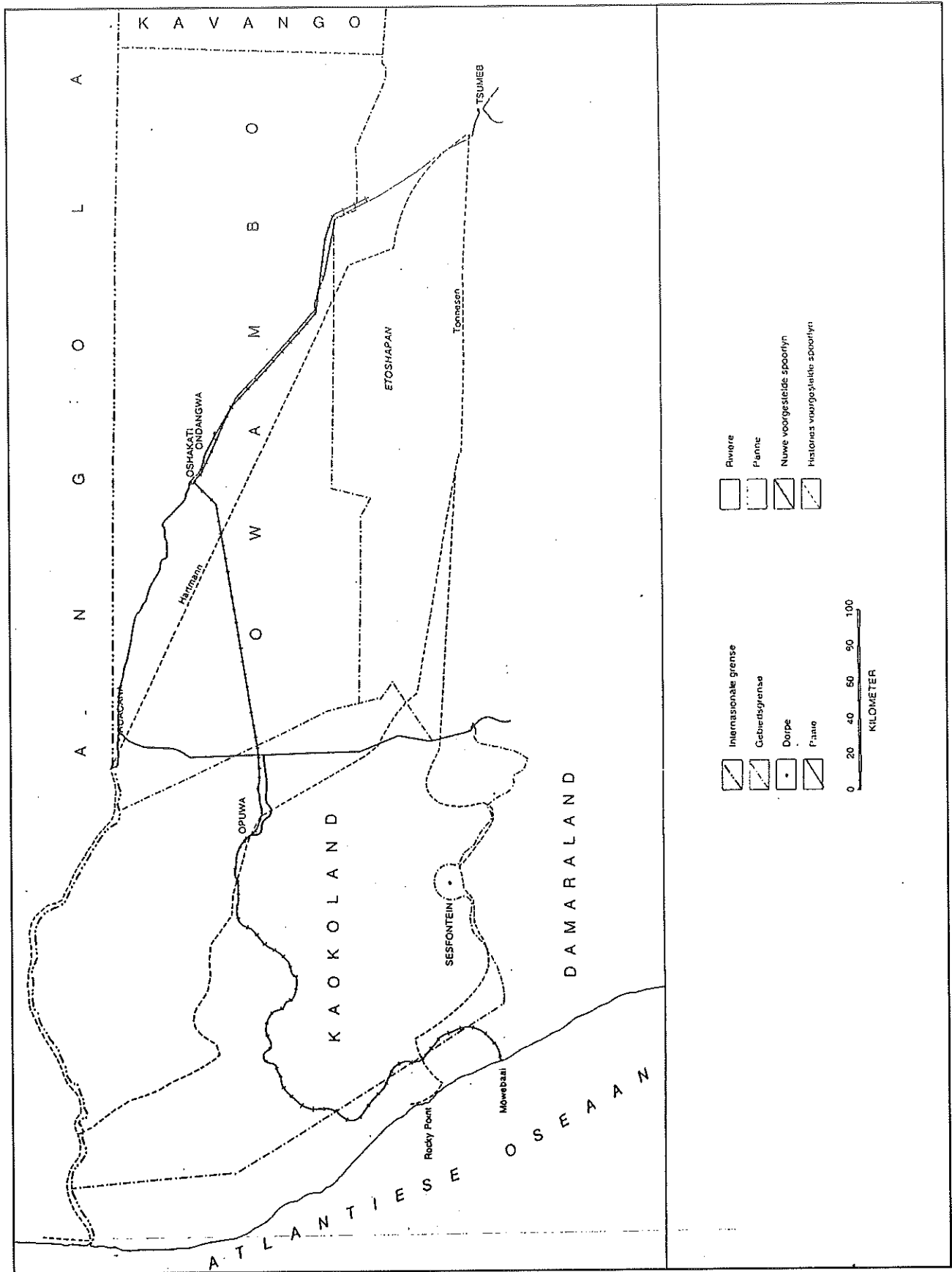
1928, a large part of the Kaokoland (approximately 2/3) became a game reserve known as Etosha. The Game Reserve is under the control of a Native Commissioner in former Kaokoland. This is as well the last significant migration from Herero speaking people, when a group of Ovaherero known as Ndamuranda moved from an area south-west of Kamanjab to settle in south-east Kunene, under the invitation of the Chief of OvaHerero people (in “working paper, preliminary site survey. Report Northern Regions Livestock Development report (section 3)”, 1996; Bollig, 1996)

From the 1930’s onward, trade with Angola was prohibited, exchange with markets to the South is virtually impossible and the barter with Owambo is hampered due to the regulations on livestock movements. (Bollig, 1996; in ‘livestock marketing in the Northern Communal Areas of Namibia, 2000).

In 1935 various conflicts in Kaokoland have been reported (Gibson, 1977 quoted in Bollig, 1996)

In 1938 Ohopoho has been established as a stop over for planes from the Cape to Luanda. (Bollig, 1996)

In 1939 Kaokoland became a district on its own and a court is established at Ohopoho. (Bollig, 1996) The Native Commissioner, previously stationed at Otjitundwa, moved to Ohopoho (Malan et al, 1974)



Later on more chiefs were named by the South African administration which then restricted the power of each single chief. (Bollig, 1996)

In 1941 the local police shot 517 cattle and 700 small stocks at Otjiningwa which had crossed into the Territory “illegally”. There were heavy fines for unauthorised shifts of cattle (Bollig, 1996)

The period 1941 to 1944 is a period of conflict in Kaokoland (Gibson, 1977 quoted in Bollig, 1996)

In 1946, after an outbreak of foot-and-mouth disease in Ombalantu, Kaokoland was declared a quarantine area and all trading between Ovamboland and Kaokoland was forbidden. Trading across the Kunene became illegal and trading with Owambo communities was strangled and for decades completely prohibited. Kaokoland was surrounded by buffer zones which were forcibly cleared of their inhabitants. A number of Boer farmers and hunters were expelled from the area and a monetary market was inhibited. From the 1920s onwards, Kaokoland’s pastoralists were deprived of development option and excluded from integration into larger markets. (Bollig, 1996; Cornu, 1999).

In 1954 the first mission was established at Orumana, and also included a school and a hospital (Malan et al, 1974)

In the 1960s the first shops in Ohopoho, were opened (Bollig, 1996; in “livestock marketing in the Northern Communal Areas of Namibia, 2000)

Whatever trade came up in the 1960’s and early 1970’s, it was usually barter trade, and the access to cash remained a problem. At that time the rate of labour requirement to farms in central Namibia gradually rose. A certain amount of young Herero men but very few Himba men opted for wage labour down country. (Bollig, 1996)

The Odendaal plan of 1964 did not bring a lot of changes to the Kaokoland. A territory of 50,000 km² is guaranteed as a homeland for the Himba, Tjimba and Herero (Cornu, 1999). A Legislative Council constituted by three Himba headmen, two Tjimba headmen, two Herero headmen and several elected members was to take over gradually from the Department of Bantu Administration and Development. However, political development remained slow. The Odendaal plan stated that “it is strongly doubted whether the present agricultural pattern of the Kaokoveld will change to any appreciable extend in the future, and stock farming will remain the determining factor in the economy of the region”. It describes the pastoralists as “isolated” and “exceedingly conservative in their way of life”. (Bollig, 1996)

In the 1970’s, the armed wing of SWAPO extended its operations to the Kaokoland. (Bollig, 1996)

In the late 1970’s the South African Defence Force (SADF) was based in Ohopoho, Ehomba and Okangwati. The establishment of army barracks led to a rapid population growth in Ohopoho. Okangwati was virtually founded at that time. The army lured more people in the area and shops were quickly getting more numerous. Himba were recruited into the army and its paramilitary wing, Koevoet. Although there were few military operations inside the Kaokoland (the bases were rather meant to control the neighbouring parts of Southern Angola), the Himba population was severely restricted during this time. Some say that during the night they were beaten by guerrillas for co-operating with the army and during the day they were beaten by the army for hosting PLAN fighters over the night. (Bollig, 1996)

At the height of the conflict, between 1980 and 1985, many households settling near the Angolan/ Namibian border were forced to live near the army barracks of Okangwati. (Bollig, 1996; Cornu, 1999). The whole period 1980 to 1989 is considered as a period of major conflict in Kaokoland. (Gibson, 1977 quoted in Bollig, 1996)

1981 and 1982 are years of a catastrophic drought that killed between 80 and 90% of the cattle. This mark an important settlement of populations in and around Opuwo (Bollig, 1996; Cornu, 1999). Following the drought, there was a movement of population towards the western parts of Kaokoland (an area previously used only during dry years) (Jacobsohn, 1988)

In 1992, the Kunene Region is created after the promulgation of the Regional Council Act of 1992 and comprises the whole of former Kaokoland, the northern part of former Damaraland, the western part of former Ovamboland and the commercial farming area districts of Outjo and Kamanjab. (in “Kunene Integrated regional Land use plan”, 1998)

3. STORY WITHIN THE HISTORY: THE OMAKANGE VILLAGE

In: “working paper, preliminary site survey. Report Northern Regions Livestock Development report (section 3)”, 1996

In 1940, the village was established by a man named TJIMUHIVA. Firstly, he and several other households travelled to the Oukwaruuzé tribal area, from Otjondeka. They conferred with the incumbent Tribal Chief, who had no space available in his tribal area. He informed the group to settle at Omakange.

From 1940 to 1968, the village developed

In 1968, there was a major migration to other villages. This exodus resulted through the establishment of the Veterinary Cordon Fence by the former South African Government. The fence inhibited access for the villagers to boreholes (they were on the other side of the fence).

In 1969, the Commissioner for the region based in Opuwo agreed to requests for new boreholes to be drilled in 1969.

In 1970, after two years, former inhabitants began to return to their homes.

From 1970 to 1996, the village goes on developing. In 1996 it was under the jurisdiction of the Headman Ismael TJIMUHIVA. However, due to his age, his son David TJIMUHIVA was acting on his behalf.

4. STORY WITHIN THE HISTORY: THE OMURAMBA SOUTH VILLAGE

In: “working paper, preliminary site survey. Report Northern Regions Livestock Development report (section 3)”, 1996

From 1890 to 1960, the area has been a cattle post for the Oruvandjai community.

In the 1950s, as the number of livestock was increasing, the Oruvandjai community requested the former South Africa Government to drill a borehole in Omuramba South.

In 1961, the South Africa Government drilled the borehole in Omuramba South. People decided to move to this area permanently.

Since 1961, the village has developed. There are today various infrastructures, such as a school, an auction pen, a crush-pen, dams and boreholes. (personal data, NOLIDEP)

Section 3

Infrastructure in Kunene North

1. MINISTRIES AND GOVERNMENT ORGANISATIONS

1.1 MINISTRY OF FOREIGN AFFAIRS, INFORMATION AND BROADCASTING

In Opuwo the Department of Information is present, employing 1 Information Officer, 1 Senior Clerical Assistant and 1 Media Officer. (in “Infrastructure in Opuwo”, 2000)

1.2. MINISTRY OF REGIONAL AND LOCAL GOVERNMENT AND HOUSING

1.2.1 Kunene Regional Council

In Opuwo the Kunene Region Council comprises 1 Governor, 5 Councillors (the Governor being as well the councillor for Khorixas), 1 Chief Executive Officer, 1 Chief Control Officer, 1 Chief Clerk, 1 Accountant, 1 Private Secretary, 1 Personnel Officer, 1 Clerk, 1 Record Clerk and 4 Cleaners. (in “Infrastructure in Opuwo”, 2000)

1.2.2. Town Council

The Town Council in Opuwo, comprises 7 Councillors, 4 Heads of Department, 1 Car Registry Clerk, 1 Private Secretary, 3 Clerks (Treasury Department), 4 Cleaners, 3 Handymen, 3 Operator Drivers, 1 Security Guard and 45 Labourers. (in “Infrastructure in Opuwo”, 2000)

1.2.3. Community Development Centre

The Community Development Centre employs 1 Clerk, 1 Community Activator, 1 Community Liaison Officer and 1 Cleaner. (in “Infrastructure in Opuwo”, 2000)

1.3. MINISTRY OF LANDS, RESETTLEMENT AND REHABILITATION

3 Staff members are working in the Opuwo branch of the Ministry.

1.4. MINISTRY OF TRADE AND INDUSTRY

The Directorate of Industrial Development: Section Small Stock and Information Industry is present in Opuwo and employs 1 Economist and 1 Clerk. (in "Infrastructure in Opuwo", 2000)

1.5. MINISTRY OF WORKS, TRANSPORT AND COMMUNICATION

1.5.1. The Government Garage

The Government Garage employs 2 Artisan (A), 1 Clerical Assistant, 2 Drivers, 2 Handymen, 1 Senior Workshop Assistant, 1 Operator Driver, 1 Leader Labourer and 1 Labourer. (in "Infrastructure in Opuwo", 2000)

1.5.2. Directorate of Works Maintenance

In Opuwo, this Directorate employs 1 Inspector, 3 Artisan, 3 Handymen, 1 Work Hand, 10 Labourers, 1 Clerical Assistant, 1 Broiler Operator and 1 Driver. (in "Infrastructure in Opuwo", 2000)

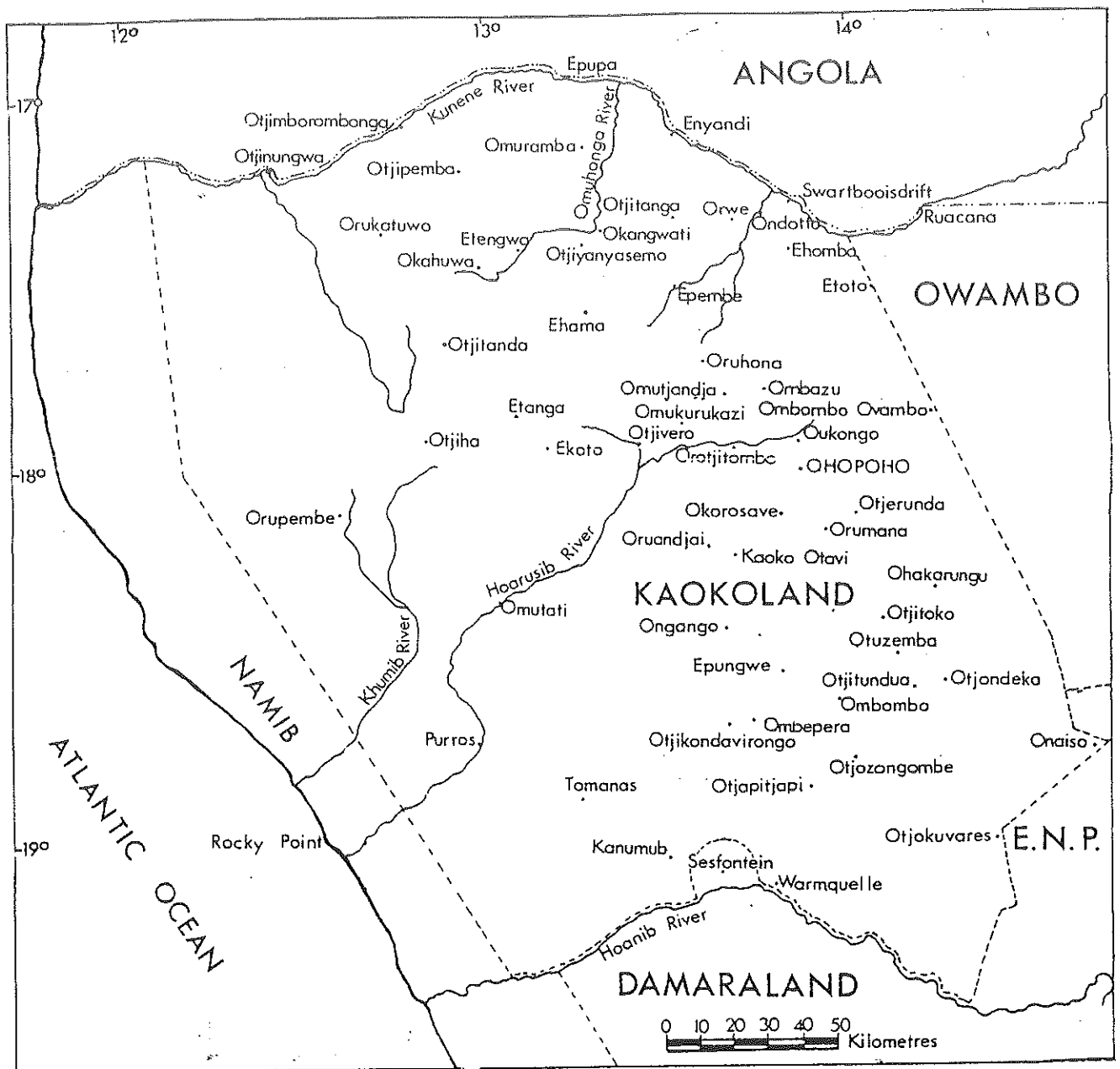
1.6. MINISTRY OF JUSTICE

In Opuwo, the Ministry of Justice employs 1 Magistrate/Legal Officer, 1 Public Prosecutor, 1 Senior Legal Clerk, 1 Legal Clerk, 1 Interpreter, 1 Typist and 1 Cleaner. (in "Infrastructure in Opuwo", 2000)

1.7. MINISTRY OF HOME AFFAIRS

1.7.1. Department of Civic Affairs

In Opuwo, this Department 1 Chief Clerk, 3 Clerks, 1 Record Clerk and 5 Cleaners. (in "Infrastructure in Opuwo", 2000)



Kaokoland: Major settlements.

1.7.2. Namibian Police

It was not possible, at the time of the survey, to obtain the number of people employed by the police force in Kunene North. The main station is in Opuwo, under the responsibility of a Warrant Officer. Other posts are in Okangwati, Etanga, Swartbooisdrift, Sesfontein and Epupa, each headed by a Station Commander. (in "Infrastructure in Opuwo", 2000)

1.8. MINISTRY OF WOMAN AFFAIRS AND CHILD WELFARE

In Opuwo, this Ministry employs 1 Chief Liaison Officer and 1 Clerical Assistant. (in "Infrastructure in Opuwo", 2000)

1.9. MINISTRY OF ENVIRONMENT AND TOURISM

1.9.1 Directorate of Forestry

It employs 1 Forestry Officer, 1 Forestry Guard, 4 Labourers and 2 Work Hands. (in "Infrastructure in Opuwo", 2000)

The Ministry of Environment and Tourism, Directorate of Forestry, has a 16m² nursery in Opuwo. The species of trees planted at the nursery are Flamboyant, *Dodonia viscosa*, *Melia azendrax*, *Luceana leococephala*, *Colospermum mopane*, *Phoenix spp*, *Diospyros*, *Boneteria*, *Prosopis*, *Faidherbia albida* and *Prosantos*. Trees are for sale at a subsidised price and can be obtained on request. A programme to plant trees in town has also been implemented. (in "Infrastructure in Opuwo", 2000)

1.9.2. Directorate of Resource Management

It is based in Opuwo and employs 2 Principal Rangers, 1 Senior Rancher, 1 Information Rancher, 1 Warden, 1 Scouter and 4 Work-hand.

1.10. MINISTRY OF BASIC EDUCATION, SPORT AND CULTURE

1.10.1. Directorate of Sports

In Opuwo this Directorate employs 1 Sport Officer and 1 Clerical Assistant. (in "Infrastructure in Opuwo", 2000)

1.10.2. Directorate Youth Development

This Directorate employs currently 2 Youth Development Officers and 2 Youth Promoters. (in “Infrastructure in Opuwo”, 2000)

Associated to this Directorate are (personal data DEES):

- The Regional branch of Red Cross, active with Youth Programme, such as drama course and implementation of the programme “My life is my choice”.
- The Youth Health Development Programme, a programme funded by UNICEF, developing sensitisation programmes for the youths in communities.

1.10.3. Primary Schools

In 1959, the first school was built in Kaokoland, in Orumana. (Page, 1976)

Table: distribution of educational institutions in Kaokoland in 1975 – Primary and Secondary School

Place	Status	Pupils
Ohopuho	1 Lower primary, 1 Higher primary school, 1 Secondary school (grade 10), 1 hostel for 74 boys and 57 girls.	Altogether 195
Okorosave	Lower primary	43
Ehomba	Lower primary	45
Okongwati	Lower primary and hostel	76
Oromana	Up to secondary (grade 10)	140
Kaoko-Otavi	Registration of school already approved for 40 boys and 40 girls	

(Page, 1996)

Table: Primary Schools in Kunene North, 1998

School	From grade	To grade	Learners	Teachers
Alariki Kaulukei Primary school	Gd 1	Gd 2	60	2
Alfa Primary School	Gd 1	Gd 9	348	14
Ehomba Primary School	Gd 1	Gd 7	107	4
Etanga Junior Primary School	Gd 1	Gd 4	27	2
Etoto Primmary School	Gd 1	Gd 7	166	5
Hi aukambe Junior Primary School	Gd 1	Gd 4	122	3
Hungua Junior Primary School	Gd 1	Gd 7	183	7
Kameru Primary School	Gd 4	Gd 7	534	17
Kaoko-Otavi Primary School	Gd 1	Gd 7	161	6
Musaso Primary School	GD 1	Gd 7	255	9
Okangwati combined school	Gd 1	Gd 8	214	7
Okorosave Junior Primary School	Gd 1	Gd 7	90	4
Omakange Junior Primary School	Gd 1	Gd 6	212	6
Ombombo Combined School	Gd 1	Gd 8	295	9
Omudhuwahauwanga Junior Primary School	Gd 1	Gd 4	46	1
Onamatanga Junior Primary School	Gd 1	Gd 4	50	2
Ondau Mobile School	Gd 1	Gd 1	153	7

School	From grade	To grade	Learners	Teachers
Ongongo Junior Primary School	Gd 1	Gd 6	26	2
Opuwo Junior Primary School	Gd1	Gd3	470	14
Orumana Combined School	Gd 1	Gd 10	659	23
Otjaandjamwennyo Junior Primary School	Gd 1	Gd 6	145	6
Otjapitjapi Junior Primary School	Gd 1	Gd 4	82	3
Otjekua Primary School	Gd 1	Gd 2	60	2
Otjerunda Junior Primary School	Gd 1	Gd 7	166	7
Otjetjekua Junior Primary School	Gd 1	Gd 2	73	3
Otjikondavirongo Primary School	Gd 1	Gd 2	39	1
Otjitanda Primary School	Gd 1	Gd 2	32	2
Otjitoko Junior Primary School	Gd 1	Gd 4	116	4
Otjiu Junior Primary School	Gd 1	Gd 3	50	2
Otjondeka Junior Primary School	Gd 1	Gd 7	218	8
Otjorute Primary School	Gd 1	Gd 2	26	1
Otjovanatje Junior Primary School	Gd 1	Gd 5	66	2
Oukongo Junior Primary School	Gd 1	Gd 4	131	4
Ovikange Junior Primary School	Gd 1	Gd 6	229	7
Ruiters Primary School	Gd 1	Gd 7	124	4
Shoopala Junior Primary School	Gd 1	Gd 6	355	11
Tjihozu Junior Primmary School	Gd 1	Gd 5	426	13

(in "schools address for Namibia", 1998)

Note: there is currently one volunteer working in one of the schools in Opuwo. (in "Infrastructure in Opuwo", 2000)

1.10.4. Teacher Resource Centre

The Teacher Resource Centre is in charge of the mobile schools in the region. It also provide teachers with on-going training. It is based in Opuwo. It employs 1 manager, 1 assistant manager, 4 cleaners and 1 volunteer. (in "Infrastructure in Opuwo", 2000)

1.10.5. Secondary Schools

In 1975, a secondary school was existing in Ohopoho. (Page, 1976)

Table: Combined and Secondary Schools in Kunene North, 1998

School	From grade	To grade	Learners	Teachers
Ombuumbuu Combined School	Gd 6	Gd 10	449	15
Putuavanga Junior Secondary School	Gd 8	Gd 10	418	17
Mureti Secondary School	Gd 10	Gd 12	310	12
Ruacana Vocational Secondary School	Gd 8	Gd 12	507	22

(in "schools address for Namibia", 1998)

1.11. MINISTRY OF AGRICULTURE, WATER AND RURAL DEVELOPMENT

1.11.1. Directorate of Veterinary Services

This Directorate currently employs 1 State Veterinarian, 1 Chief Animal Health Inspector, 3 Animal Health Inspectors, 27 Assistant Stock Inspectors, 1 Handyman, 41 Watchmen, 3 Work Hands, 7 Labourers and 1 Senior Animal Health Inspector. (in "Infrastructure in Opuwo", 2000)

In an effort to decentralise its services, the Directorate has established Veterinary Rural Extension Centres or VREC in Okangwati, Etanga and Sesfontein. Each of the VREC is manned by 1 Animal Health Inspector, supported by 2 supportive staff. (personal data, NOLIDEP)

1.11.2. Directorate of Rural Water Supply

This Directorate currently employs 1 Regional Head, 1 Control Rural Water Extension Officer, 2 Chief Rural Water Extension Officers, 12 Rural Water Extension Officers, 1 Senior Artisan Foreman, 1 Artisan Foreman, 2 Artisan (A), 1 Artisan (B), 12 Handymen, 34 Work Hands, 1 Chief Clerk, 1 Clerk, 1 Clerical Assistant, 1 Record Clerk, 2 Labourers, 1 Cleaner and 3 Operator Drivers. (in "Infrastructure in Opuwo", 2000)

This Directorate has also got plans to decentralise its services. (personal data, NOLIDEP). This Directorate is supported by a Finnish funded project that aims at building staff capacity. (personal data, DRWS)

1.11.3. Directorate Extension and Engineering Services

This Directorate employs 1 Chief Agriculture Extension Officer, 1 Agriculture Extension Officer (NOLIDEP Regional Manager), 1 Senior Agriculture Extension Technician, 6 Agriculture Extension Technicians, 3 Clerical Assistants, 4 Operator Drivers, 6 Labourers, 2 Work Hands, 1 Cleaner.

This Directorate is highly decentralised. The Regional Office is in Otjisoko-tjongava, 10 km from Opuwo. Agriculture Development Centres or ADC are located in Opuwo (1 Agriculture Extension Technician), in Okangwati (2 Agriculture Extension Technicians and supportive staff) and in Kaoko-Otavi (2 Agriculture Extension Technicians and supportive staff). Two new ADCs will soon be opened in Etanga and Oruvandjai. (personal data, DEES)

Associated with this Directorate are (personal data, Talavera):

- The Northern Regions Livestock Development Programme or NOLIDEP that aim at poverty alleviation and staff capacity building, employing two regional facilitators.
- The Research and Extension Management Programme that aim at building managerial capacity at regional and national level, currently employing one volunteer.

Furthermore, the Kunene North Farming System Research and Extension Unit, chaired by the Chief Agriculture Extension Officer, led by an Agriculture Research Technician, has been created in 1999 and falls under the responsibility of this Directorate. The Unit also comprises one Agriculture Extension Technician and one Agriculture Research Technician based in the region. The Unit is in charge of on-farm tests, trials and surveys. (in "how to work with farmers as equal partner", 1999)

1.11.4. Directorate of Agriculture Research and Training

In Kunene North this Directorate employs 2 Agriculture Research Technicians, both based at Otjisokotjongava. (in "Infrastructure in Opuwo", 2000)

1.12. MINISTRY OF HEALTH AND SOCIAL SERVICES

In 1946 a Finish Mission Organisation undertook mission work in the region and by 1952 this mission had established a clinic at Opuwo. In 1955 the Dutch Reformed Church took over the Finish Mission and sent a missionary-nurse to Opuwo. In 1957 the mission was shifted to Orumana. In 1975 the regional hospital was already under construction in Opuwo. At this time a clinic-cum-hospital also existed at Orumana with a district doctor. At Okangwati there was a clinic constructed with a full-time nurse. There were also bungalows erected at certain visiting points where the district doctor went to twice a month to treat patients and for extension purposes (Page, 1976)

1.12.1. Primary Health Care Outreach Services

This service is manned by 1 Registered Nurse/Medical Assistant, 2 Enrolled Nurses and 1 Driver. (in "Infrastructure in Opuwo", 2000)

1.12.2. Clinics

Opuwo clinic:	1 Registered Nurses/Medical Assistant and 3 Nursing Assistants
Etanga clinic:	1 Enrolled Nurse, 1 Driver and 1 Cleaner
Ohandungu clinic:	1 Enrolled Nurse and 1 Cleaner
Etoto clinic:	1 Enrolled Nurse and 1 Cleaner
Otjiu clinic:	1 Registered Nurse/Medical Assistant and 1 Cleaner
Oruvandjai clinic:	1 Registered Nurse/Medical Assistant and 1 Cleaner
Epupa clinic:	1 Enrolled Nurse and 1 Cleaner
Sesfontein clinic:	2 Enrolled Nurses, 1 Nursing Assistant, 1 Driver and 1 Cleaner
Orumana clinic:	1 Enrolled Nurse and 1 Cleaner
Otjondeka clinic:	1 Enrolled Nurse and 1 Cleaner
Okangwati clinic :	1 Registered Nurse/Medical Assistant, 1 Enrolled Nurse and 1 Cleaner

(in "Infrastructure in Opuwo", 2000)

1.12.3. Section: Social Welfare Services Opuwo

This section is manned by 1 Senior Social Worker, 1 Social Worker, 1 Clerk and 1 Record Clerk. (in "Infrastructure in Opuwo", 2000)

The Subsection: Environmental Health Services Opuwo is manned by 1 Health Inspector, 1 Environmental Health Assistant and 2 Labourers.

The clinic in Etanga



1.12.4. Section: District Hospital Opuwo (Opuwo State Hospital)

This section is under the responsibility of 1 Principal Medical Officer. (in “Infrastructure in Opuwo”, 2000)

Office and General Services: this service employs 3 Record Clerks, 1 Handyman, 1 Senior Institution Worker, 2 Watchmen and 3 Cleaners. (in “Infrastructure in Opuwo”, 2000)

Cleaning Services: this service employs 2 Leader Cleaners, 2 Labourers and 14 Cleaners. (in “Infrastructure in Opuwo”, 2000)

Transport Services: this service employs 2 Drivers. (in “Infrastructure in Opuwo”, 2000)

Catering Services: this service employs 2 Cooks, 1 Senior Institution Worker and 6 Institution Workers. (in “Infrastructure in Opuwo”, 2000)

Laundry Services: this service employs 1 Sewing-Laundry Assistant, 2 Equipment Attendants and 5 Institution Workers. (in “Infrastructure in Opuwo”, 2000)

Subsection: Nursing Services: this subsection employs (in “Infrastructure in Opuwo”, 2000):

- 1 Principal Registered Nurse
- For the Inpatients service, 7 Registered Nurses, 11 Enrolled Nurses and 6 Nursing Assistants
- For the Outpatients service, 3 Registered Nurses/Medical Assistants, 4 Enrolled Nurses and 1 Nursing Assistant

Theatre and CSSD: this service employs 1 Institution Worker and 1 Nursing Assistant. (in “Infrastructure in Opuwo”, 2000)

Subsection: Professional Services: this subsection employs (in “Infrastructure in Opuwo”, 2000):

- For the Medical Services, 2 Senior/Principal Medical Officers
- For the Dental Services, 1 Dental Assistant
- For the Pharmaceutical Services, 1 Pharmacist’s Assistant and 1 Work Hand
- For the Rehabilitation Services, 1 Medical Rehabilitation Worker
- 1 Radiographic Assistant

Note: the Health and Social Services Support Programme second phase (HSSSP II), a project funded by the Government of Finland, is currently supporting the Ministry of Health and Social Services and has got a branch in Opuwo. It aims mainly at building staff capacity, especially at managerial level. (in “Infrastructure in Opuwo”, 2000)

2. NON GOVERNMENTAL ORGANISATIONS

Save the Rhino Trust: this NGO was set-up to try and save the Rhino by establishing anti-poaching units. The NGO helps with the capturing of Rhinos and their translocation to safer places. (in “Kunene integrated regional land use plan”, 1998)

Desert Research Foundation of Namibia: the mandate of this organisation is the combating of desertification through awareness creation, education and research. The organisation does not have an office in Kunene North but interact with the region. (in “Kunene integrated regional land use plan”, 1998)

Himba Years: this is a cultural heritage research and preservation project, also committed to partake in community development. The project is based in Etanga and is led by an anthropologist. (Sherman, 2000)

Kaokoland Development League: this is a local NGO that has been supported first by RISE (also an NGO) and later on by the Africa Development Foundation, especially in terms of capacity-building. The League is based in Okangwati. (in “Kunene region, appraisal report by regional co-ordinator”, 1996)

Integrated Rural Development and Nature Conservation: it is a non-resident NGO mainly, but not exclusively, involved in Kunene South and training Community Game Guards (in “Kunene region, appraisal report by regional co-ordinator”, 1996)

Note that various governmental Committee (such as the Regional HIV/AIDS Committee) and non governmental Committees (such as the OTJIOMO Committee, Committee Against Alcohol Abuse) are also present in the region. (personal data, Talavera).

3. COMMUNITY-BASED ORGANISATIONS

Prior independence, most communities have never been consulted by government about development issues, have almost no prior experience of negotiating with government over development programmes and are used to having a relatively small number of public services being provided free of charge. (in “Kunene region, appraisal report by regional co-ordinator”, 1996) It was observed that there is a high dependence on government to provide services and infrastructure. Several communities are waiting for government to repair crush-pens which could quite easily be repaired by communities themselves (in “NOLIDEP site survey in Kunene North (Feb- March 1996)”, 1996; in “Kunene region, appraisal report by regional co-ordinator”, 1996; Hovey, 1997)

There is therefore a need to transfer more responsibilities for identifying problems and implementing actions from government to communities themselves. (in “Kunene region, appraisal report by regional co-ordinator”, 1996) To support the implementation of the project, governmental services and development projects have based the organisation of the services at the village level: water point committee, conservancy committee and farmers’ association (in “developing financial services in two regions of the Northern Namibia”, 1999)

However, locally elected committees have sometimes been perceived as an attempt to promote an alternative system of leadership and decision-making in communities. (Hovey, 1998)

3.1. CONSERVANCY COMMITTEES

They have been formed with considerable influence from the Ministry of Environment and Tourism. Their main purpose is to oversee the formation and management of game conservancies at various locations in the Kunene region. (in “Kunene integrated regional land use plan”, 1998)

3.2. WATER POINT COMMITTEES

They are being formed throughout the country as provided for in the new Community-Based Water Supply Policy. These committees oversee the management of water points and the collection of user-fees. These are probably the most well supported community based organisation in terms of training. The local committees are affiliated to a regional committee. (in "Kunene integrated regional land use plan", 1998)

However, it has also been reported that promoting the idea of elected committees to co-ordinate development activities has met with mixed success. The Water Point Committees rarely operates as such. Instead, the water point is under the overall responsibility of the headman with day-to-day responsibility for operation and maintenance being delegated to a caretaker. (Hovey, 1997)

3.3. FARMERS UNIONS AND FARMERS ASSOCIATIONS

Prior to 1995, there was one Farmers' Union, (Ngatuuane Farmers' Union) and one Farmers' Association, (Kaokoland Farmers' Association), both very political (SWAPO and DTA respectively) and none really effective (in "Grass-roots institutional development in Kunene, a review of NOLIDEP's experience", 1998) Between 1996 and 1999, Ngatuuane, affiliated with the Namibia National Farmers' Union, has received training and support, both financially and in terms of lobbying. (personal data, Talavera)

Between 1996 and 1998, under the influence of the Northern Regions Livestock Development Programme, based within the Ministry of Agriculture, Water and Rural Development, numerous Farmers' Associations have been established. End of 1999, 10 of them and the Kaokoland Farmers' Association decided to merge and form a new Farmers' Union. They were, in 2000 joined by another Farmers' Association. (in "Grass-roots institutional development in Kunene, a review of NOLIDEP's experience", 1998; personal data, Talavera)

There are nowadays two Farmers Unions in Kunene North (personal data Talavera):

- Ngatuuane Farmers Union, the eldest one, comprising 7 Farmers Associations, affiliated to the National Namibia Farmers Union
- Kunene North Communal Farmers Union (KUNOCOFU), comprising 12 Farmers Associations, not affiliated to the National Namibia Farmers Union.

Another Farmers' Association, Maturintugu Farmers' Association, is still independent and did not merge with neither of the Unions. This Farmers' Association is operating in the Okangwati area. (personal data, NOLIDEP)

3.4. THE KAOKO-EPUPA DEVELOPMENT FOUNDATION

The Himba community recently launched this foundation. It is an "incorporated non-profit making association, which could among other things focus on developing the region's economy as well as maintaining the unique traditions of communities in the region. (the Namibian, Thursday, June 4, 1998, quoted in "Kunene integrated regional land use plan", 1998)

Other Community-Based Organisations comprise rest camp committees (Ovahimba Traditional Village Committee nearby Opuwo, Etanga rest camp Committee, etc.), the Youth League, etc. (personal data, Talavera).

4. OTHER INFRASTRUCTURES IN KUNENE NORTH

4.1. ELECTRICITY SUPPLY

The Kunene Region has a hydro-electric power station at Ruacana and yet it is one of the most poorly electrified. All major urban centres and some commercial farms in Kunene South have electric power. The rest of the region has no power and no plans have been advanced to electrify it through the rural electrification programme. This is probably due to the fact that there is no buying power for such services in most of the region. (in "Kunene integrated regional land use plan", 1998)

4.2. POSTAL AND TELEPHONE SERVICES

Postal and telephone services are available at all major centres. (in "Kunene integrated regional land use plan", 1998) Since end of 1998 the telephone system in Opuwo is automatic. Since 1999 there are phone lines in places such as Okangwati, Etanga, Kaoko-Otavi, Ehomba, Otuni, etc. Since June 2000, cell phone services are operational in Opuwo. (personal data Talavera)

4.3. SHOPS AND BANKS

Shops are confined to towns and big villages. There is pressure on the Himba people to sell more livestock, but the question that springs up is "what would they do with their money where there are no banks and shops?". (in "Kunene integrated regional land use plan", 1998) Furthermore, there are no banking facilities in Opuwo and as a result there is no incentive for farmers to sell their livestock (in "Kunene integrated regional land use plan", 1998; Smit, 2000).

4.4. ROADS

There exists a communication bottleneck in the region: distances between villages and the town of Opuwo. The low development of the transportation means are the main constraints to the development of marketing mechanisms as well as other services (in "developing financial services in two regions of the Northern Namibia", 1999) Some villages are more easily accessible than others. It is the case of most villages alongside the main road from Opuwo to Epupa falls (for instance Ohandungu). Other village, however, are much more difficult to reach. Okahozu, only 20km from Ohandungu, is, for instance, difficult to access. (Mouton, 2000)

There are no tarred roads in the region. The main town in the region is Opuwo, with main access roads from Kamanjab and Ruacana to Opuwo being fairly well-kept gravel roads. The roads from Opuwo to Kaoko Otavi, Orotjitombo and Okangwati are usually good enough to be travelled by sedan cars, while all other roads are dirt tracks and only accessible by four-wheel drive vehicles (Paskin, 1990)

4.5. QUARANTINE CAMPS

A quarantine camp for the marketing of animals outside the region exists at Omutambo Maowe on the Kaokoland-Ovamboland border. (Page, 1976) For various reasons including the effective control of foot-and-mouth Disease and Contagious Bovine Pleuropneumonia (Bovine lungsickness), quarantine camps are present at Omutambo Maowe and Khowarib, both camps in the south of the Kunene North near Sesfontein. Small stock must be quarantined for 21 days before moving them south of the cordon fence. Cattle that are quarantined can only go to the abattoir in Oshakati. Only the meat, under certain conditions, is exported south of the cordon fence (Ngauyake, no date)

5. INFRASTRUCTURES IN SOME OF THE COMMUNITIES

In 1975, equipment for the treatment and prevention of livestock diseases consisted of 36 dips (dipping troughs) and 34 crush-pens, which are spread out throughout the region. Approximately 140km of fencing already existed in the region, including 2.5km at Swartbooisdrif that probably were connected to agronomy uses (Page, 1976). The number of crush-pen has increased all over the region, thanks to the effort of the Directorate of Veterinary Services, within the Ministry of Agriculture, Water and Rural Development, and the financial support of the Northern Regions Livestock Development Programme. (personal data, NOLIDEP) There are currently 126 crush-pens in Kunene North (Sesfontein area included) (personal data DVS)

In a formal survey conducted 20.0% of the Ovahimba (sample: 15 persons) questioned found crush-pens to be sufficient, while only 13.1% of the Herero (sample: 38 persons) questioned found crush-pens to be sufficient in Kunene North (Paskin, no date)

Table: the use of crush pens and auction pens in Kunene North

Facility	Used for	Percentage
Crush pens	Veterinary vaccinations only	100%
	Auctions	0%
Auction pens	Auctions only	52%
	Auction and vaccination	46%

(Hashoongo et al, 1999)

Prior to 1995, there was only 5 auction pens in Kunene North, most of them in poor condition. (in “Grass-roots institutional development in Kunene, a review of NOLIDEP’s experience”, 1998) There are nowadays 9 cattle auction pens and 5 goat auction pens in Kunene North (personal data, DEES)

5.1. OHANDUNGU COMMUNITY

Ohandungu (GPS co-ordinates: 13 37’ N, 17 45’ E) is a large community with 25 households and 200 to 300 members (children included). The following facilities are present at Ohandungu (in “analysis of the farming systems in Ohandungu”, 2000):

- Goat auction pen and cattle auction pen: marketing opportunities exist in the community. Meatco goes there on a regular basis to purchase animals.
- Goat dip: to treat small stock affected by mange.

- School: children have access to education. Furthermore it attracts children from the surrounding communities.
- Clinic: first aid and common diseases can be treated directly in the community. There is an enrolled nurse working full-time in the clinic, as well as a cleaner.
- Store: one store is present in the community, selling basic items.
- Water points: there is one borehole and two earth dams. Water is therefore available for both human and animal consumption. However, the holding capacity of the earth dams is not enough to go through the whole dry season. Two rivers run through the community and are full after heavy rains.
- The main road between Opuwo and Okangwati runs through the community. The community has direct access to the road and easy access to the main centres.
- The telephone line goes up to the community. The clinic and the school have got a direct telephone line.
- A lot of gardens have been recorded. The average size of a field is 0.5-1.0 hectare in size and the main crops planted are maize, watermelons, pumpkins, beans, sweet stovered sorghum and calabashes. All crops are rain fed

Crushpens can be used to perform various tasks such as branding, dehorning, castration, vaccinations, the treating of sick animals, pregnancy testing and drenching or parasite control. Auction pens can be under the responsibility of communities or farmers associations. Commission paid during auctions should fund the up-keep of the facilities. (Smit, 1999)

5.2. OTUANI COMMUNITY

In Otvani (about 70km from Opuwo) infrastructures such as a crush pen, cattle auction pen, goat auction pen, goat dip, school, store and water points (one borehole and two earth dams) are present. The main road from Opuwo is very close to the community, therefore the community has easy access to the main centres. The telephone line goes through the community. There is no clinic, therefore sick people have to be transported to Opuwo (in “analysis of the farming systems in Otvani”, 2000)

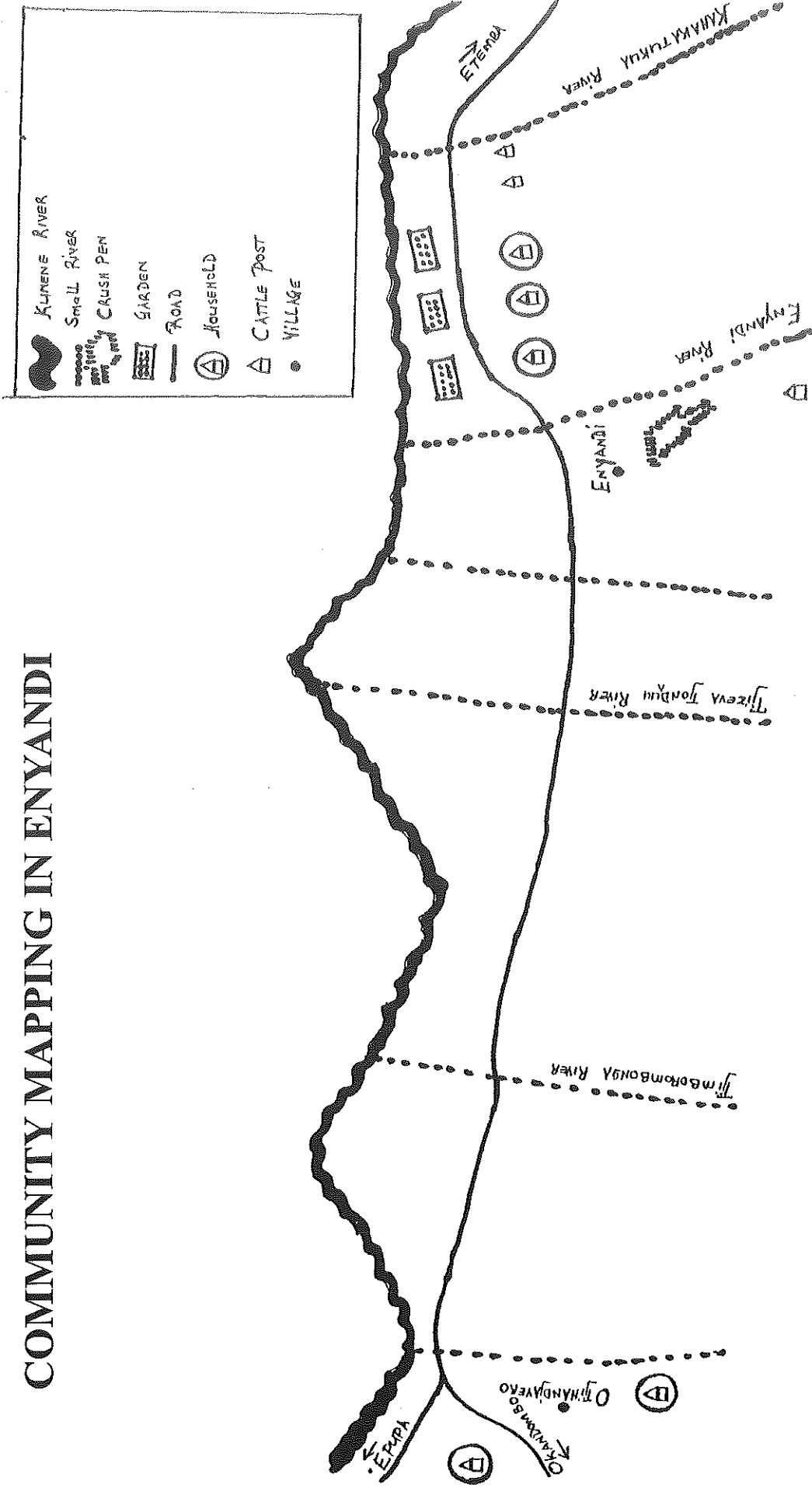
5.3. OMUHONGA COMMUNITY

There are two hand pumps at the Omuhonga community but no borehole and no dams. There are as well one crush-pen and one school. There are no auction pens, no goat dip, no shop and no clinic. (Mbinga et al, 1999)

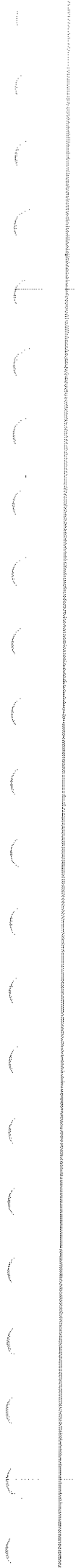
5.4. ENYANDI COMMUNITY

At Enyandi the only facility is a crush pen. There are no school, clinic, telephone lines, proper roads, store or marketing facilities. It has already been suggested that studies should be conducted to determine how it is possible for such a community to cope without the minimal infrastructures (in “use of PRA tools in Enyandi, 1999)

COMMUNITY MAPPING IN ENYANDI



Kunene North FSR-E Unit
In "Analysis of the farming systems in Enyandi"



Section 4

Policies and incentives in Kunene North

Kunene North is part of the Kunene Region, which is part of the Namibian territory. As such, all National policies are valid in Kunene North. Their implementation is left under the responsibility of the concerned Ministry, under the supervision of the Governor and his Regional Management Unit. This chapter will not review all policies in Namibia but highlight some points of importance for Kunene North.

1. THE REGIONAL COUNCILS ACT OF 1992

Kunene region was created after the promulgation of the regional councils Act of 1992. It comprises of the whole of former Kaokoland, the northern part of former Damaraland, the western part of former Ovamboland and the commercial farming area district of Outjo and Kamanjab. The region is named after the Kunene river, which forms not only the boundary of the region to the north, but also, the boundary between Namibia and Angola. (in “Kunene integrated regional land use plan”, 1998)

Kunene region is divided into six administrative units known as “constituencies”. Each constituency is headed by a councillor who represents it on the regional council, which is in essence, the regional government. The region is divided into north and south by the cordon fence (in “Kunene integrated regional land use plan”, 1998)

2. SECTORAL POLICIES AND LEGISLATION OF IMPORTANCE FOR KUNENE NORTH

The Namibian Cabinet has declared tourism as a priority economic development sector in the country, including in Kunene Region. Several sectoral policies and legislation have been developed in pursuit of these objectives. Worthy noting is (in “Kunene integrated regional land use plan”, 1998):

- The Rural Water Supply and Sanitation Policy of 1993. The government has got a system in place to give responsibilities of maintaining water points to farmers (Smit, 2000)
- The Agricultural Policy of 1995
- The Agricultural (Commercial) Land Reform Act of 1995
- The National Forestry Policy of 1996
- The Nature Conservation Amendment Act of 1996
- The National Land Policy of 1997
- The National Drought Policy of 1997

All these policies and laws converge on several fundamental aspects, namely; the need to conserve natural resources, equitable access to natural resources and promotion of economic growth amongst formerly disadvantaged groups. Agricultural sector seeks to promote food security at both household and national levels. Central government has put up a number of policies and legislation on natural resource management and development planning. (in “Kunene integrated regional land use plan, 1998)

3. THE DROUGHT POLICY

The recently promulgated drought policy has wide implications for the Kunene region. As advanced by the policy statement, drought relief handouts or subsidies for livestock (be it in terms of water or fodder provision) have been ruled out. There is a need to introduce an innovative livestock marketing system that responds to the need to de-stock during drought and restock after drought. (in “Kunene integrated regional land use plan”, 1998)

The eight objectives of the new government drought policy are as follow (Smit, 1999):

- Ensure that household food security is not compromised by drought
- Encourage and support farmers to adopt self-reliant approaches to drought risks.
- Preserve adequate reproductive capacity in livestock herds in affected areas during drought periods.
- Ensure the continuous supply of portable water to communities, in particular to their livestock, their schools and their clinics.
- Minimise the degradation of the actual resource base during drought.
- Enable rural inhabitants and the agricultural sector to recover quickly following drought.
- Ensure that the effects of drought do not threaten the health status of all Namibians.
- Finance drought relieve programmes efficiently and effectively by establishing an independent and permanent National Drought Fund.

It was further decided that boreholes that were drilled during the last droughts as drought relief water supplies should be used strictly for emergencies. No new boreholes should be opened up in overgrazed areas as these may lead to further degradation. In the future land boards will have to sanction the establishment of livestock watering points. (in “Kunene integrated regional land use plan”, 1998)

4. THE LAND REFORM

It needs to be stressed out that land tenure reform will be necessary in the Kunene region. The tenure reforms proposed in the National Land Policy adopted in 1997 should be tried out. In an attempt to do so, the Ministry of Lands, Resettlement and Rehabilitation took the task of developing the regional land use plan as part of on-going efforts to improve capacity in land use planning (in “Kunene integrated regional land use plan, 1998)

It has however to be noticed that non-equilibrium conditions due to great aridity and consequent temporal and spatial variability of rainfall events characterise the region. The variability is random and unpredictable. This makes conventional land use planning concepts less applicable. (in “Kunene integrated regional land use plan, 1998)

All communal land in Namibia is regarded by the country's constitution as state owned. In terms of the country's constitution, all Namibians have the right to settle anywhere in the country but it is understood that people waiting to move into a new area need the permission of the local authority. (Jones, 1993)

The land tenure in Kunene North is communal and does not allow freehold title deed ownership. Land therefore cannot be offered as collateral and a private person cannot tender communal land for security (in "Developing financial services in two regions of the northern Namibia – Feasibility study organised by NNFU, Windhoek Namibia", 1999; Smit, 2000). However, there is currently a new land bill, which is under discussion. The bill will target communal land and address issues such as ownership and fencing (Smit, 2000)

5. NORTH-SOUTH INCENTIVE SCHEME

A scheme is in place whereby farmers are given an opportunity to sell animals north of the cordon fence and buy a farm and stock south of the control fence. A person must have 150 herds of cattle. Farmers will not pay interest for the first four years but from the fifth year onwards the interest will start at 2% and increase by 2% every year until the maximum rate of about 16%. The payment will be for the period of about 25 years. The government will cover the difference between the selling price for cattle north of the cordon fence and buying price south of the fence. Communal farmers from Kunene North can benefit from this scheme. (Smit, 2000)



Section 5

Demographics

Prior to this section, it has to be mentioned that figures found in the literature are sometimes unclear or contradictory:

- The Kunene Region has an area of 136 549 km² with a population density of 0,5 person/km² (population census 1991). (in “developing financial services in two regions of the Northern Namibia, 1999)
- The Kunene Region has an area of 1 444 252 km² with a total population of 64,017 people and a population density of 0,04 person/km². The region has therefore one of the lowest population densities in Namibia (in “Kunene integrated regional land use plan, 1998)
- The Kunene Region has a population of 58,500 people in 144,254 km² and a population density of 0,41 persons/ km². (in “working paper, preliminary site survey, report Northern Regions Livestock Development Programme, section 3, 1996).

Demographic data of the region is not up-to-date as there has been no census since 1991. However, in 1995 there has been a report on the distribution of economic resources and in 1997 a publication by the United Nation Development Programme (UNDP) on “Human Development” (in “Kunene integrated regional land use plan”, 1998). All those information have been proceeded and the more realistic figures, approved by more people, have been selected in the following paragraphs.

1. POPULATION CENSUS IN KUNENE REGION

In total the Kunene Region has a population of 64,017 inhabitants of which 32,359 are males and 31,658 are female. The Kunene Region represents 4,5% of the total Namibian population. 75% of the inhabitants are rural communities. The total region has 34% of female headed households, but this figure is slightly lower in Kunene North. (in “developing financial services in two regions of the Northern Namibia, 1999; (in “Kunene integrated regional land use plan”, 1998)

1.1. DISTRIBUTION OF POPULATION PER CONSTITUENCY

Table: distribution of population by constituency

Constituency	Total population (all ages)	Percentage total
Kamanjab	5996	9
Khorixas	13517	20
Opuwo	15344	23
Outjo	7239	11
Ruacana	14915	22
Sesfontein	6558	15

(adapted from IDC, 1995, quoted in “Kunene integrated regional land use plan”, 1998)

1.2. DISTRIBUTION OF POPULATION PER SEX AND ORIGIN

Table: breakdown of Kunene population by sex and origin

Parameter	Numbers	Percentage
Total population	64,017	4,5% of Namibian population
Sex composition:		
Male	32,359	51% of the total population
Female	31,658	49% of the total population
Urban population:	8,769	14% of the regional population
Male	4,223	48% of the total urban
Female	4,546	52% of the total urban
Rural population:	55,245	86% of the regional population
Male	28,136	51% of total rural
Female	27,112	49% of total rural

(in "Kunene integrated regional land use plan", 1998)

1.3. Distribution of population per age groups

Table: age distribution of population in Kunene Region

Age group	Total population in group	Percentage
0-4	10548	18,6
5-9	7666	13,5
10-14	4860	8,6
15-19	4636	8,2
20-24	4646	8,2
25-29	4673	8,2
30-34	3874	6,8
35-39	3179	5,6
40-44	2514	4,4
45-49	2073	3,7
50-54	1719	3,0
55-59	1378	2,4
60-64	1392	2,5
65 and more	3568	6,2
Not stated	52	0,1

(in "Kunene integrated regional land use plan", 1998)

About 41% of the population is under the age of 15. The dependency ratio is therefore very high, as this population is not yet economically active. (in "working paper, preliminary site survey, report Northern Regions Livestock Development Programme, section 3", 1996; in "Kunene integrated regional land use plan", 1998)

2. POPULATION CENSUS IN KUNENE NORTH

The 1991 Census reports that the population living in Kunene North is 26,176, forming approximately 1,9% of the total population for Namibia (NPC, 1993, quoted in "working paper, preliminary site survey, report Northern Regions Livestock Development Programme, section 3, 1996). This shows a high population increase of 201% since 1974 (Malan, 1974, quoted in "working paper, preliminary site survey, report Northern Regions Livestock Development Programme, section 3", 1996).

In 1970 in the Kunene North the human population was 13,000. With the exception of the Thwa, Zemba and Hakaona, they were all explicitly livestock farmers. (Malan, 1974; Page, 1976) The population distribution estimates for Opuwo District in 1980 and 1983 gave a total of roughly 20,000 inhabitants. (in "Namibia, the Demographic background) In 1990, the estimate population for Kunene North is 30,000. The population growth in the sub-region is therefore beginning to reach crisis proportions. (Paskin, 1990). In 1991 it was estimated that the population would double in 20 years. (in "Kunene integrated regional land use plan", 1998)

The fertility of Kunene North is high, as indicated by the average of 3,2 children for females over the age of 15. Additional pressures have come from repatriation of exiles in the area and a small number of people fleeing from the war in Angola during recent years. The sex ratio for the region in 1991 was 93 males for 100 females, which is a relative parity between sexes. (in "working paper, preliminary site survey, report Northern Regions Livestock Development Programme, section 3", 1996).

84% of the total inhabitants in Kunene North live in rural areas, versus 16% in town. However, the town of Opuwo continues to grow in size. (in "working paper, preliminary site survey, report Northern Regions Livestock Development Programme, section 3", 1996).

Table: population in Opuwo District

	Rural	Urban	Total
1980	15,000	5,000	20,000
1983	16,000	5,000	21,000

(in "Namibia: the Demographic background)

3. THE HIMBA POPULATION

The Himba population is represented in 152 communities, 1223 households. It is mainly a young population, with the high majority being less than 19 years old. (Hvidsten et al, 1997)

3.1. POPULATION DISTRIBUTION PER COMMUNITY

Table: distribution of population per community in Kunene North

Community	Number of homes	Estimate total population
Ehomba area		
Ehomba	11	144
Okaumbamenye	3	39

Community	Number of homes	Estimate total population
Ozombu	7	92
Okauapehuri	9	118
Ojiheketjangukutu	9	118
Ondoozu	3	39
Okovahene	3	39
Otjimuhaka	9	118
Ohangonga	3	39
Okakulangua	3	39
Ondoto	10	131
Oroutumba	7	92
Total	77	1011
Epembe area		
Epembe	38	499
Otjitandi	27	355
Total	65	853
Etangua area		
Etangua	11	144
Ekarandjuwo	2	26
Okapara	2	26
Oruseu west	2	26
Total	17	223
Etoto area		
Okampere	4	53
Etoto west	12	158
Ongete	5	66
Ompanda	4	53
Okasokona	2	26
Otjisoko	2	26
Omundjete	6	79
Okekuva	2	26
Etoto	20	263
Okombungu	4	53
Orionduri	1	13
Total	62	814
Etanga area		
Etanga	24	315
Onjuva	12	158
Orutanda	8	105
Okaanga	18	236
Okazorowe	4	53
Orupembe	7	92
Okatapati	2	26
Ekambu	16	210
Okamanga	3	39
Otjihaa	8	105
Omutati	12	158
Osana	2	26
Owongongoro	5	66
Ondauka	5	66
Omuhero	4	53
Okondhombu	12	158

Community	Number of homes	Estimate total population
Omimborombonga	9	118
Reddrum	8	105
Etara	4	53
Otjaparakaha	9	118
Owakapawe	5	66
Orombamba	4	53
Omirora	6	79
Ombutisewone	4	53
Ouozonduombe	9	118
Total	9	118
Kaoko-Otavi area		
Oruhito	9	118
Ombosapamue	4	53
Omeyameu	4	53
Total	17	223
Okauwa area		
Okauwa	6	79
Osiya	5	66
Ondjimbi	1	13
Oumauue	3	39
Orongorozu	2	26
Total	17	223
Ombazu area		
Ombazu	28	368
Otjovihe	1	13
Total	29	381
Omuramba North area		
Omuramba North	3	39
Oronditi	3	39
Omukazeze	4	53
Ohajouwa	3	39
Oryeheke	3	39
Otjouvaoutiti	4	53
Okeheke	3	39
Ombombo	1	13
Ommitenguindi	3	39
Omiemire	1	13
Otjoya	1	13
Ozohorongo	1	13
Enyandi	8	105
Omuzororora	1	13
Omarawombua	2	26
Eyayona	4	53
Otjipanga	2	26
Ohamaremba	9	118
Etunda Otjipahaue	1	13
Ommuhonga	31	407
Otjiandjasemo	7	92
Omwangete	8	105
Otjeme	2	26
Omungerewa	6	79
Ombaka	10	131

Community	Number of homes	Estimate total population
Oheuva	10	131
Otjerivanga	1	13
Ondova	2	26
Ohavaye	1	13
Otjiheke yomakati	1	13
Otjikongo	4	53
Orute	2	26
Total	142	1864
Ondjete area		
Ondjete	25	328
Omuhiva	12	158
Okapembambu	40	525
Omaoipanga	5	66
Total	82	1077
Orotjitombo area		
Otutati	15	197
Otjiheke	6	79
Orotjitombo south	17	223
Okau	3	39
Ohungumure north	14	184
Ozohaviria	1	13
Total	56	735
Oruhona area		
Oruhona	11	144
Okamue	10	131
Total	21	276
Oruseu area		
Oruseu east	9	118
Oviyere	4	53
Total	13	171
Orwe area		
Orwe	20	263
Otjihoko	4	53
Otjakati area		
Ongongo	15	197
Otjipanga	3	39
Okasoko	3	39
Oronganga	4	53
Otjikunda	10	131
Otjakati	5	66
Otjikuyu/ Oturindi	16	210
Otjivero	7	92
Okaharaanandjara	6	79
Orotjitombo/ Outati	37	486
Total	106	1392
Otjekua area		
Otjekua	10	131
O mipanda	4	53
O mindjete	6	79
Ombumbihaka	2	26

Community	Number of homes	Estimate total population
Otjimanangombe	6	79
Otjorute	12	158
Total	40	525
Otjitanda area		
Otjitanda	6	79
Omuatjivingo	5	66
Otjihende	8	105
Otjizu	2	26
Embwende	4	53
Otjinungwa	20	263
Omingondo	2	26
Ozohorongo	4	53
Total	51	670
Otjiu area		
Omungunda	6	79
Okomihuva	3	39
Otuvare	6	79
Onganga	10	131
Otjite	2	26
Otjilunda	5	66
Otjiu	3	39
Outjikune	9	118
Okureza	1	13
Ondjombo Yakotkiyo	1	13
Total	46	604
Oukongo area		
Ovinyange	17	223
Otjongoro	11	144
Okahozu	33	433
Okarukoro	43	565
Okatutura west	9	118
Otjirumbu	11	144
Okoupaue	9	118
Orokasoko	25	328
Total	158	2075
Grand total	1223	16070

(adapted from Hvidsten et al, 1997)

The table includes Zemba and some minorities, exclude Otjovanatje and Ruacana areas, Opuwo and few households around Puros. (Hvidsten et al, 1997)

3.2. POPULATION DISTRIBUTION PER AGE GROUPS

Table: population distribution per age group:

Age groups	Number
0–5 years	3583
6–15 years	3755

Age groups	Number
16 – 19 years	3424
Adults	2935
Elderly	2373

(adapted from Hvidsten et al, 1997)

The table includes Zemba and some minorities, exclude Otjovanatje and Ruacana areas, Opuwo and few households around Puros. (Hvidsten et al, 1997)

The annual growth of the Ovahimba is more than 5%, which means a doubling of the population in less than 20 years (Hvidsten et al, 1997)

4. THE EPUPA BASIN

The area between Epupa and Tjimuhaka (Swartbooisdrift) is intensively used. On both Namibian and Angolan sides 108 households, 101 livestock camps and 60 gardens were counted. Even if it does not reflect population density, it does reflect the axibility of the land use system usage. Only 9 households, 35 livestock camp structures and 6 gardens were counted in the basin between Epupa and Oriokawe. This area is predominantly used by highly mobile livestock camps. The stretch of land between Oriokawe and Otjinungwa is slightly more used, with 11 households, 26 livestock camp structures and 40 gardens. (Bollig, 1996)

Table: household, livestock camps and gardens in Kunene Basin

Strip	Coverage	N/H	N/C	N/G	A/H	A/C	A/G
Strip 8	Tjimbundu – Enyandi	18	6	14	22	13	4
Strip 9	Enyandi – Otjihandi	3	6	0	2	3	0
Strip 10	Otjihandi – Omarombwa	17	5	6	8	11	0
Strip 11	Omarombwa – Oronditi	10	13	20	17	17	6
Strip 12	Oronditi – Epupa	6	9	8	5	18	2
Strip 13	Epupa – Orukoko	2	9	0	2	2	0
Strip 14	Orukoko -	0	1	0	0	1	0
Strip 15		1	7	0	1	7	0
Strip 16		0	1	0	0	0	0
Strip 17	- Oriokawe	3	5	2	0	2	4
Strip 18	Oriokawe -	1	3	0	0	3	0
Strip 19		0	1	0	0	2	0
Strip 20	- Otjiuu/Otjomborombo	1	7	13	8	8	20
Strip 21	Otjiuu – Onyezu	0	0	0	1	2	7
Strip 22	Onyezu -	0	0	0	0	0	0
Strip 23	- Otjinungwa	0	0	0	0	0	0
	Total Namibian side	62	73	63			

N/H Namibian side, households,

N/C Namibian side, camps

N/G Namibian side, gardens

A/H Angolan side, households

A/C Angolan side, camps

A/G Angolan side, gardens

(Bollig, 1996)

5. THE ETANGA AREA

Table: Etanga population and settlement by pastoral-ecozone

Settlement	Number of households	Population (estimated)
Omudjandu		
Etanga	24	315
Ekambu	16	210
Okamanga	3	39
Omutati	12	158
Osana	2	26
Owongongoro	5	66
Etara	4	53
Otjapakaha	9	118
Owakapawe	5	66
Orombamba	4	53
Omirora	6	79
Ombutisewori	4	53
Ouozonduuombe	9	118
Total	103	1354
Okaanga		
Okaanga	18	236
Okazorowe	4	53
Total	22	289
Oviana		
Onjuva	12	158
Orutanda	8	105
Orupembe	7	92
Okatapi	2	26
Otjihaa	8	105
Reddrum	8	105
Total	45	591
Ozongoto		
Okondjombo	12	158
Omimborombonga	9	119
Total	21	277

(NOLIDEP files and Hvidsten et al, 1997, quoted in Behnke, 1998)

In 1947 N.J. Van Warmelo conducted a census of headmen and sub-headmen districts in Kaokoland. It would appear that the current Etanga jurisdiction is more or less comparable to the Etanga headman's area in 1947. 400 people (or adults, the source is unclear) were registered under the Etanga headman in 1947. This implies that the population of the Etanga area may have increased six-fold in half a century. (Behnke, 1998)

Note that another survey gives 27 households in Etanga, instead of 24 (Hashoongo et al, 1999)

Table: detail for the Etanga community

On ganda	0 - 5 yrs		6 - 15 yrs		16 - 19 yrs		Adults		Elderly		Sum
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
1	1	2	1	0	1	1	1	2	2	0	11
2	2	1	3	3	4	0	2	2	1	1	19
3	4	3	2	3	1	2	1	1	0	1	18
4	2	3	3	0	1	1	0	1	1	1	13
5	3	0	1	2	1	0	1	3	2	0	13
6	1	2	2	0	2	0	1	2	1	1	12
7	2	1	3	1	1	1	2	2	0	1	14
8	1	0	1	1	2	3	1	1	2	1	13
9	0	1	1	2	1	2	0	1	1	0	9
10	2	2	1	3	1	1	1	1	1	1	14
11	1	2	0	1	2	2	1	0	2	1	12
12	0	0	1	1	3	3	1	1	0	1	11
13	1	2	3	1	1	1	2	1	0	1	13
14	1	1	0	1	1	1	0	2	1	2	10
15	2	1	3	2	1	1	1	1	2	1	15
Sum	23	21	25	21	23	19	15	21	16	13	197
Average	1.53	1.40	1.67	1.40	1.53	1.27	1.00	1.40	1.07	0.87	13.13
Sum M/F	44		46		42		36		29		197
Average M/F	2,93		3.07		2,80		2,40		1,94		

(Hvidsten et al, 1997; Behnke, 1998)

Section 6

Agriculture in Namibia

About half of the surface area of the country can be farmed. Agriculture supports some 70% of Namibia's population directly or indirectly (El Toukhy, 1994, quoted in "livestock marketing in the Northern Communal Areas of Namibia", 2000) The agricultural sector displays a high degree of dualism, with 73% of the farm land occupied by 4000 to 4500 commercial farmers on 6337 farming units, while 27% supports a population of about 900,000 people on communal lands. (in "livestock marketing in the Northern Communal Areas of Namibia", 2000)

The northern communal areas are characterised by higher rainfall and therefore a higher agricultural potential than the commercial farming areas (Matanyaire, 1996, quoted in "livestock marketing in the Northern Communal Areas of Namibia", 2000) As a result there have been more cattle in the communal areas of Namibia than in the commercial areas since 1995. The ownership of cattle was distributed almost equally between the commercial and communal areas in the early 1990s. This ratio has changed considerably by now. (in "livestock marketing in the Northern Communal Areas of Namibia", 2000)

Table: number of cattle in commercial and communal areas (1991 – 1998)

	1992	1993	1994	1995	1996	1997	1998
Commercial	1,179,000	1,130,000	1,030,000	887,000	743,000	791,000	824,000
Communal	1,028,000	944,000	1,005,000	1,144,000	1,247,000	1,265,000	1,368,000
TOTAL	2,206,000	2,074,000	2,036,000	2,031,000	1,990,000	2,055,000	2,192,000

(Ministry of Agriculture, Water and Rural Development, 1999, quoted in "livestock marketing in the Northern Communal Areas of Namibia", 2000)

Namibia exports some 80% of its total beef production, mainly to South Africa. The commercial sector contributes more than 90% of exports from 50% of the Namibian cattle herd. It is however interesting to note the large number of cattle marketed from the Northern Communal Areas between 1991 and 1992 when Meatco started buying cattle from these areas. (in "livestock marketing in the Northern Communal Areas of Namibia", 2000)

The marketing of cattle from the Northern Communal Areas is heavily influenced by health considerations. The Namibian market is divided by a Veterinary Cordon Fence or "red line" running from Palgrave point on the West Coast of the country through Oshivelo to the Namibian-Boswana border in north-eastern Omaheke Region. Meat and livestock cannot pass freely over the Veterinary Cordon Fence into the southern foot-and-mouth-free zone without conforming to veterinary regulations. (in "livestock marketing in the Northern Communal Areas of Namibia, 2000)

Table: number of cattle marketed 1991 – 1998 (formal market)

Year	Export abattoir (Meatco)		Total live exports to RSA	Local butcheries	Total
	NCA	Rest of Namibia			
1991	4,837	No figure	No figure	No figure	333,845
1992	17,106	No figure	No figure	No figure	365,634
1993	16,512	No figure	No figure	No figure	400,690
1994	18,604	No figure	No figure	No figure	406,044
1995	29,690	156,381	198,773	29,645	414,489
1996	19,724	170,707	279,127	28,405	497,963
1997	13,522	88,879	92,661	31,713	226,775
1998	18,488	126,824	143,344	24,276	312,932

NCA: North Central Areas; RSA: Republic of South Africa

(Meat Board, 1998, quoted in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

The abattoir operated by Meatco within the zone were granted export status to South Africa in 1995. Animals have to be quarantined for three weeks prior to slaughter. All meat is de-boned after the meat has been allowed to mature for twenty-four hours. The meat is then stored for at least three weeks before sale (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

The trade in goat meat is highest in Kunene North and North Central Division, less in Kavango region and nearly non-existent in the Caprivi region. (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

The Northern Communal Areas have a relatively poor marketing infrastructure that has affected trade in livestock in these areas since the 1850s. Furthermore, they are characterised by extreme rural poverty. The 7 regions, namely Kunene, Omusati, Oshana, Oshikoto, Ohangwena, Kavango and Caprivi, occupy the last 7 ranking in terms of the national Human Development Index, mainly because of their low per capita incomes in relative and absolute terms. (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

Chapter Two

THE SOCIAL ENVIRONMENT



Section 7

Cultural groups

As a result of historical events, the Herero became dispersed over a vast area stretching from South-Western Angola through the Kunene Region and the central parts of Namibia to the then-called Ngamiland in Northern Botswana. The Herero-speaking people became divided into various groups. (in “the Nomadic Pastoralist”, no date). They were joined, in Kunene North, by groups from different origin who eventually adopted the Otjiherero as mother tongue. As a result, various cultural groups can be identified nowadays. (in “the Nomadic Pastoralist”, no date)

1. THE HIMBA GROUP

The Himbas or OvaHimba reside mainly in the area north of the Hoarusib River, which is composed of the following wards: Omuramba, Ehomba, Epembe, Orwe, Eyangwa, Okahuwa, Ehama, Otjitanda, Etanga, Ekoto, Orotjitombo, Otjivero, Oruhona and Ombazu. There are however also a few Himba villages in the south of the territory, in Otjikondavirongo, Tomanas and Kanumub. (Malan, 1974; Paskin, 1990). A small community exists in Otjiwarango. (Paskin, 1990)

Totalling about 5000 people, they are the largest single group in Kunene North. (Page, 1976)

2. THE HERERO GROUP

Although there are several wards (Ohopoho, Oukongo, Ombazu and Orumana) which have a mixed population comprised of Herero, Tjimba-Herero and Himba, the following wards can be regarded as the nucleus of pure Herero: Kaoko-Otavi, Okorosave, Oruvandjai, Otjerunda, as well as parts of Oukongo and part of Ombazu. (Malan, 1974, Paskin, 1990)

The pure Herero group comprised about 3000 people in Kunene North. (Page, 1976)

3. THE TJIMBA GROUP OR TJIMBA-TJIMBA GROUP

At the beginning of the century it was a large group, but part of it merged with either the Himba or the Herero communities when Oorlog and its followers came back to Namibia. It is a group consisting of about 150 people, staying in the rugged Baynes and Otjihapa Mountains and the adjacent range of South Western Angola. More specifically they are encountered at Otjipemba, Otjimborombonga, Etambwe, Onyazu, Orukatuko, Okapupa and Otjinungwa. They are among the poorest in the Kunene North. They are hunters and

gatherers and depend on food from the veld, including berries, roots, grass seeds, honey, insects and animals. (Malan, 1974, Page, 1976)

They have been living longer in the region than the other groups. According to their physical appearance, they are probably not of Herero origin. However, they have become fully integrated with the Himbas and Hereros and have accepted the Otjiherero as their mother language. (Malan, 1974; Page, 1976)

They also have corresponding matri- and patri-lineal clans, the associated stateless political system, patrilineally organised groups with associated sacred fires, etc. (Malan, 1974)

Recently the question of their existence has been risen. In a report from a survey undertaken by the Directorate of Veterinary Services, the existence of hunters and gatherers was mentioned. (Paskin, 1990) A survey undertaken by the Ministry of Agriculture, Water and Rural Development under the Northern Regions Livestock Development Programme has proven that the group of hunters and gatherers still exist in the above-mentioned mountains (personal data Kakongo, 2000).

4. THE TJIMBA-HERERO GROUP

This group is gathered mainly around Ohopoho, Orumana, Otuzemba, Ongango and Ombepera.

Historically, it seems that the Tjimba group has associated mainly with the Himba and as a result have taken over most of their language, traditions and life style. Often, they acted as workers and helpers and obtained small stock for payment. (Page, 1976). Later on, the Tjimba-Herero attempt to integrate with the pure Herero has also included the discarding of their traditional dress in favour of western clothes. Among the Tjimba Herero there is a general feeling that, in view of the fact that they again have cattle and that they have overcome their earlier phase of impoverishment, the name "Tjimba" is no longer applicable. Although they prefer to be known as merely "Herero", the prefix "Tjimba" is still applied by other groups when referring to them. (Malan, 1974)

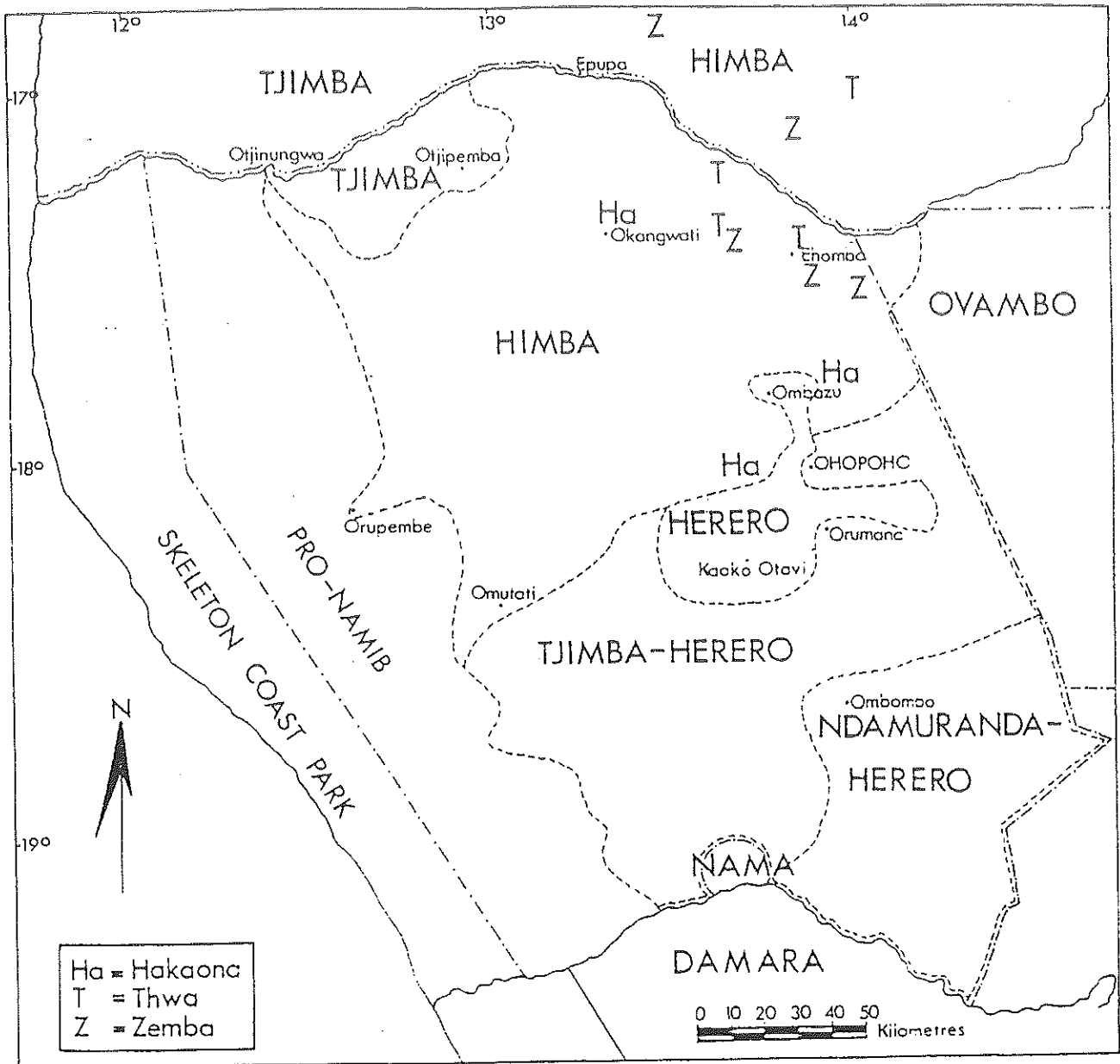
The Tjimba-Herero group totals about 3500 people. This group is often described as a group between the Himba and the Herero. They are a reasonably wealthy community of cattle farmers. (Page, 1976)

5. THE NDAMURANDA GROUP

This group is distinguished on historical grounds from the other Herero. They reside in the Otjondeka and Ombombo wards and have moved into the area excised in the 1960s from the Etosha Game Reserve, where villages have been constructed at Otjokavare and Otjomumborombonga. This group is characterised by its mobility. (Malan, 1974, Page, 1976)

6. THE ZEMBA GROUP

The Zembas are recognised as a closely related Herero-speaking group which has its own tribal area in Angola and is there known as the "Zimba". A number of families, however, migrated with the Himba to



Ethnographic map of Kaokoland

Kaokoland because of the demand for their services as magico-religious specialists and medicine-men. For this reason they have not congregated in any single place but live dispersed among the Himba. Zemba are found in Ovinyange, Orwe, Etoto, Okamwe Orokakaru, Otjovanatje and Ruacana. (Malan, 1974; Page, 1976; Hvidsten et al, 1997). They are not traditionally livestock oriented. They traditionally live from payment for the service offered. Traditionally, payment was under the form of small stocks. Nowadays, it can take the form of cash. Besides, the trend is for them to become small stock farmers or crop producers, producing maize and pumpkins. (Page, 1976; Paskin, 1990).

7. THE HAKAONA GROUP

The Hakaona are closely related to the Zemba and also originally entered the territory as religious specialists. They are encountered at Ovinyange, Oukongo, Orotjitombo and Okangwati, which are all in the Himba area. (Malan, 1974)

As for the Zemba group, they are not traditionally livestock oriented. They traditionally live from payment for the service offered. Traditionally, payment was under the form of small stocks. Nowadays, it can take the form of cash. Besides, the trend is for them to become small stock farmers or crop producers, producing maize and pumpkins. (Page, 1976; Paskin, 1990).

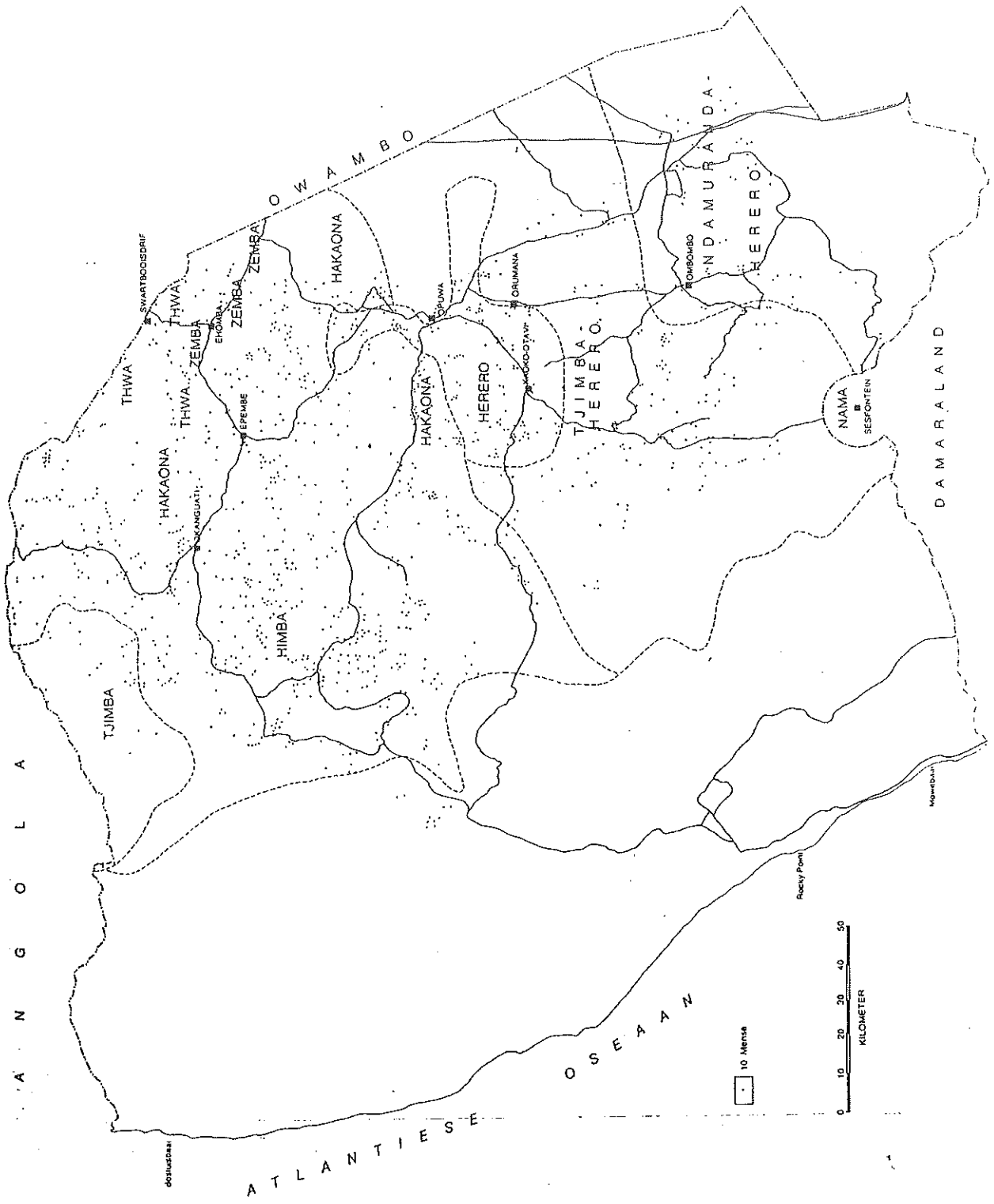
Both the Hakaona and the Zemba are extremely conservative and still wear traditional clothes. These two closely related groups total altogether 500 people. (Malan, 1974; Page, 1976)

8. THE THWA GROUP

The Thwa are ironsmiths whose presence in the territory is also directly related to their labour specialisation. This group total less than 300 people. They are found far north at Ehomba, Okatapati, Otjikanga, Ezorowe, Enyandi and Okandombo. The largest group (about a hundred people) is at Ezorowe, near Otjitanga. (Malan, 1974) They have spread between the Himba, despite the fact that they are of a different descent. Even if traditionally they were ironsmiths, they currently do not smelt iron anymore but manufacture items such as arrow heads, spears and knives. They trade their iron from sheep and goat. (Page, 1976).

9. THE OWAMBO GROUP

Coming from the then-called Owamboland, about 500 Owambo people lived in Kunene North in the 1970s. They supplied most of the territory's semi-skilled labour, including lorry drivers and operators of heavy machinery. The majority resided in the vicinity of Opuwo (then called Ohopoho). Some families were encountered along the Kunene River where men served as border guards. (Malan, 1974, Page, 1976)



PAGE (1976)
 In :Kaokoland: evaluasie van Hulpbronne en Ontwikkelingsvoorstelle”

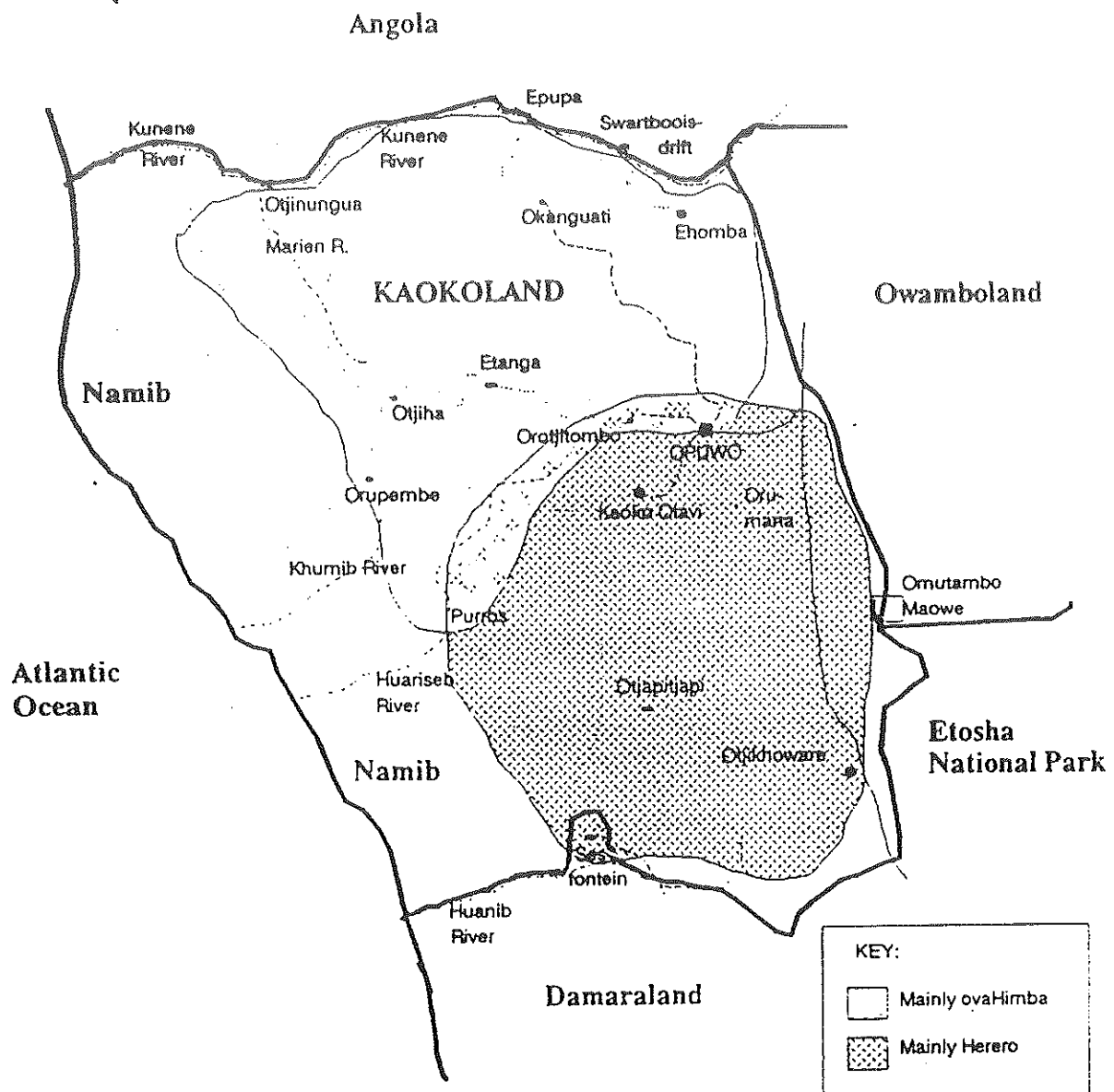
10. OTHER CULTURAL GROUPS

The following Angolan ethnic groups are also encountered in Kunene North (Malan, 1974):

- The Tjavikwa group: between 20 and 30 of them are settled in Okarere and Etoto
- The Ngambwe group: some families are encountered at Ondoto, Ehomba and Etoto

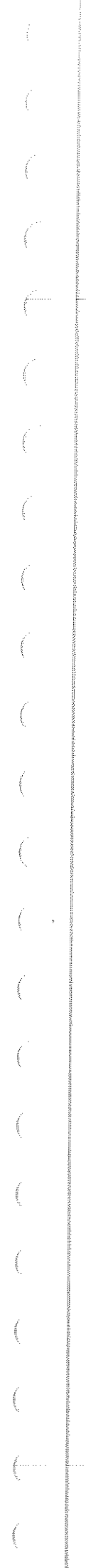
Some people are of unknown decent and are distributed in places such as Warmquelle and Ehomba, where they carry out specific activities such as irrigation, mining of sodelite at Swartbooisdrift and trade. (Page, 1976). Nama, Damara, Whites, Mbundu and Kuvare are also present minorities (Hvidsten et al, 1997)

A small number of people of miscellaneous origin from outside Kunene North have found a heaven in this area. One person of considerable standing deserving of mention is the headman George Hartley who was born at Otjimbingwe and whose wife was from Rietfontein, now Upington district (Van Warmelo, 1951) At this time in the Kaokoland few Basters and Coloureds were present. In Sesfontein reserve some Hottentots, Basters, Coloured, Bergdama and Bushmen were present (van Warmelo, 1951)



Approximate ethnic boundaries.

Sources: author's own observations, see also Malan, 1974 and Jacobsohn, 1990.



Section 8

The double descent

The social organisation of Himba communities is based on a double descent system (Cornu, 1999):

- The place of life (community and household levels), the authority within the family and the religious ceremonies are under the responsibility of the father and the father's family (the patriclan);
- The inheritance system and the control of the properties are under the mother and the mother's family line (the matriclan).

The Herero and the Ovahimba descent system is a double descent system with the "eanda" or matriclan and the "oruzo" or patriclan. (Grandall, 1991; Cornu, 1999). Double descent would result when a person with strongly functional exogamous matrilineal kin groups comes to adopt patrilocal residence and to organise politically on a local basis in consequence either of outside contacts or of internal adjustment (Murdock, 1940, quoted in Malan, 1973)

An actual ascription of one line of descent as constantly superior to the other among the Ovahimba is not helpful as it varies according to the situations, genders and purposes involved (Grandall, 1991). According to some authors, the descent lines have become vague due to the fact that a lot of inter-marrying has taken place (Page, 1976). According to others, it is still a strong system in existence in Kunene North (Grandall, 1991)

Most cultural groups in Kunene North have adopted the double descent system of the Ovahimba and Hereros (Malan, 1974)

Section 9 and section 10 will present respectively the matriclan and the patriclan. The Ovahimba model has been chosen. However, most explanations can be extended to other cultural groups.



Section 9

The matriclan

The membership of a matrilineal group is of fundamental importance in the Herero-speaking society. This is illustrating by the saying “eanda onditjita omuhoko”, “the matrilineal clan procures me with relatives” (Malan, 1973)

The two basic forms of matrilineal groupings among the Himba are the clan and the lineage (Malan, 1973):

- The clans are dispersed, segmentary systems, cutting across the boundaries of language and culture to indicate kinship with several other tribes in the south-western Bantu group.
- The lineages are the corporate segments of the seven matriclans and are composed of people who recognise exact genealogical relationship with one another.

1. THE “EANDA” OR MATRICLAN

The matrilineal clan or “eanda” (pl. “omaanda”) is a named, non-totemic descent group, non-residential in character and with a rule of exogamy which is not always strictly enforced. Owing to the institutions of patrilocal residence after marriage, its members cannot form localised units and are consequently dispersed over a wide area. (Malan, 1973)

Except for certain rules providing for adoption, every individual obtains membership of a matriclan through birth and is in this way attached to kinsmen who are reckoned unilineally through the mother. (Malan, 1973)

This way of descent reckoning is putative in nature because genealogies are not sufficient to prove direct descent from a remote ancestress. Seven matrilineal clans are identified in the Himba society, some of them sub-divided into sub-clans. (Malan, 1973)

Table: matrilineal clans and sub-clans

Matrilineal clans	Matrilineal sub-clans
OMUKWEYUVA	Omukweyuva Woyamuzi
	Omukweyuva Wokatenda
	Omukweyuva Woyahawari
	Omukweyuva Woyapera
	Omukweyuva Woyamutati
OMUKWENDJANDJE	
OMUKWENDATA	Omukwendata Wondjuwo Onene or
	Omukwendata Wozongombe or
	Omukwendata Omukwaruvara
	Omukwendata Wondjuwo Okatiti or Omukwendata Omukwatjitupa

Matrilineal clans	Matrilineal sub-clans
OMUKWENAMBURA	Omukwenambura Omutjavikwa
	Omukwenambura Omutjavikwa
OMUKWANDONGO or OMUKWAUTI	
OMUKWATJIVI	Omukwatjivi Womuhuka
	Omukwatjivi Womungambu
OMUKWENATJA	

(Malan, 1973)

With the exception of the Omukwenatja clan, confined to a small area, the matrilineal clans are not confined to the Himba alone, but are encountered in all the Herero-speaking tribes, some Ovambo, Ngambwe, Kuvare, Ngumbi and Sele groups and tribes practising double descent such as the Tjimbundu of Angola. (Malan, 1973)

The seven matrilineal clans are unranked and exhibit a high degree of autonomy from one another. (Malan, 1973)

Owing to the prevailing segmentary lineage system, there is no decentralised authority in the clan, because there is no person holding a hereditary position which allows social or political seniority over other members of the clan. (Malan, 1973)

All clan and sub-clans are divided into smaller unilateral units with similar composition but shallower genealogical depth. Descent reckoning in this group is not fictional since the matrilineage consists of people who base their kinship on common descent from the same known ancestress. The identifying and naming of the various lineages are determined by the clan name and then finally qualified according to the house or hut ("ondjuwo") of the foundress. (Malan, 1973)

A further characteristic of the lineage in the "eanda" is the lack of genealogical depth. It usually involves members of five generations, thus embracing a deceased woman and her matrilineal descendants in four generations. (Malan, 1973)

2. THE ORIGIN OF THE GENEALOGY

The most common interpretation of the genealogy is as follow (Malan, 1973): it is generally accepted that Omukweyuva is the eldest of all matriclans. A woman, whose name is not known, gave birth to two daughters:

1. The first one was born during sunrise and was called "Omukweyuva" ("daughter-in-law of the sun"). Some of her matrilineal descendants were afterward designated as Ovakweyuva (sing. Omukweyuva). She had various daughters:
 - The eldest daughter, Mdondo, gave rise to the division of the Omukweyuva clan into sub-clans. She had four daughters, all responsible for the establishment of a sub-clan.
 - The four younger daughters established:
 - the Omukwenambura clan ("daughter-in-law of the rain, as she played in the rain at her mother's funeral),
 - the Omukwandongo clan (daughter-in-law of the stick, as she played with a stick),
 - the Omukwatjivi clan (daughter-in-law of wickedness, as she refused to join the others to play). The further sub-division into two sub-clan is not due to two sisters but to two groups who

separate at some stage, one staying close to a tree and the other one moving forward.

- and the Omukwenatja clan (no clear meaning. This clan appeared in the genealogy at a late stage only).

2. The younger one was called Karombo. She gave birth to two daughters:

- One was called Omukwendjandje (“daughter-in-law of the ondjandje-grass, grass she used to provide clean water)
- One was called Omukwendata (“daughter-in-law of the mud”, as she made a hole in the mud, “ondata” to allow the water to seep into it). She had two daughters, each one responsible for the establishment of a sub-clan.

3. THE “OMUHOKO” OR KINSMEN

Clan membership is the key to the membership of the wider Himba society. The “omuhoko” or “relatives” or “kinsmen” is used to refer to a person’s actual genealogical relatives. They belong to the same matrilineage. The “omuhoko” has certain rights and obligations towards them. Furthermore, a person will use the term “omuhoko” for all the members of the “eanda” to which he belongs and as, they must be treated with the necessary hospitality. To a lesser degree, the term also encompass members of other ethnical groups who belong to corresponding matriclans. (Malan, 1973)

Furthermore, the term “omuhoko” is used in a political context as reference to geographically delimited sectors of the larger matrilineal structure, which is unilinear in character with a single founding ancestress. All the inhabitants of Kaokoland who are member of any of the seven matriclans collectively form a political body also called “omuhoko”. (Malan, 1973)

4. THE ROLES OF THE MATRICLAN

4.1. CONTROL OF PROPERTIES

It controls the bulk of wealth in livestock, since most animals are inherited matrilineally (Grandall, 1991, Paskin, no date). Other properties are also inherited from the “eanda” (in “the Nomadic pastoralists”). Although the father is the head of the family the inheritance goes to the oldest sister of the deceased and her oldest son (meaning the nephew of the deceased) and not to the oldest son of the father. The inheritor must then provide for the family of the deceased. (Page, 1976). The Herero-speaking group are primarily pastoral people with matrilineal control over their livestock (Malan, 1974) The matrilineage is a kin group which is mainly concerned with the economic security of the lives of its members. (Malan, 1973)

Young men often exploit the economic association which exist between members of the same “eanda”. Whenever they are in need of cattle or money, they approach their maternal uncles, hereby drawing from resources to which they have a hereditary right. A person very seldom makes such request to his own father, because he is a member of a different “eanda”. A man’s wife and children are not member of the man’s

“eanda”. (Malan, 1973; in “social organisation, economic life, political structure, military organisation and religion”, no date).

4.2. MARRIAGE

The “eanda” is the branch of descent that broadens its field to include a potentially vast number of people within the bonds of matrilineal kinship. Both the Himba and the neighbouring matrilineal tribes of Kunene North and Southern Angola share most of the same matriclans. There is thus a “relatedness” conceptually strong, even if functionally it is of minimal consequences. This has a great deal to do with the selection of a spouse. The Ovahimba marry preferably cross cousins. Matrilineal relatives are a category of persons who are perceived to stand in a cross cousin relationship, rather than exclusively mother’s brother’s child or father’s sister’s child. (Grandall, 1991)

The “eanda” comes to the fore in mate selection because of an institution called “ongura” (working together). “Ongura” refers to the matriclans which are most closely related – offspring of the same mother. The myths of origin recounted by the Ovahimba in regard to their matriclans provide a genealogy which divides the matriclans into two sets of founding ancestresses. Each set is composed of sisters. The two respective sets are cousins to each other. This is the mythical foundation of “ongura”. One of its practical consequences is preferential “ongura” marriage, meaning marriage to a woman who belongs to the an “eanda” which stands in an “ongura” relationship to one’s own “eanda”. (Grandall, 1991)

The preferential form of marriage is between a man’s daughter and his sister’s son. According to Herero laws such cousins are not related within the kinship traditional organisation, as they do not belong neither to the same matrilineal clan (“eanda”) nor to the same patrilineal clan (“oruzo”). The bridegroom is nevertheless a close matrilineal relative and also related to his father-in-law. The groom is therefore not likely to ill-treat his wife. Viewed from this angle, the bridegroom and his uncle are both members of the same matriclan, but he is not related to the bride as she belongs to the “eanda” of her mother and not of her father. Patrilineally, there is no link between the two family either, as the bridegroom’s father and the groom’s father are not related. (in “the Nomadic Pastoralists”).

The “eanda” is the line of kinship which broadens the scope of one’s own field of matri-relations. (Grandall, 1991)

5. THE ADOPTION SYSTEM

The cardinal factor in the Himba society being matrilineal descent, it follows that members of other ethnical groups can only be assimilated by the Himba if adoption into one of the “omaanda” can be accomplished. This is culturally provided for in the following circumstances (Malan, 1973):

- If a man of another ethnical group marries a Himba woman, he will be adopted into his wife’s clan by her uterine relatives.
- Children borne of the afore-mentioned union are immediately regarded as proper Himba as, according to general beliefs, a person inherits his blood from his mother (while his spiritual attributes are transmitted through the father). Note that in this case the father must obtain patrilineal clan to

Young girl in her "ondjuwo"

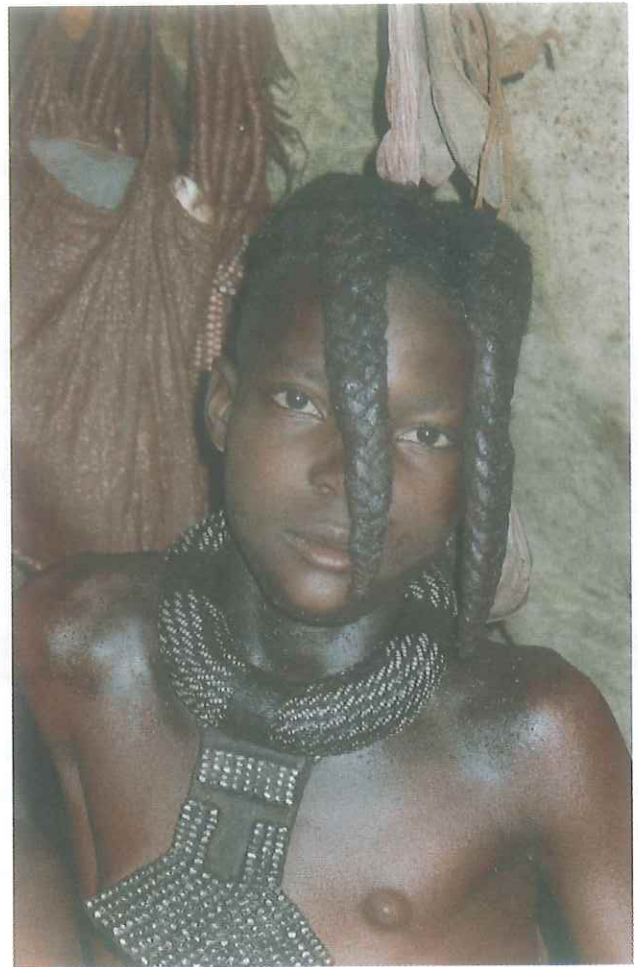
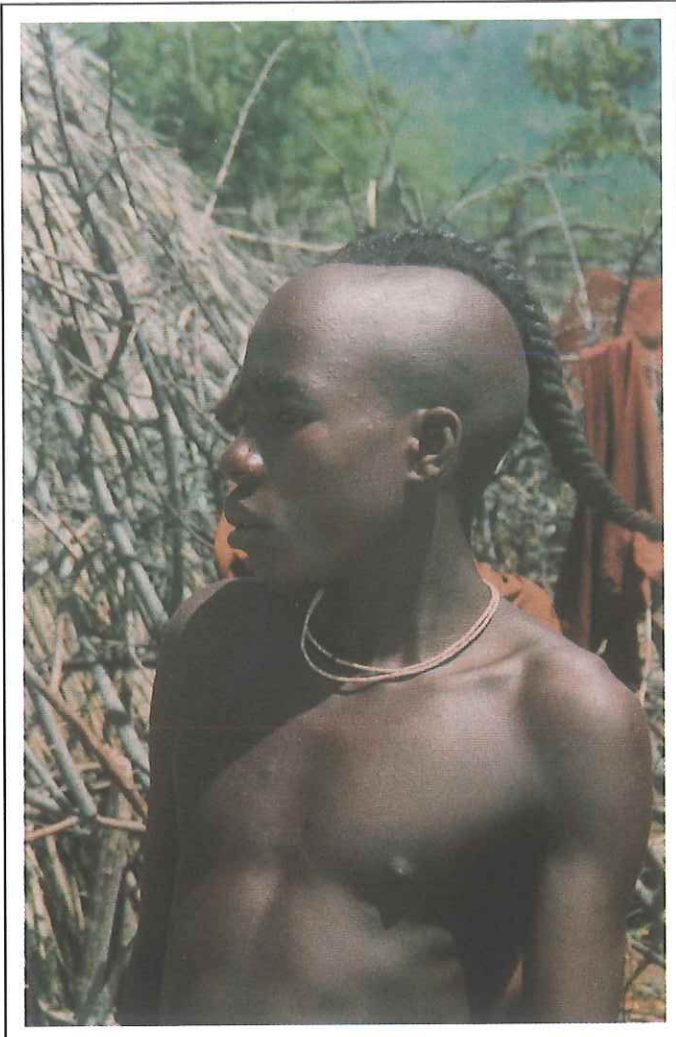


Photo: Philippe TALAVERA



Young Himba male in a village close to Okangwati

Photo: Philippe TALAVERA

ensure that his child's life will be spiritually secured. It is done through the adoption in the "otjihinaruzo" clan.

- A woman from a related ethnical group belonging to a matrilineal clan which corresponds with that of the Himba is right from the onset regarded as matrilineal relative who needs no formal adoption into the Himba society.
- In the event of a marriage between a Himba man and a woman without any recognised matrilineal clan membership, the wife will be adopted into the "eanda" of her husband. This is not common practice.
- A Himba couple can adopt a child from another ethnical group. In this case, he is adopted by his stepfather's relatives (a child not beared by a woman cannot enter the "eanda" group)

6. RELIGIOUS ACTIVITIES LINKED TO THE MATRICLAN

There are some relations between the heir and the deceased uncle, embracing certain punitive measures which can be taken if negligence occurs in the maintenance of the family of the deceased. The heir develops a functional connection with the "oruzo" and sacred fire of his uterine uncle because his future matrilineage heritage will cause religious liability which cannot be met with inside his own patrilineage. However, it is of an ephemeral nature and is discontinued when the wives are dead and the children grown-up and economically self-sufficient. (Malan, 1973)

Section 10

The patriclan

The Ovahimba “oruzo” (pl. “otuzo”) or patrilineage clans are dispersed, segmentary groups without a tradition of common origin of all the “otuzo” collectively. The significance of the clan is therefore limited to its constituent lineages, which emerge as highly functional kin groups in society, playing a substantial part in organising the life of an individual on a local basis. (Malan, 1973)

1. THE VARIOUS PATRICLANS AND THEIR TABOOS

The Himba’s patriclan is a named, non-totemic group which traces descent to a remote, imaginary ancestor. The most important indication of clan identity is a set of magico-religious prohibitions of which each clan has its own. Tradition relates that the progenitor of the clan first imposed these taboos on his patrilineal kinsmen. When a woman obtains membership of another “oruzo” after marriage, she and her children are then subjected to the taboos of her husband’s clan only. The clans are as following (Malan, 1973):

- “Orumenda”: taboo apply to yellow cattle (“ozongombe ondumbu”), grey sheep (“ozondu ozondovazu”) and yellow dogs. Members are not allowed to keep or even touch these animals, neither may they eat the meat or use the fat for any purpose whatsoever).
- “Okoto”: prohibitions were imposed against any beast without horns (“ohungu”), a red beast (“osaona”: cow and “osazu”: ox), as well as a beast of any colour but with a transverse white stripe on the back, extending over the ribs (“ongomba ekondo”) and against grey sheep. Furthermore, women belonging to this clan do not eat cream and they observe a taboo against milking during menstruation (“omukazendu urikomweze”: the woman is at the moon)
- “Ohorongo”: taboos are applicable to all cattle and small stock without horns, as well as goats and sheep with one small ear (“onweya”). This clan is divided into a number of sub-clans which are all attached to different family names. The best known are Ohorongo yaKapika, Ohorongo yaTjiposa, Ohorongo yaTjijahura, Ohorongo yaHiyaumba and Ohorongo yaMumbuu.
- “Omakoti”: members of this clan are not allowed to eat the colon (“oruverera”) of a beast, neither may any of the women or young men eat the meat of sacrificial animals.
- “Onguramene”: prohibitions are observed against grey sheep, black cattle as well as any beast with a white stripe across the back and ribs. The meat of rhinoceros is also taboo.
- “Ombongora”: the “ongombe ekonde”, the lower part of the thighbone (“epindi”) and upper-haunch (“evango”) of any beast as well as the blood and liver of all small-stock is taboo.
- “Omurekwa”: the thighbone, the heart and tongue of any beast may not be eaten by any member of this clan.

- “Ongweyuva”: taboos are observed against grey sheep, the thighbone of cattle and against rhinoceros (even if it is just by seeing it).
- “Ondjimba”: taboos in this clan apply to grey sheep and the eating of wild roots and berries by women while trekking with the cattle. Furthermore, milk can only be drunk inside the cattle kraal. Furthermore, no stick may be put through the nostril of cows to hold them when milking.
- “Oherero”: a grey beast with a longitudinal white stripe running from the head to the croupe or from the throat across the stomach (“ongombe ondaura”) is taboo. The colon of all other cattle is also taboo. Women are not allowed to eat any fat meats. The entrance to the kraal as well as the doors of huts always point East.
- “Otjikuma Tjosemba” or “Ondanga”: this group honours taboos against yellow cattle and yellow dogs. Furthermore, in order to be successful in farming at least half of their cattle must be black with white speckles or spots (“ozosemba”).
- “Otjikuma Tjongange” or “Ondanga”: this group honours taboos against yellow cattle and yellow dogs. Furthermore, in order to be successful in farming at least half of their cattle must be red with white speckles (“ozongange”).
- “Oharangoro”: taboos are against grey sheep and the meat of rhinoceros.
- “Otjihange”: taboos are against yellow cattle and yellow dogs, except if one of the holy cattle has a yellow calf. The meat of such a beast may then be eaten but not the fat.
- “Otimba” or “Otururu”: prohibitions were imposed against yellow dogs, grey sheep yellow cattle and black beast with a longitudinal white stripe across the back or stomach (“ongombe ondaura ondorozu”).
- “Omumbaru”: members may not eat a black beast with the longitudinal white stripe across the back or stomach, or the thighbone of any other beast.
- “Ongwandumbu”: taboos are against the yellow cattle and yellow dogs. Members of this group have an obligation to keep a black or a white dog or a black one with white spots.
- “Otjihinaruzo”: it means “no oruzo” and represents a number of unrelated patrilineages collectively known as a clan. It lacks the tradition of common origin and the observance of certain magico-religious prohibitions by all its members. Everybody is free to associate himself with this clan without any formalities. This is special mechanism for the adoption of outsiders into the Himba patrilineal clan organisation.

There are some clans in Southern Angola not represented in Namibia and therefore not mentioned in this document. (Malan, 1973)

The Himba’s patriclans exist without any form of stratification as equal units in society, all enjoying a high degree of autonomy. However, some clans have a common origin and only subdivided during later stages. Larger patrilineal groups or phratries are not easily definable because they do not form functional units. (Malan, 1973)

Since none of these groups enjoy any generally recognised seniority over other clans, there could be no hereditary leadership possible in the clan as a whole. This results in the non-corporate character of the “oruzo”. (Malan, 1973)

2. THE PATRILINEAGE

The most significant structural feature of the “oruzo” is its division into a number of localised segments or lineages existing as equal units in society. These groups are characterised by strong political and religious functions which are performed independently in every lineage. The lineages are the functional segments of the clan and consist of people who recognise exact patrilineal kinship with one another. (Malan, 1973)

Unlike the patriclan, the patrilineage is an institution highly corporate, with various functional kinship obligations emanating from it. This results in a strong social bond between members and finds expression in (Malan, 1973):

- The sphere of religion. The patrilineage forms a unit which offers a high degree of spiritual security to its members. As such the different lineages are autonomous religious groups with mutual activities restricted to the very minimum.
- Political authority. The lineage head has got political authority over the whole group, and the rules of *patria potestas* is generally in force.
- The economical functions of the descent group. It only involves the material care of fellow members, as properties does not pass patrilineally. Nevertheless, wives and children have an undisputed right to economic maintenance by the livestock of the husband, although sons lose this claim after marriage (they must maintain their wives and children with livestock belonging to their own “eanda” and not that of their father).

The very rigid segmentation of clans on a functional level has also important implications for the “oruzo” as an exogamous kin group. Marriages between members of the same “oruzo”, although from different lineage, should be denounced as such persons are considered as “sisters and brothers”, owing to the tradition of common descent. However, this is not used very consistently and the general tendency is towards determining the “eanda” identity of people. (Malan, 1973)

3. THE ADOPTION SYSTEM

The “oruzo” is therefore a patrilineal descent group. It reckons mostly over five generations. A very unusual phenomenon among descent groups is the large-scale adoption into the “oruzo” of persons who had not been born inside this group. There are therefore two categories of patrilineal clan membership (Malan, 1973):

- All persons who are members by birth as well as the subsequent formal initiation into the group. This is the consanguineal kin group.
- All women adopted into the “oruzo” through marriage and ritual initiation alone. During the initiation, she will loose her previous “oruzo” identity and will be freed of all taboos upheld in her patriclan of birth. She will in future only be subjected to the religious prohibition of her new “oruzo”. It is a prerequisite for the formal initiation of her children into the “oruzo” of their father, since a man is not allowed to introduce his children to his ancestors at the holy fire if their mother still belongs to another clan.

4. RELIGIOUS ACTIVITIES LINKED TO THE PATRICLAN

4.1. THE FIVE GENERATIONS INVOLVED

The “oruzo” places each person in a position where that person has access to the infinite and can make contact with it. (Page, 1976; Grandall, 1991, in “the Nomadic Pastoralists”, Paskin, no date). The strength of the “oruzo” lies with men. Women, as nominal members of an “oruzo”, have no rights, privileges or duties in the “oruzo” other than to abide by the various restrictions which at once bind and bound together the members of an “oruzo”. Outside of a few rites of passage a woman’s access to her “oruzo” is through her father or husband. If a problem arises in her life it is her husband or father who must make the approach. (Grandall, 1991)

The Himbas attach great significance to the relationship between a man and his grandson. In the religious organisation, this is maintained between the lineage head and his deceased grandfather. Fission of the lineage occurs when the members of generation three are dead. The former deceased grandfather lose direct significance. The former deceased father becomes the deceased grandfather of the new lineage heads. This does not imply that the position of the great-grandfather is belittled. The situation rather amounts to him not having any direct obligations towards his great-grandchildren. (Malan, 1973)

As a result of the religious functions of the patrilineage, deceased members in two ascending generations from the kraal head still play an active part in the daily life of members of the group. The role of these ancestral spirits can be clearly defined only with regard to the youngest two generations in the spirit world. This role quickly fades away when they are substituted by deceased in younger generations. Persons who do not have the same father but the same grandfather cannot form one lineage. The different deceased father (ancestor) cannot serve as common link with the deceased grandfather and the rest of the spirit world. (Malan, 1973)

4.2. THE PATRILOCALITY AND THE “OKURUWO”

Ovahimba residence patterns are characterised by their patrilocality. Patrilocal residence stems from the very close relationship which must exist between the living Himba and their deceased forebears. The most important of these relationships is that which is obtained between closely related patrilineal kinsmen, particularly between a man and his deceased father and grandfather. Membership in an “oruzo is transferred generation after generation by fathers. Males comprise the only gender whose “oruzo” statues does not change. Women, by contrast, are not, as they will marry out and become members of their husband’ patriclans. They are, however, free to move back to the kraal of their brothers in the event of becoming widowed or divorced, and frequently do so. (Grandall, 1991).

Patrilocality or “okuruwo” locality is based on the assumption that living and deceased patrilineal kinsmen have to dwell in the presence of one another.(Grandall, 1991). The religion is practised within the patrilineal groupings and feature strongly in the institutions relating to sacred fire and sacred cattle. (Malan, 1974)

Patrilocality is based on the need to live by an “okuruwo”, generally mistranslated as “holy fire” but which actually means “a very old house” (perhaps referring to some type of structure which formerly housed the fire, or to the notion that the fire represents the “house of so and so”, a very ancient lineage), to which one is related. An “okuruwo” is very ancestor specific. A group of brother will live together throughout life and belong to

one ancestral fire. This fire is the actual point of contact between two worlds, that of the living and that of the deceased. An "okuruwo" is specific to the persons who belong to that fire during life. When this group of brothers dies, their children and grandchildren must go to the fire to which the deceased brothers belonged, and which has been inherited by the eldest member of the patrilineage segment, to make contact with them. (Grandall, 1991) The dry branches on the sacred fire may not be tampered with. The sacred fire is kindled only ceremonially. (Paskin, 1990)

4.3. THE WAY TO GOD

The eldest living member of the patrilineage segment is designated as "omuini wokuruwo" (keeper or possessor of the fire) and must officiate at all functions pertaining to the fire. To each successive generation the fire will be known as the "fire of ...", the most recently deceased keeper of the fire. His name will be the first to be invoked during the prayer. The living keeper of the fire, together with the deceased keepers (whose names will be successively invoked as far back as they are known) form an unbroken chain stretching from the living generation all the way back to "Mukuru" (Grandall, 1991) or "Ndjambi Karunga" (Jacobsohn, 1990) or God, with Whom the origin of man begins. Blessings from "Mukuru" and the deceased ancestors are available to the living patrilineal members. (Grandall, 1991)

The position of the holy fire is between the entrances of the main hut and the cattle kraal, which face each other, although a bit nearer to the cattle kraal. Stones are placed around the fire for people to sit on, with the stone for the lineage head nearest to the entrance of the cattle kraal. A large stone ("ewe roviso", the stone for the branches) is also provided on which the firewood is placed. Only mopane branches are piled on the stone. (Malan, 1973)

The holy fire is lit with sacred firesticks or "ozondume" (sing. "ondume"). (Malan, 1973; Grandall, 1991) The firesticks consist of round sticks approximately 400 mm long and 8 mm in diameter, with which the fire is turned out on a wooden slab with two holes. A variety of trees such as mopane, baobab and white seringa may be used to make the firesticks from, though care must be taken that the slab is of a shorter wood than the round sticks. Only the lineage head is allowed to make them or replenish them. The firesticks are kept in a prepared skin and stored in the main hut, as they have ritual value and are therefore taboo to anyone but the kraal head. (Malan, 1973)

The sticks have to be left for two days on a stone at the holy fire because they are too "potent" to be put inside the hut or "ondjuwo" immediately after use. After two days, it is safe to store the sticks inside the "ondjuwo". They are let at the back, to the left side, among the women's possessions. (Grandall, 1991) Note that nowadays matches and tinderboxes are used (Grandall, 1991).

The sacred fire may be moved from camp to camp by the fire keeper. (Jacobsohn, 1990).

The holy fire is symbolic of the lineage and emphasises the patrilineal kinship bond between members and their common descent from certain known ancestors. Under no circumstances can a lineage fire be lit from the fire of another patrilineal group in its neighbourhood. (Malan, 1973)

4.4. SITUATIONS IN WHICH RELIGIOUS CEREMONIES ARE PERFORMED

Ancestors are called to participate in or bear witness in all the family events, such as naming of a baby, changing of hair styles, circumcision, marriage, healing a sick family member, welcoming back who has been

away for a long time and funerals. (Jacobsohn, 1990; Kakongo, 1999) The Herero and Himba system of ancestor worship requires the performance of numerous rituals around the sacred fire and in this livestock play an important role. Animal sacrifices are made to the ancestors with the aims of curing diseases or ensuring the benevolence of the forefathers. (in "the Nomadic Pastoralist")

The daily tasting of the first milk in the morning involves a ritual at the sacred fire. Only then can the family drink the milk. (Jacobsohn, 1990). Every morning the keeper of the fire act as "omumakere", the one who tastes and eats some food first, to neutralise its power so that it is safe for ordinary people to drink or eat. It is a very old custom (described by Irle, 1906, quoted in Jacobsohn, 1988)

The most important object produced when a rite is performed is a small mug carved of wood ("otjipwina" or "orunyara" if woven from palm leaves). This little bowl, with water and mopane leaves or chopped roots of the "omuhe" tree, is placed next to the stone of the kraal head who stirs the contents with his fingers when he approaches his ancestors. This act is called "okupweya" and can be translated with "pray". It means that the lineage head wants contact with the spirits in order to put certain requests on them. It is a supplication that the spirits must listen to the lineage head. He takes some of the water in his mouth and blows it out through his squeezed lips, until the conviction is received that the ancestors listen. (Malan, 1973)

Temporary shelters for use during ceremonial occasions are also erected in and near the religious complex. These are to protect the ancestral spirits over persons who are in a condition of ritual impurity. This apply to virtually all the rites of passage in the life of the individual. (Malan, 1973)

After the ceremony, care must be taken that the holy fire remains alight, as this will ensure sustained contact with the ancestors who are also active members of the lineage. The holy fire is taken to be burning if a stump lies smouldering in the ashes, and it is only blown to flames when important religious ceremonies are performed. If the fire should become extinct, it is lit anew from the fire which is kept burning in the main hut every night. The extinction of both fires would point to grave neglect on the part of the lineage head and is punishable by the ancestors who would feel insulted. The maintenance of the holy fire is the responsibility of the principal wife of the lineage head and these tasks are done under his supervision. (Malan, 1973)

4.5. THE "OKAUE"

If a man must be absent from the "okuruwo" for an extended length of time he will be given a stone, "okaue" and firesticks "ozondume". If he experiences problems he will use them to kindle a temporary fire. The sticks and stones must return to storage once the man is back. To be able to use an "okaue" a man must have attained the proper status which is normally conferred in a rite during the wedding ceremonies. (Grandall, 1991; Paskin, no date)

4.6. ROLES AND RESPONSIBILITIES OF OTHER MEMBERS OF THE "ORUZO"

The eldest male member is the religious head of the group but not the sole one. His younger brothers who share the same relationship with the ancestors can also communicate with their deceased father and grandfather at the holy fire. In case a brother goes and settles elsewhere, far from his elder brother's kraal, his elder brother will use two of his firesticks at the new place to lit up a smaller fire. He explains to his ancestors that this "oruzo" man is living far from the main fire and that the spirits must in future meet him there. The lives of the seceded group are now spiritually secured. The lineage head gives them the two firesticks. They

will still have to visit the main fire in case of a religious crisis, for example during the death or serious illness of one member. (Malan, 1973)

Sons of the lineage head as well as sons of his brothers are under no circumstances allowed to perform religious tasks around the holy fire. They cannot communicate with their deceased grandfather without the mediation of their own father who is still alive. Even if they have settled elsewhere, they will still have to go to the holy fire of their father or uncle for all religious needs. This is one of the reasons why patrilocal residence is still a preferential way of settlement. (Malan, 1973)

5. NAMING OF CHILDREN

Names among the Ovahimba are officially given through the “oruzo”. A man’s surname is his father’s surname. All surnames are the names of various patrilineages belonging to a single patriclan. A surname is an instant identifier of “oruzo” membership. (Grandall, 1991)

Given names are customarily (but by no means solely) bestowed by the patrilineage, though given names are not associated with a specific “oruzo” in the way surnames are. When a woman marries she must be symbolically stripped of her former “oruzo” membership so that she may be incorporated into the “oruzo” of her husband and receive a new surname. This change of “oruzo” status occurs at her husband’s “okuruwo”, with the keeper of the fire officiating. Once this transition has been accomplished a necklace called “okanatje” will be laid around the bride’s neck. It is made from a piece of leather cord with four more sections of hoof from a sheep sacrificed and eaten during the wedding festivities. The keeper and his wife will each give the bride two names (names are unisex) corresponding to the four hoof beads on the necklace. These are the names her children have to receive. The necklace may not be discarded before the four names have been given without offending the ancestors. (Grandall, 1991).

6. RELATIONS BETWEEN THE HEIR AND HIS MATRILINEAL DECEASED

From the matrilineal inheritance system, a heir accepts responsibilities for the material care of the bereaved family. Hence, he finds himself in a position where the matrilineal related deceased can punish him if negligence occurs. There is therefore a need for contact between the heir and his deceased matrilineal uncle. This can be done only at the holy fire of the uncle’s “oruzo” kinsmen. If it is not feasible due to distances, the heir will request a holy fire from the patrilineal heir of his uncle. In this case the “oruzo” head of lineage will go and kindle a fire at the home of the “eanda” heir. He will also leave a few firesticks. The position of this fire is not between the hut and cattle kraal, since this place is exclusively reserved for the local “oruzo” fire. It is placed in front of a minor hut, where the person can then communicate with his deceased matrilineal uncle and offer sacrifices when necessary. (Malan, 1973)

When the wives of the deceased have all died and the children are grown-up and economically self-sufficient, the matrilineal religious bond loses most its importance and the firestick may be returned to the “oruzo” of the deceased. (Malan, 1973)



Section 11

Ownership and inheritance

1. OWNERSHIP

The main possession among the Herero-speaking groups are livestock. The question of ownership within Herero and Ovahimba is complex in the sense that all livestock are registered under one owner who is the head of household. Different household members may have individual livestock. The herd management can be individual or collective and the traditional ownership of the livestock is based at the family level. (in “developing financial services in two regions of the Northern Namibia”, 1999)

In terms of decision making, especially when it comes to the selling of animals, the head of household must be consulted for approval. Theoretically, in case the head of the household wants to sell animals, he should also consult other household members. (in “developing financial services in two regions of the Northern Namibia”, 1999)

Livestock management is based on the principle that there is no private ownership of cattle in its true sense. This means that a person does not have the unfettered right to dispose of his cattle beyond the limits of his immediate needs. The cattle belong to the lineage of which he is a member and from which he has acquired most of his wealth. In a wider sense, the livestock belong to his “eanda” and ultimately to the whole tribe “omuhoko” which is the larger matrilineal group. Through the headmen, as executive officials of its judicature, the tribe can take action against any individual who dispose his cattle in an untraditional and abuse manner. (Malan, 1973; in “social organisation, economic life, political structure, military organisation and religion”, no date).

2. INHERITANCE

2.1. THE MAJORITY OF CATTLE AND OTHER POSSESSIONS

The majority of livestock (and other possessions) is transferred through the “eanda” from person to person and generation to generation. With some exception, the bulk of any man’s cattle will have come to him through his matrilineage. (Grandall, 1991)

2.2. THE SACRED CATTLE

A certain amount of livestock (mainly cattle but sometimes sheep) will also be inherited patrinely. Those animals are not privately but corporately held by the patrilineage at the "okuruwo" level. Their control is however vested in the head of the patrilineage, the keeper of the fire. (Grandall, 1991)

Two different types of cattle comprise an "oruzo" herd: the "ozongombe ozomwaha zoviruru" and the "ozondumehupa" (Jacobsohn, 1990; Grandall, 1991, Paskin, no date)

2.2.1. The "ozongombe ozomwaha zoviruru"

The "ozongombe ozomwaha zoviruru" refers to cattle which are the actual "possessions of the ancestors". It literally means the "cattle" ("ongombe"), an object on which taboos have been imposed and which consequently has ritual value" ("omwaha") and "of the ancestral spirits" ("yoviruru") (Malan, 1973).

Usually at a ceremony marking the one year anniversary of a man's death a rite is performed in conjunction with the "yambara" or "hiyambara" ceremony. At the grave of the deceased the lineage head cuts off the tip of one of the heifer's ear, after which she is regarded as a holy cow belonging to the ancestral spirits. (Malan, 1973) She becomes a "mwaha zoviruru" (Jacobsohn, 1990) When the heifer calves, she is again taken to the grave where some of milk is poured on the grave for the deceased to perform the "makera" ceremony. This comprises the tasting of milk to free it from its ritual properties, thus making it fit for use by other persons. Back home, the lineage head again performs a "makera" ceremony at the holy fire, after which the milking-pail, calabash and funnel of this cow is stored separately in the main hut. In future the lineage head must time and again taste the milk of this cow before it may be used by other persons. The use of milk or meat from "ozomwaha zoviruru" is restricted to direct male, patrilineal descendants of the deceased to whom the beast was dedicated. (Malan, 1973; Grandall, 1991)

This beast and her offspring are the living representations of specific ties to the specific ancestor. They are sacred for life. This category is inherited from father to son. (Jacobsohn, 1990; Grandall, 1991, Paskin, no date)

2.2.2. The "ozondumehupa"

The "ozondumehupa" (sing. "ondumehupe"): the literal meaning of this term is "holy firesticks" ("ozondume") "which are alive" ("hupa"). (Malan, 1973) This imply a direct relation to the "okuruwo" but not to specific ancestors. Such holy cattle do not belong to the ancestors. (Malan, 1973; Jacobsohn, 1990)

The milk and meat of these beasts are likewise restricted. Within an existing range of 36 names, a lineage head is at liberty to declare any of his heifers holy. After the cow has calved, he will take some of the milk to the holy fire to perform the tasting ceremony and inform the ancestors that this cow has been declared "ondumehupa" and attached to the religious property and holy fire of the "oruzo". (Malan, 1973). Although single patrilclans usually give preference to certain "ozondumehupa", their choices overlap considerably with that of other clans. (Malan, 1973)

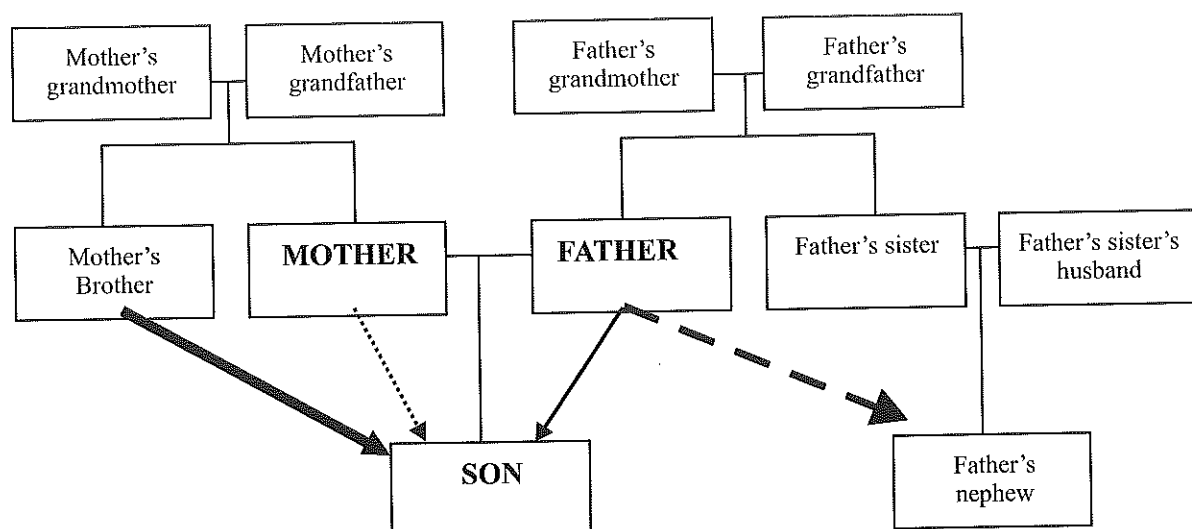
However, there are various sub-categories of “ozondumehupa” and each has its own set of restrictions. (Malan, 1973):

- “Ondumehupa yaMahuno” (“the holy cow of Mahuno): milk and meat may be eaten by all men and boys, Himba as well as Herero, after a “makera” ceremony has been performed by the lineage head. Women, girls and persons from other ethnical groups are excluded.
- “Ondumehupa yaTjisekiro”: only for adult (married) men and women in the Himba and Herero groups.
- “Ondumehupa yohorongu”: any person from any ethnical group.
- “Ondumehupa yaMahova”: reserved for old men and women in the Himba group.
- “Ondumehupa yaZombati”: milk and meat of this cow may only be taken by ex-soldiers as well as adult men among their patrilineal descendants.

Most of this category is inherited from father to son but some can be inherited from mother to son (Paskin, no date).

There are 36 different categories of sacred cattle among the Himba alone, of which each family have a prescribed minimum. These cattle may not become estranged from their respective sacred fires and species regulations govern their care and the use of their milk. (in “the Nomadic Pastoralists”). A typical small herd size consists of about 20 to 30 holy cattle. Households owing large herds have up to 300 of these cattle. (in “livestock marketing in the Northern Communal Areas of Namibia”)

2.3. A SYNOPSIS OF THE HERITAGE SYSTEM



- Genealogical lines
- ➔ The **son** will inherit cattle of his uncle from his mother’s side (“eanda”)
- ⋯➔ The **son** will inherit few cattle that belong directly to his mother (“eanda”)
- ➔ The **son** will inherit the holy animals from his father (“ozomwaha zoviruru” and “ozondumehupa”) (“oruzo”)
- ➔ The **father’s nephew** will inherit the cattle from the father (“eanda”)

(Talavera, 2000)

The cattle inherited through the patrilineal system are important because of their spiritual and ritual value. They remain attached to the fire to which they belong. (Grandall, 1991)

Few cattle belong directly to the woman and will be inherited by her children. (Jacobsohn, 1988).

The heritage system for the livestock is therefore complicated. It can be summarised as proposed by Talavera (personal data, 2000).

Therefore the family encompasses for the man his parents, brothers and sisters. His children do not belong to his family. They belong to the family of the mother. (Cornu, 1999).

When a person dies, his property becomes the due of his younger brother who is a member of the same matrilineage as the deceased. If the deceased has no living brothers the son of his eldest sister will be his heir. If the eldest sister of the deceased has no sons at the time of his death, the son of a younger sister will conditionally inherit the estate. The condition are that if the eldest sister does have a son later on he is still entitled to the possessions and they must therefore be handed over to him. If a man has no brothers or matrilineal nephews his properties will go to his mother's sister's son. Otherwise, one of the other matrilineal descendants of his grandmother will be traced to take charge of the estate. (Malan, 1973)

Although the heir will be allowed to keep most of the inherited cattle for himself, he is under the obligation to share the property with his brothers and the sons of his mother's younger sisters because they all share the same kinship relation to the deceased. (Malan, 1973)

With the inheritance of the estate the heir also assume certain responsibilities for the material care of the wives and children of the deceased, who are all members of a different matrilineage from himself. According to the levirate custom the heir will actually continue the marriage of the deceased and as sociological father of the children he will henceforth be addressed as "father", until the wife/ wives are dead and the children economically self-sufficient. (Malan, 1973).

Section 12

Political systems

1. POLITICAL AUTHORITY BEFORE THE SOUTH AFRICA GOVERNMENT

In a political sphere the practice of full double descent necessarily involves statelessness. The political organisation system with the Herero-speaking groups is non centralised with no hereditary leadership position in society. (Malan, 1973 and 1974)

Before 1920 political authority was still confined to the matrilineal sub-clan “Omukwendata Wondjuwo Onene”. This fact indisputably points to the earlier existence of centralised matriclans among the Herero, attended by the matrilineal inheritance of leadership functions. (Malan, 1973) However, either the Himba group nor the Tjimba group ever formed well-knit political groups, being organised more on a family basis and dispersed in such small units that a central authority could not arise. (van Warmelo, 1951)

The various agnatic and uterine lineages are the primary bearers of political roles and tasks. In addition to them the Himba also developed a form of institutionalised leadership based on a number of co-equal headmanships. (Malan, 1973)

Politically, the Herero society is non centralised as it does not have a royal family in which political power is transmitted unilineally within a particular descent group. (in “the Nomadic Pastoralists”).

The adoption of the present rule of patrilocal residence dispersed the matrilineages and resulted in the discarding of hereditary leadership position according to matrilineal succession. Single matriclans lost their corporateness and the matrilineage only retained its functions of control over productive property. (Malan, 1973)

2. HEADMEN UNDER THE SOUTH AFRICA GOVERNMENT

2.1. CREATION OF THE HEADMEN SYSTEM

During the South African regime, the former Kaokoland area was divided into 26 wards, each under the control of a Headman or Councillor (Malan, 1974). Both the wards and the Headman structures were formulated by the South African Government to regulate and control communities throughout the region. Then the Headmen were respected as they had enormous power through their associations with the South African Defence Force. (in "working paper, preliminary site survey. Report Northern Regions Livestock Development report (section 3)", 1996; in "Kunene integrated regional land use plan", 1998)

Therefore 26 areas with their Headmen were established. Headmen were elected by the people. Headmanship was not inheritable. Owing to the prevailing segmentary lineage system nobody can claim political seniority in descent over any other person outside his own lineage. Consequently, the institution of centralised authority on a hereditary basis cannot be effected in the Himba society. Each cultural decent group was associated with a specific geographical area (Malan, 1973; Page, 1976)

Individual kraals retain their autonomy to a large extent. The most significant alliance arising from such a loose complex is political. In that perspective, one of the "onganda" heads is elected as a non-hereditary headman for the whole ward (Van Warmelo, 1951)

2.2. THE HEADMEN COUNCIL

During the South Africa Regime a Council of Headmen was established. It is an European-like council that, let to itself, would most probably not function very efficiently. However, at that time there was an officer-in-charge supporting it. It was not only an administrative council but also a court with jurisdiction over all disputes and crimes such as murder, treason and rape. (van Warmelo, 1951)

Disputes were first brought forward to the local sub-headman or Headman. If no decision could be agreed upon then, the case was referred to the Council of Headmen which sat in Ohopoho or elsewhere. If no decision could be agreed upon, then appeal may be made to the officer-in-charge assisted by two or more Headmen or sub-headmen, who had not taken part previously in the trial, as assessors. (van Warmelo, 1951)

3. THE SITUATION TODAY

Today, headmen and other leaders instilled by South Africa may still have some authority, as they are usually the wealthy members of the community. Little has changed in the hierarchical structures. According to the author, the present Namibian Government would like to abandon the concept of Headmen and wards, as it believes this is a divisive and out of date system. (in "working paper, preliminary site survey. Report Northern Regions Livestock Development report (section 3)", 1996; in "developing financial services in two regions of the Northern Namibia, 1999)

3.1. THE SENIOR HEADMAN

Senior Headmen are sometimes refer to as Chiefs. The most well-known are Chief KAPIKA, in the area around Okangwati, and Chief Ukorwavi TJAMBIRU, in the Etanga area, both Ovahimba. They are responsible for large areas. Each senior headman has got several traditional councillors. (Cornu, 1999)

Nowadays, the traditional councillors either inherit the title from their fathers or are elected by community members. (Cornu, 1999)

Regionally important natural resources used by numerous communities are controlled by the senior customary authorities. For instance the Etanga river is the key natural resource around which the senior headman U. TJAMBIRU's jurisdiction is organised. (Behnke, 1998) The Himba Headmen control large areas within which their people move. For instance the whole of the Etanga traditional jurisdiction of Senior Headman U. TJAMBIRU functions as a loosely integrated regional grazing system. TJAMBIRU's Etanga jurisdiction is large. The parts that are routinely used cover between 3500 and 4000 square kilometres and support about 2400 people (Behnke, 1998)

The Senior Headmen and Headmen in Kunene North may not have legal powers to allocate land. However, all applications are directed through them. The Representative Authority will liase with the traditional leaders before making any decisions regarding land in a specific ward. (in "working paper, preliminary site survey. Report Northern Regions Livestock Development report (section 3)", 1996; in "developing financial services in two regions of the Northern Namibia, 1999) Final authority over land-use decisions resides unequivocally with the Senior Headman resident near the concerned settlement. But the Headman does not seek out problems. He waits for disagreements to be brought to him. He is involved only in contentious issues. (Behnke, 1998)

3.2. THE HEADMAN

He is falling under the responsibility of a senior headman and is responsible for an area sometimes referred to as a ward. The centre of the ward is the village from where the headman is acting. The number of villages referring to the ward can vary from one place to another. The distance between the village and the centre can be as high as 75 kilometres. (in "Developing financial services in two regions of the Northern Namibia", 1999)

Traditionally the administration of the ward is under the responsibility of the headman, with delegation of the administration of the villages to his traditional councillor(s). (in "Developing financial services in two regions of the Northern Namibia", 1999)

Some of the elder Headmen often speak through "spokesmen" when dealing with visitors. (Paskin, 1990) However, this is less the case nowadays (personal data Talavera, 2000)

When visiting a kraal, an emissary is best sending first. The headman can require his visitor to spend some time waiting while he prepares himself to receive them. The more important the visitors are perceived to be, the more preparation will be required and the longer will be the wait. A headman who received a visitor immediately usually does not have a high opinion of that visitor. (Paskin, 1990)

During any conversation, it is best to remain seated. The Headman being the more important person will speak first, thereby acknowledging his visitors and giving them permission to speak. (Paskin, 1990)

3.3. THE TRADITIONAL COUNCILLOR

He is responsible for a village. Within the village, distances between households can be as high as 11 kilometres. The councillor, usually selected by the villagers and approved by the headman, is responsible for the social management of the area under his responsibility. (decision-making, resolution of conflicts), the allocation of land and the settlement approval for new families. (in "Developing financial services in two regions of the Northern Namibia", 1999)

3.4. CONGREGATION OF PEOPLE

There is still a traditional authority for the former territory known as "ombongarero yomuhoko", meaning "congregation of the people". This has irregular meetings to discuss affairs affecting the whole territory. (in "working paper, preliminary site survey. Report Northern Regions Livestock Development report (section 3)", 1996; in "developing financial services in two regions of the Northern Namibia, 1999)

3.5. THE REGIONAL AND CENTRAL AUTHORITIES

The Regional Council is a democratic body comprised of 6 Councillors who are elected from political parties active in the area. Two members of the Regional Council are selected to represent the region in the National Council, which is a Lower house of Parliament. This constitutes a link between the regional and national level political systems. The main functions of the Regional Council is to spear-head regional development. A region is thus considered a dynamic entity with potential for and emphasis on development, whether administrative-political, economic, human, social infrastructural or any other (in "Kunene integrated regional land use plan", 1998)

After independence, Opuwo was made the regional capital and the seat of the regional government. The Council does not have its own funds and is dependant on central government. Effectively, it runs as the regional arm of the Ministry of Regional, Local Government and Housing. (in "Kunene integrated regional land use plan", 1998)

There are reported conflicts between traditional leaders and Regional Councils, particularly over the control of people and natural resources. (in "Kunene integrated regional land use plan", 1998)

4. CENTRAL POWER VERSUS TRADITIONAL POWER: THE CASE OF THE HIMBA GROUP

OvaHimbas people are at the crossing of two forms of power, sometimes contradictory. They fall under the Namibian law, politics and regulations. This is an administration with rules, borders and regulations. But they also fall under their traditional rules and laws, under the leadership of the headmen, senior headmen and councillors of the region. (Cornu, 1999)

Contradictions can be illustrated through several examples:

- The Christian religion prohibit polygamy. A man can have only one wife before god, and vice versa. However, the Himba traditional system allow polygamy. It is even an important social feature, as it is a sign of wealth. A man who can afford to have several wives is considered as rich. In the tradition, it is also a way to increase the number of children and therefore manpower to help with the herd management and the daily work in the household (personal data Talavera, 2000)
- By law the Kunene river is the northern border between Namibia and Angola. However, Himba families are living in Namibia and in Angola. The geographical border is a theoretical concept for such family. One brother can have Namibian papers while the other one has got Angolan papers. It obviously leads to administrative problems. It is estimated that 75% of the OvaHimba live in Namibia and 25% in Angola. (Cornu, 1999)
- Land tenure in the Kunene North is still communal. People can graze their livestock on the communal grazing and acquire usufruct of arable land for gardens, which may involve a small fee paid to the headman. The power over this land is today legally with the Regional Governor and Executive Committees of the Representative Authorities. Chiefs and Headmen do not have the legal authority to allocate land or withdraw land. However, the reality is very often different, where some Chiefs and Headmen still hold authority. (in "working paper, preliminary site survey. Report Northern Regions Livestock Development report (section 3)", 1996)

5. THE HEADMEN AT DIFFERENT TIME

5.1. HEADMEN AND SUB-HEADMEN IN 1951

Table: Headmen and associated population in 1951

Headmen and sub-headmen	Residence	Tribe	Herero	Tjimbas	Himba	Total
Moses Ndjai and Edward Tjipepa	Okorosave	Herero	175	175		350
Paul Zakokua	Omuhiva	Herero	40	40		80
Uemusepa	Orotjitombo	Himba			110	110
George Hartley	Oruvandjei	Coloured	200	80		280
Twazapo Musaso	Ongango	Tjimba		260		260
Kaimuvaza Mbunguha	Otjiu	Tjimba		230		230
Langman Tjihahura	Otjondeka	Herero	140	210		350
Jonas Tjivikua	Otjitoko	Herero	80			80
Hi aukambe Turitjo	Omuhama	Herero	140	210		350
Willem Tjerije	Oukongo	Herero	100	80	110	290
Ngairo Muhenje	Ozombazu	Herero	90	70	70	230
Cabritu Hiyangombo	Otjihama	Herero	40	90		130

Headmen and sub-headmen	Residence	Tribe	Herero	Tjimbas	Himba	Total
Johannes Muzuma	Okahua	Herero	80	30		110
<i>Isak Ngazepue</i>	Oruvandjei	Herero	220	70		290
<i>Gideon Muteze</i>	Otjapitjapi	Herero	100	70		170
Martin Tjiheura	Otjirunda	Herero	50	90	10	150
Adrian Karipose	Ohakarungu	Herero	35	85		120
Kapute and Joururuka	Ehomba	Himba		20	180	200
<i>Kainamuni</i>	Orue	Himba		10	90	100
<i>Vetjii</i>	Orue	Himba		10	90	100
<i>Hipukire</i>	Okarere	Himba		5	35	40
Munimuhoro	Ombuku	Himba		15	155	170
<i>Katjinatji</i>	Etengwa	Himba		10	90	100
<i>Kotjiuta</i>	Enjandi	Himba		10	90	100
Veripaka	Etanga	Himba		10	60	70
<i>Vetamuna</i>	Orujombo	Himba		5	55	60
<i>Tjaurete</i>	Katjimbombo	Himba		5	55	60
<i>Kavepanga</i>	Otjiha	Himba		5	55	60
<i>Tjaripo</i>	Etanga	Himba		5	45	50
Mariha	Okauua	Himba		10	60	70
Karuo	Otjizu	Himba		10	60	70
Vependura	Otjihende	Himba		10	60	70
Tuarimbara	Ekoto	Himba		20	180	200
Kazongama	Otjivoro	Himba		10	90	100

(Van Warmelo, 1951)

5.2. HEADMEN IN 1976

Table: Headmen and their areas in 1976

Cultural group	Area	Headman
Himba	Omuramba North	Munimohoro
	Ehomba	Kavekuru
	Epembe	Pahere
	Orwe	Kyaenamune
	Etengwa	Katjikaere
	Okuhuwa	Hikuminuwe
	Ehama	Katjinatje
	Otjitanda	Kautjizerire
	Etanga	Vetamuna
	Ekoto	Mekahako
	Orotjitombo	Wamiseppa
	Otjivoro	Watjaya
	Ohdorre	Kaundumbo
	Omuhona	J. Ruiter

Cultural group	Area	Headman
Herero and Himba	Ombazu	M. Muhenye
	Onkongo	Vacant
Herero	Okorosave	E. Ndjai
	Kaoko-Otavi	D. Humu
	Ornandjai	V. Hartley
	Otjerunda	A. Tjiahura
	Oruhowa	J. Ruiten
Tjimba-Herero	Opuwo	
	Oromana	J. Mbahoumba
	Otuzemba	W. Rutjani
	Ongango	
	Ombepera	H. Tututa
Ndamuranda-Herero	Otjendeka	J. Tjiahura
Ndamuranda	Ombombo	K. Muzuma

(Malan, 1973; Page, 1976)

5.3. HEADMEN AND SENIOR HEADMEN IN 1996

Table: Headmen in Kunene North, 1996

Name	Place
Hartley S.	Oruvandjei
Humu D.	Kaoko-Otavi
Japuhua J.	Okarivizu
Kapika H.	Omuramba North
Kozongombe T.	Otjitanda
Kujambera H.	Ondore
Maundu N.	Otjivero
Mbaumba J.	Otuvero
Muharukua N.	Oukongo
Muharukua V.	Ongongo
Muhenje M.	Ombazu
Mumbuu L.	Ombombo
Musaso T.	Ongango
Muzuma K.	Otjokavare
Ruiten J.	Oruhona
Rutjindo K.	Orue
Tjambiru U.	Etengua
Tjambiru T.	Ehomba
Tjambiru T.	Okauua
Tjihange V.	Ovireva
Tjijeura C.	Otjerunda
Mbunguha J.	Omungunda

Name	Place
Kututa M.	Ombepera
Thom J.	Okangwati
Ndjjai F.	Okorosave
Turitjo R.	Omuhamana
Tjisuta M.	Ekoto
Muteze M.	Otjapitjapi
Tjambiru U.	Etanga
Vacant	Okozongwehe
Vacant	Ozohaviria
Vacant	Otuzemba

(personal data NOLIDEP; in “working paper, preliminary site survey. Report Northern Regions Livestock Development report (section 3)”, 1996); Behnke, 1998; in “livestock marketing in the Northern Communal areas of Namibia”, 2000)

Section 13

Organisation of communities

The term “community” can sometimes be misunderstood and can refer to various level of organisation, according to the perception used. It is therefore more comprehensive to distinguish the levels of organisation.

Furthermore people make their home where they can find grazing and water for their livestock and themselves. Since for most years the rainfall is greater in the East and decreases toward the West of Kunene North, there are generally more people using the Eastern and Central areas and fewer the Western areas. There are therefore more communities in the Eastern and Central parts of Kunene North. (Irving et al, 1999)

1. THE IMPORTANCE OF THE GROUP

The OvaHimba society is organised according to an acephalous scheme. The power is organised on a horizontal plane and shifts in power are frequent, according to the domain in question. Some areas of social life are reigned by women and some by men, some by traditional authorities and some by individual households, etc. An individual exists in the context of a group and often group interest overrides individual objectives. (Talavera, 2000)

Decisions of any importance are taken by a group that is considered by those present to represent the community. An individual may not initiate something without the approval of such a group from the community. Within these groups, the voices of the headmen or “osoromana”, councillors or “orata” and the elder are heard first and carry most weight. (Talavera, 2000). Traditional authorities are therefore still influential when it comes to community-based decision making. (Bollig, 1996). They cannot be by-passed (in “how to work with farmers as equal partners”, 1999).

For instance in Otuani, a Herero community, the traditional leaders decide on where and when farmers should move their animals. If a member of the community takes his own initiative to move his animals he will stand a trial before the local tribunal and be punished accordingly. (in “Analysis of the farming systems in Otuani”, 2000; in “analysis of the farming systems in Ohandungu”, 2000)

2. ROLE OF THE “OWNER OF THE LAND” OR “OMUNI WEHI”

Residential villages or communities comprise typically 5 to 15 households (Behnke, 1998). Most places where households or “ozonganda” settle have an “owner of the land” or “omuni wehi”. It is usually the elder man of the family. Even if this person is respected, he does not have any formal right over the land. He cannot

exclude someone or a family from the territory. He cannot exploit the land as he wishes. However, he looks after the resources. (Cornu, 1999). That type of land tenure should be translated as “guardianship” over a specific place. (Bollig, 1996)

However, some authors reported that the allocation of land and potential grazing areas is under the responsibility of traditional leaders (Smit, 2000). Others explain that if an old man has significant cattle wealth, vigorous sons, is living near the graves of his ancestors and is related to other senior households heads in his village, then he can probably claim a position of authority in local affairs. This authority may be largely ceremonial, or exercised indirectly through kinship links to middle-aged heads of households and their spouses, who, in turn, control unmarried men and women. (Behnke, 1998)

When people from the outside of Kunene North wish to settle in the territory they first get in touch with their uterine or agnatic kinsmen living in Kaokoland who will then approach the local headman and apply for such right to occupation on their behalf. (Behnke, 1998)

Outside herders may ask permission to live temporarily in a community and use its water and grazing resources. If permission is granted, they may stay from few weeks to a few years in their adopted location. Occasionally, if resources are scarce, the “omuni wehi” may be influential enough to keep away outsiders who would bring further stress to resources (Bollig quoted in Behnke, 1998). Therefore, the stocking rate in an area arises out of the summation of these individual decisions, rather than through any centralised decision-making process. (Behnke, 1997)

If an outsider wish to relocate permanently, they must again seek permission from the long-term residents of the community. (Behnke, 1998)

3. ROLE OF MEN AND WOMEN

Although decisions may have been made overly by Himba and Herero men in the past, there was no decentralised political system and decisions were usually made at “onganga” (household) level, with considerable input from the women. However, nowadays women feel their traditional power (vested in their day-to-day control of small stock and the acquisition, preparation and distribution of milk and other foods at their cooking hearths) is being eroded. (Jacobsohn, 1988)

Decisions at the level of the community are usually taken by men. Women do not participate to meetings with outsiders such as government employees or, when they participate, remain in a corner and hardly ever talk. This can be illustrated by the attendance to meetings held by the Kunene North Farming Systems Research and Extension Unit, Ministry of Agriculture, Water and Rural Development, in Ohandungu community (in “analysis of the farming systems in Ohandungu”, 2000)

Table: attendance to meetings called by the Farming System Research and Extension in Ohandungu – period third quarter 1999 to first quarter 2000-07-27

Activities	Number of participants	
	Male	Female
First general meeting	16	0
Community mapping	8	0
Seasonal calendar and farmers’ needs	7	0
Research protocol on mange disease	8	0
Feed-back meeting	23	0

(in “analysis of the farming systems in Ohandungu”, 2000)

During another survey also carried out by the Kunene North Farming System Research and Extension Unit in Otuni (inhabitants belong to the Herero cultural heritage), it was stated that women representation at meeting was poor. Women are usually left behind for the daily house keeping work (cleaning, milking, cooking, etc.). Meetings are regarded as men activities. (in "Analysis of the Farming Systems in Otuni", 2000). The same situation was encountered in Enyandi (inhabitants belong to the Himba cultural heritage) where women attended the first general meeting but did not participate to any meeting where decisions were to be taken (in "use of PRA tools in Enyandi", 1999)

However, women are responsible of certain activities, such as the daily maintenance of the houses, the feeding of the family and the crop production (gardens) (Jacobsohn, 1988; personal data Talavera)

4. THE "OVAHONA" AND THE "OVASYONA"

On the basis of livestock holding, the whole community is divided into two classes, namely (Malan, 1973; in "the Nomadic Pastoralist", no date):

- The wealthy cattle owners called "ovahona"
- The poor people called "ovasyona" who do not possess more than a few herd of small stock.

A man without any stock at all is called "omutjimba", in reference to the Tjimba group. (Malan, 1973; in "the Nomadic pastoralist", no date)

To possess livestock is more important than to possess properties. Livestock indicates the class one belongs to in the community. This can be illustrated by the result of the survey undertaken in 1990 (Paskin, no date)

Table: attitudinal survey of stock owners

	Ovahimba (1)	Herero (2)
Number preferring livestock to possessions	93,3	86,8
Number preferring possessions to livestock	0	0
Number wishing to acquire material possessions	13,3	81,6
Number who would like to own a car	80	84,2
Number who want better clothes	0	0
Number wanting money in the bank	6,6	39,5

(1) 15 respondents

(2) 38 respondents

(Paskin, no date)

5. THE HOUSEHOLD IN THE COMMUNITY

All man's pastoral or horticultural activities take place within the region of his "okuruwo" or sacred fire. Because of the location of one's okuruwo one is more or less limited to the areas one can exploit economically. (Grandall, 1991). Residence patterns are therefore patrilocal. The family tends to move and stay with the man responsible for the family, in order to be as close as possible from the family's sacred fire. (Paskin, no date)

Most critical decisions are left to individual households or small clusters of households with minimal interference from outside authorities. This level is therefore the level of decision. For instance individual

households decide whether it is in their interest to occupy their home area or beg resources elsewhere. (Behnke, 1997)

However, if an individual takes too many decisions on his own, especially if, by doing so, he goes against the interest of the community, he will soon be criticised. If he is too successful, people in the community will be jealous or scared. He may therefore attract bad omens through such behaviour, such as being bewitched. This fear is important in preventing people from individualistic behaviours. (Talavera, 2000)

Section 14

Housing and organisation of the household

1. THE HUT OR "ONDJUWO"

The Himba and Tjimbas who must be prepared to move whenever the needs of their livestock or other exigencies make this necessary, do not spend much time providing shelter. A climate that is always warm and where it rains so little renders house-building doubly unnecessary. The huts stand around the cattle enclosures and most seem to face towards them. (van Warmelo, 1951)

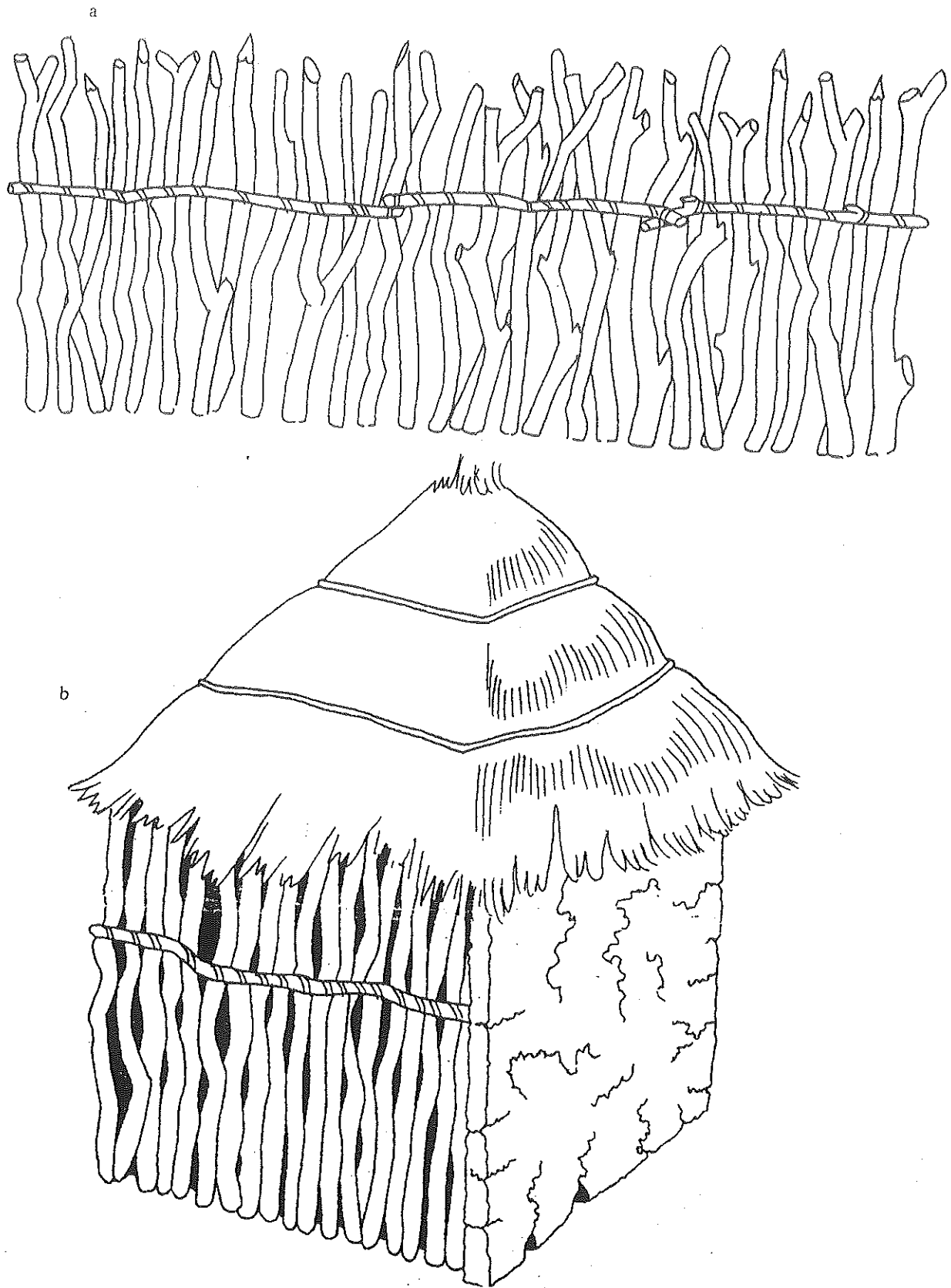
In the olden days, the Himbas used to make only one type of hut, while the ordinary Herero beehive type built of sticks and plastered with mud and dung were first built only recently. Nowadays, all manner of structures are found. (Van Warmelo, 1951)

Himba homes are usually dome-shaped and circular, with low tunnel entrances (Jacobsohn, 1988) The rounded Himba huts (and often also the more permanent "western" dwellings of the Herero) are made of a closely meshed framework of mopane branches which are then sealed by plastering them with layers of cattle dung, mixed with mud and soften with water (Paskin, 1990) This surface quickly deteriorates and abandoned kraals soon take on a very dilapidated appearance (in "Namibia: the Demographic background", no date) If a Himba family leaves the kraal temporarily, then few possessions are left in the huts and the entrance is closed with stones and branches (in: the Nomadic Pastoralist, no date).

The majority of the Herero now live in substantial rectangular mud dwellings built on European lines. (Van Warmelo, 1951) Herero houses are larger than those of the Himba, square or rectangular, and usually boast thatched or tin roofs. These houses are built either of a mopane branches and cattle dung combination, or even with bricks. The entrance can sometimes include a door if high enough. The kraal fencing is usually with branches, rarely with wire (Jacobsohn, 1988; Paskin, 1990)

Tree and shrub species utilised for house-building at Purros include the "omutapati" (*Combretum watii*) and "omungwati" (*Tamarix usneoides*). The mopane or "omutati" (*Colospermum mopane*) is the favoured building material when available. Bark from various trees, including the "omumbonde" or camelthorn (*Acacia erioloba*) is used to close in gaps between saplings before the structure is plastered and fronds from malakani palms (*Hyphaene ventricosa*) are used to bind saplings in place. Poles from an abandoned "ondjuwo" will sometimes be used in the construction of a new one. (Jacobsohn, 1988)

Home building is women's work, although men may help with the cutting and collecting of poles and saplings. Both Himba and Herero women prefer to build their homes with wood-stout poles and/or flexible

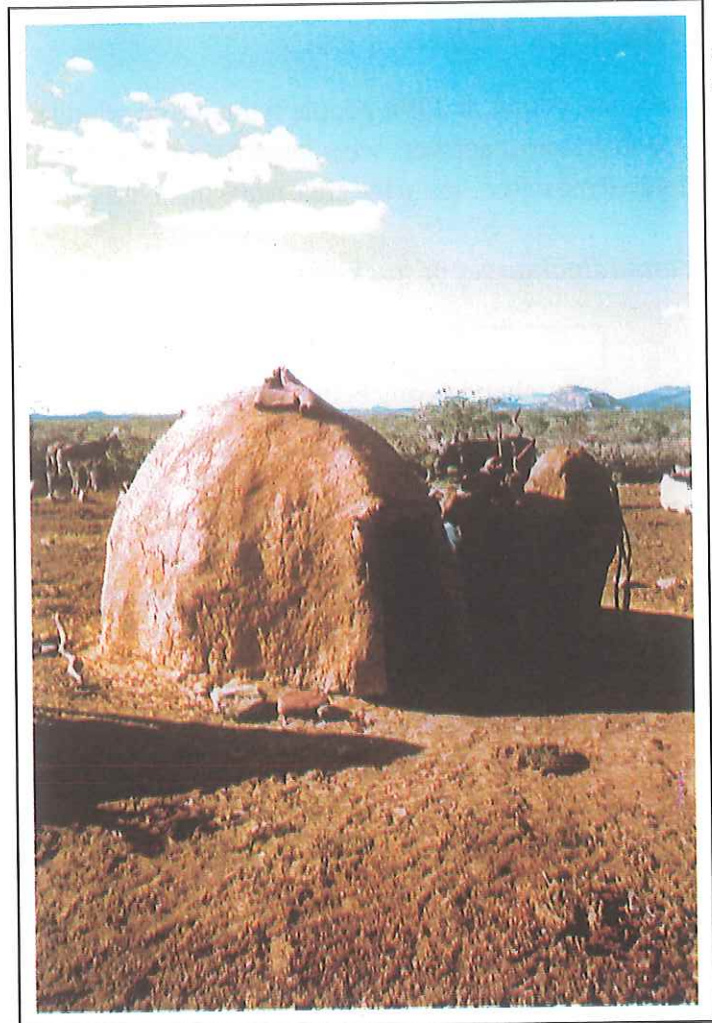


The stout poles needed for the Hero hut (b) and cattle enclosure (a) necessitate the felling of many hundred of trees.



F. Cornu

The “onganda” of Kasapa Tiumbwa at Otjihende.



F. Cornu

The “ondjuwo” of the keeper of the holy fire.

Florent CORNU

In “A propos de l’espace, des lieux, du territoire, chez les pasteurs nomades Himba de Namibie, a l’exemple d’Otiyhende”

saplings, plastered with a mixture of cattle dung and river sand. Floors may also be of dung. The term “ondjuwo” is used when all or some of the shelter has been plastered, indicating a degree of permanence and intention to re-occupy it. (Jacobsohn, 1988)

When suitable material are not available, living structures include (Jacobsohn, 1988):

- built-up rock shelters which may have stone walling or even a roof added,
- conical huts with a stone circle base,
- structures on a river bank built from logs of driftwood,
- tree shelters using a living tree trunk as a whole with branches, foliage, rocks, skins and blankets positioned to complete the enclosure
- and even a two-chambered dwelling tunnelled in a *Boscia foetida* tree.

Many Himba “ozondjuwo” around Opuwo retain their traditional circular, dome-shaped but materials used include plastic, rubber from car tyre tubes, cardboards and scrap metal. (Jacobsohn, 1988)

2. THE KRAAL OR HOUSEHOLD OR “ONGANDA”

Every local group has his own kraal called “onganda” (pl. ozonganda”) which consist of a number of huts (“ondjuwo”), cattle enclosures and a sacred fire, the latter being placed between the entrances to the main hut and the cattle enclosures. It is the place of the family. (Malan, 1974; Jacobsohn, 1988; Cornu, 1999, Talavera, 2000) The “onganda” may be circular, with the kraal in the centre, or elliptical, looping round one side of the kraal. (Jacobsohn, 1988)

During a survey held in 1990 people were asked whether they would like their houses to be improved. It appeared that almost answers were negatives, as the current housing facilities are adapted to the traditional way of life of most families in the area. (Paskin, no date)

Table: attitudinal survey of stock owners

	Ovahimba (1)	Herero (2)
Number desiring better housing	0	2,6

(1) 15 respondents
(Paskin, no date)

(2) 38 respondents

2.1. THE SIZE OF THE HOUSEHOLD

The size of the household varies. A survey carried out in 1990 gave an average size of 6,7 persons per household (Paskin, 1990) This is confirmed by the 1991 Census that described the mean household size for the area as with a median of between 6 and 7 persons per household. The age distribution for people living in these household is a typical pyramidal order with greater numbers of young people and less elder people. (in “working paper, preliminary site survey, report Northern Regions Livestock Development Programme, section 3”, 1996).

However, a more recent estimate gives an average of 13 persons per household (Hvidsten et al, 1997)

Table: data relating to household and stock owners in Kunene North

	Whole sample(1)	Ovahimba	Herero
Number of owners	57	15	39
Household size	6,7	6,6	6,8

(1) 39 Herero, 15 Ovahimba and 2 Ovambo herders are include in the whole sample
(Paskin, 1990)

2.2. THE MAIN HUT OR "OTJIZERO"

In the mutual coherence of religious places in the household, the main hut "otjizero" is of special significance. The lineage head lives in the hut and the various religious objects, including the holy firesticks and ritual bowls, milking pails, calabashes and funnels of which a separate set is kept for every holy cattle are kept. "Otjizero" means "the place of taboos". (Malan, 1973)

The area between the main hut, the holy fire and the cattle kraal (for calves, lactating cow and few oxen) is called "omuvanda" and may only be crossed by members of the lineage (Malan, 1973). In the Herero or Himba household there is a "no-go" area between the keeper of the fire's hut and the sacred fire, where no non-Herero or motor vehicle of any kind may venture. (Paskin, 1990) Women will only after about a year of marriage be allowed to traverse this area. (Malan, 1973) Outsiders or foreigners cannot cross it unless they have been introduced to the ancestors (Cornu, 1999)

The public entrance to the "onganda", even when there is no outer enclosure, is from the side opposing the main house, furthest away from the private main house-holy fire-kraal entrance area. (Jacobsohn, 1988)

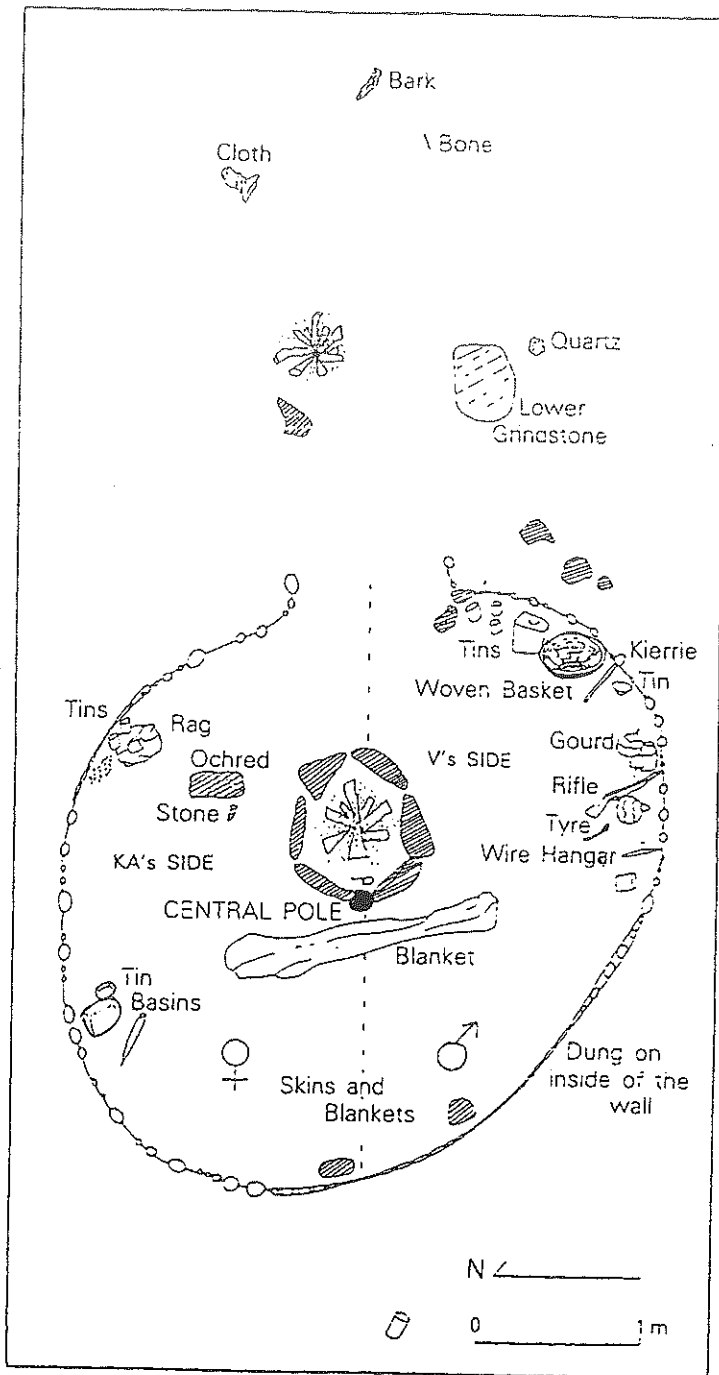
2.3. THE OTHER HUTS

The other huts are for women and children. Storage facilities are also found in between (Cornu, 1999)

The only other hut facing the holy fire is that of the younger brother or eldest son of the lineage head. He is the patrilineal heir who will be the next religious head of the group. (Malan, 1973; Jacobsohn, 1988)

2.4. THE DIVISION OF SPACE IN THE "ONGANDA"

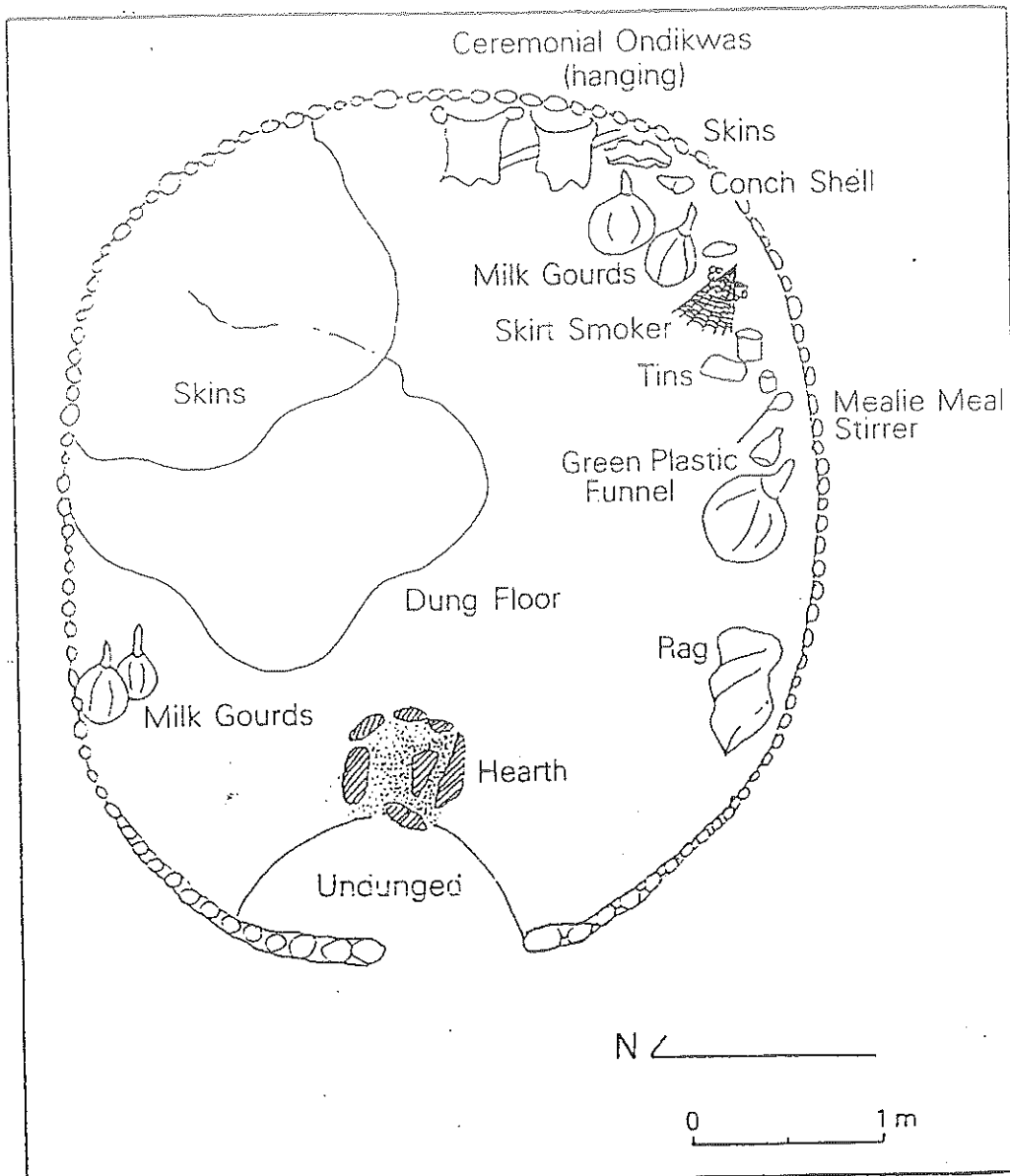
The division of space in the "onganda" is based on a left/ right or "oruzo"/"eanda" division. One's face is toward the West and the fire, one's back faces due East (this is how left and right are determined). (Grandall, 1991) People who are related to the head of the kraal, the keeper of the fire, through the patrilineage will live in houses situated to the left of the fire. People related to him through the "eanda" will live to the right of the fire. Violation to this rule can however be made for practical reason (someone comes to stay and the only vacant house is on the wrong side of the kraal). In her father's kraal a woman stays on the left side. When her brothers become the senior member of the patrilineage she moves to the right side. With her husband, she resides on the left side of the kraal. (Jacobsohn, 1988; Grandall, 1991)



Floorplan of KA and V's *ondjuwo* at the gardens settlement on the banks of the Hoarusib downriver of Purros. As V was away, KA had allowed her goods to spill onto the right or husband's side of the house. She hastened to remove them on his return.

JACOBSON M. (1988)

In "preliminary notes on the symbolic role of space and material culture among semi-nomadic Himba and Herero herders in western Kaokoland, Namibia"



An "ondjuwo" built by VE at Purros. It is larger than her previous houses and unlike all the houses built by her mother KA, it has no central pole. The interior heart has also been moved from its traditional position immediately in front of the central pole and is situated closer to the entrance.

JACOBSON M. (1988)

In "preliminary notes on the symbolic role of space and material culture among semi-nomadic Himba and Herero herders in western Kaokoland, Namibia"

The right side of the kraal is for the “eanda” relatives, the left side for the “oruzo” kinsmen. (Grandall, 1991)

Divisions of left/right also have connotations of safety/danger, life/death. When a people gather at a house to visit and gossip for a while, they should always collect to the left side of the house. Gathering on the right side could be an omen of harm or disaster. (Grandall, 1991)

The left side of the house as one faces out the house is also usually where the woman will store her possessions, leaving the right side for her husband’s goods. (Jacobsohn, 1988)

2.5. THE CASE OF HOMESTEADS WITH TWO KRAALS

Some homesteads have two kraals, in which cattle of men from different clans sharing the same homestead are kept separately and in which cows are milked separately. Some homesteads may have no holy fire if the man’s father is still alive or if his elder brother inherited the holy fire from his late father. (Talavera, 2000)

Table: data relating to household and stock owners in Kunene North

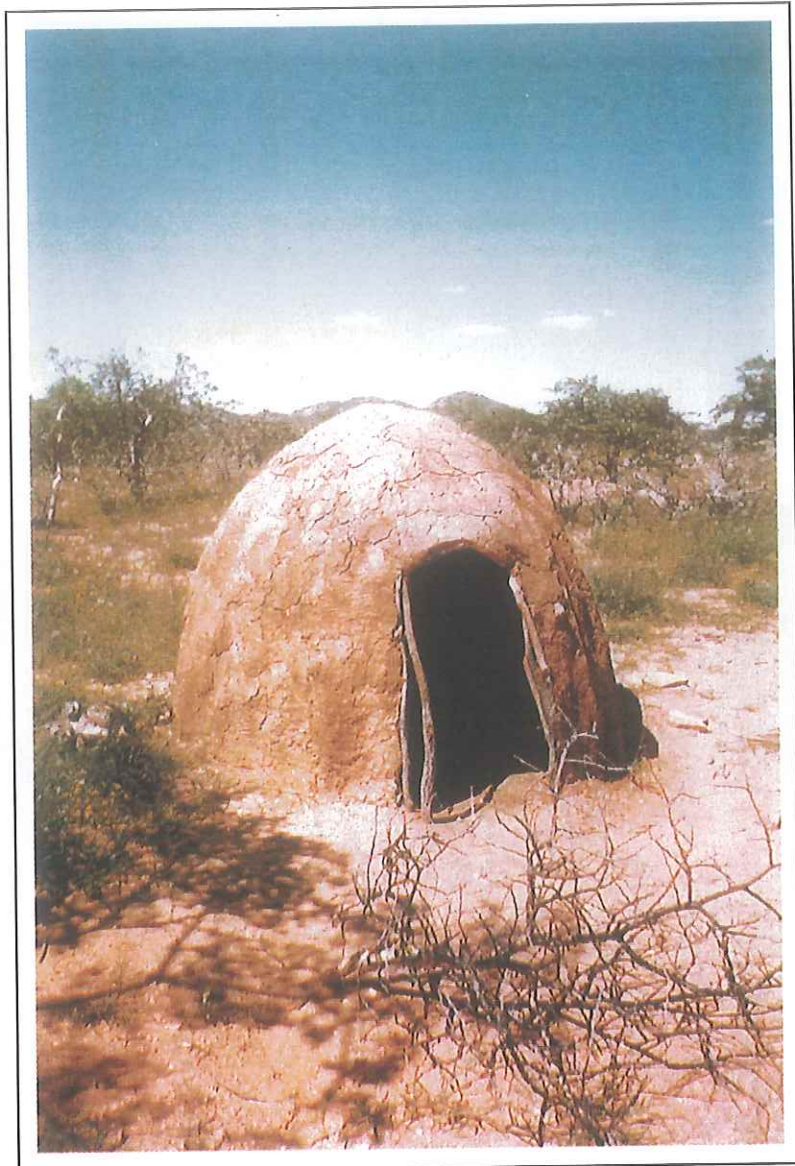
	Whole sample(1)	Ovahimba	Herero
Number of owners	57	15	39
Number of other owners at the same location	1,4	1,9	1,3

(1) 39 Herero, 15 Ovahimba and 2 Ovambo herders are include in the whole sample (Paskin, 1990)

3. THE ESTABLISHMENT OF A NEW SETTLEMENT

Traditionally, the establishment of a new settlement follows the following steps (Jacobsohn, 1988):

- Lightening the holy fire by the lineage head
- Construction of an enclosure to protect calves and a small pen for small stock by men
- Putting up of an overnight shelter by women
- The first night a goat ram is killed and cooked on a specially built fire to the left of the shelter (will be later used only to cook meat)
- The women will cut and strip branches for the “ondjuwo” from the next day
- The main “ondjuwo” or “otjizero” (sleeping shelter which faces the entrance to the calf enclosure) is established first
- Then each woman will go and establish her own house
- If the stay is likely to be a long one, the “ondjuwo” will be plastered with cattle dung mixed with a little, preferably river, sand

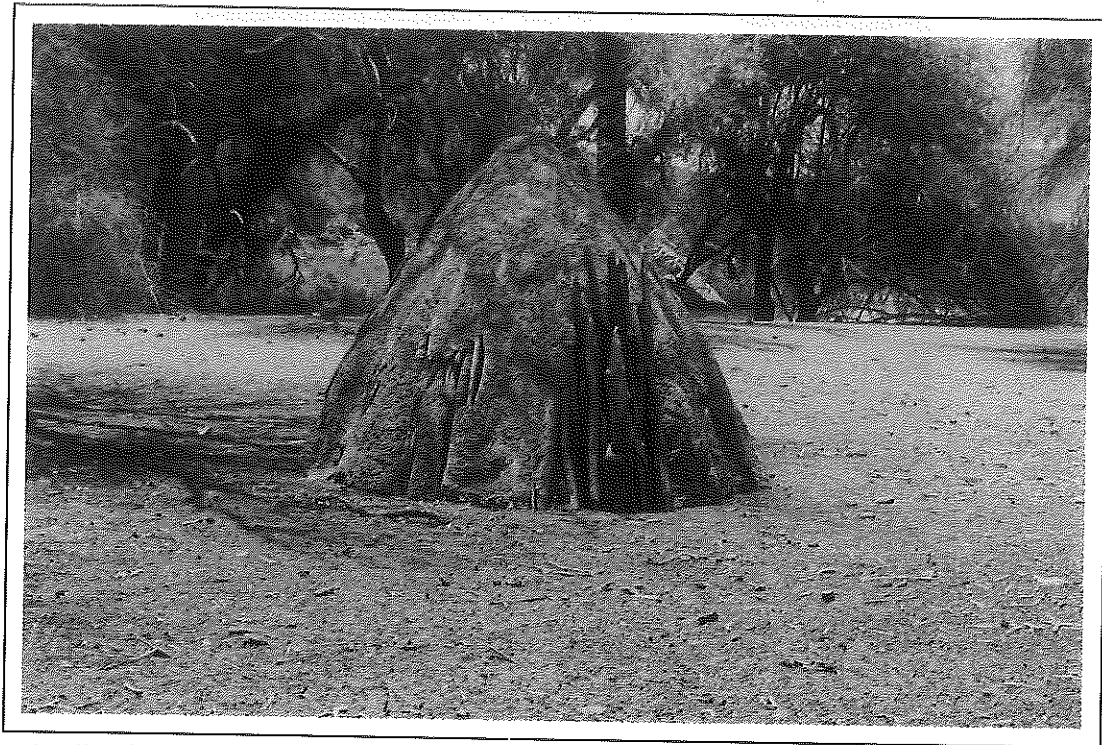


F. Cornu

An "ondjuwo" in the cattle post, after the departure of its inhabitants.

4. SETTLEMENTS AT THE CATTLE POST

At the cattle post settlements are not permanent. They usually consist of a kraal and one to two huts. They are abandoned at the end of the staying period, once the people move further or come back to the main settlement (Cornu, 1999)



An "ondjuwo" in a cattle post: single hut next to the water point for a young man looking after part of his father's herd.

Photo: Philippe TALAVERA

Section 15

Main cultural traditions and beliefs

The Kunene North is inhabited mainly by Herero speaking people, most notably the Ovahimba and the Herero proper (who comprise various sub-groups). The Herero and the Ovahimba share a similar culture and traditions. However, historically the Hereros have had more contact with the European culture. (Paskin, 1990)

1. PHYSICAL APPEARANCE AND DRESSES

1.1. AMPUTATION OF THE MIDDLE INCISORS

The knocking out of the two middle incisors of the lower jaw and the notching of the two middle uppers was common practice among most groups. Nowadays it is still done by the Himba and Tjimba groups but most of the young Herero are abandoning it. (van Warmelo, 1951)

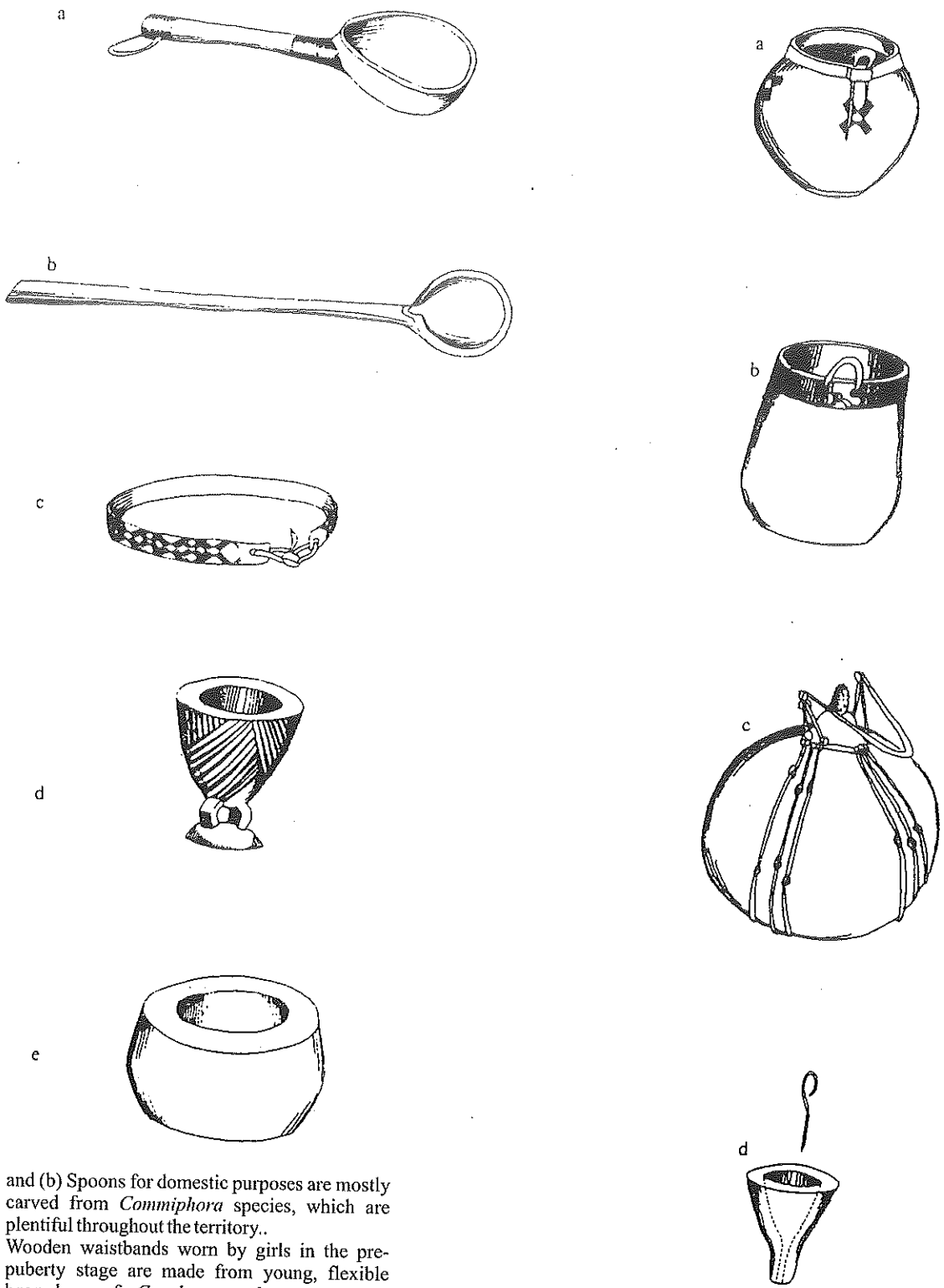
1.2. HIMBA AND TJIMBA DRESSES

Himba and Tjimba men wear aprons. In the 1950s these aprons were made of a well-dressed goat or sheep skin. The Tjimba apron is longer in front when compared to the Himba apron. (van Warmelo, 1951). Nowadays the Himba's men apron is made with material and tend to become more and more colourful (personal data Talavera, 2000). Sandals are usually used. The hair is worn long and a sheepskin or lambskin cap covers it. For ceremonies, a tuft of ostrich feathers is added. (van Warmelo, 1951) All men carry a long walking stick with them (Paskin, 1990)

The Himba women wear a back apron of sheep or calf skin called "oruheke" and a front apron of the same material called "oruhira", and when necessary a cloak called "orupera". The ceremonial headdress of the Himba women is called "ekori". When not wearing it, they wear the "okarembe", less ceremonial, made of a bit of sheepskin perched on top of the head. (van Warmelo, 1951). The Tjimba women wear no beads of lead (van Warmelo, 1951)

Himba women wear copper bangles on their wrists and ankles, with elaborated necklaces of ostrich eggshell beads around their neck. A woman of importance will often further adorn her neck with a type of sea shell. (Paskin, 1990)

Hides and skins are therefore used by Ovahima for clothes, sandals, head-pieces, sheaths and belts. Other uses include sleeping bags and carrying bags. (Page, 1976)



- (a) and (b) Spoons for domestic purposes are mostly carved from *Commiphora* species, which are plentiful throughout the territory.
- (c) Wooden waistbands worn by girls in the pre-puberty stage are made from young, flexible branches of *Combretum hereroense* or *Colophospermum mopane*.
- (d) and (e) Wooden bowls used during ceremonies and prayers at the sacred fire. A mixture of water and mopane leaves or finely chopped pieces of root from *Grewia flavescens*; are stirred on the "otjipwina" bowl to attract the attention of the spirits.

- (a) and (b) Wooden milking pails are common utensils in the household of all Himba and Herero pastoralists.
- (c) A gourd, used for storing milk.
- (d) Wooden funnel.

Women swear their skin with a mixture of butter and fine red powder (ochre) that is “mined” in various places in the region. (Paskin, 1990). Most Himba women of all age anoint their bare upper bodies, limbs, faces and hair with red ochre and butterfat mixtures. (Jacobsohn, 1988)

Himba women see symbolic links between sleek beautiful cattle and their own red ochred bodies, shaved-back hairline and calf skin apparel. Their dresses are also associated with wealth and worth. (Jacobsohn, 1988)

1.3. HERERO DRESSES

Most of the Herero men have opted for a western-type clothes. The men usually dress fairly formally with long trousers, collar, tie and jacket. (Paskin, 1990)

Herero women, however, are noted for their long colourful, high-necked, full-skirted, full-length, “Mother Hubbard-type” dresses, inspired by the Victorian dresses worn by the wives of missionaries at the turn of the century and their prominent “otjikaiva” headdress (Jacobsohn, 1988; Paskin, 1990). The dresses signify wealth and a lifestyle of ease and luxury. (Jacobsohn, 1988).

1.4. HAKAONA AND ZEMBA DRESSES

Hakaona and Zemba dress similarly to the Himba and Tjimbas, except that the women do not make use of the butter-ochre mixture on their bodies. (Paskin, 1990)

2. HANDICRAFTS AND UTENSILS

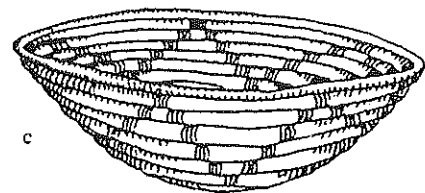
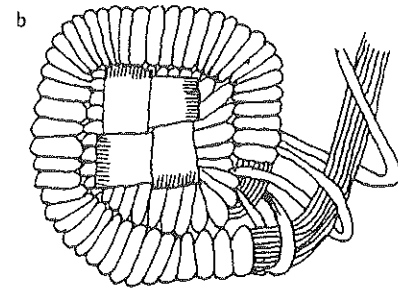
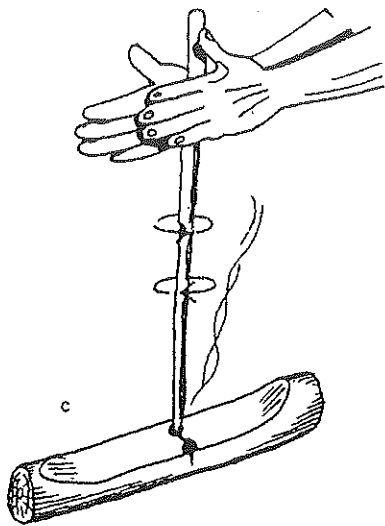
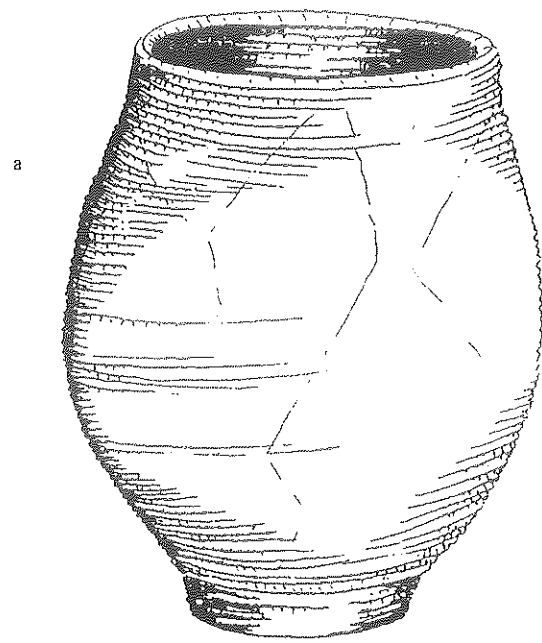
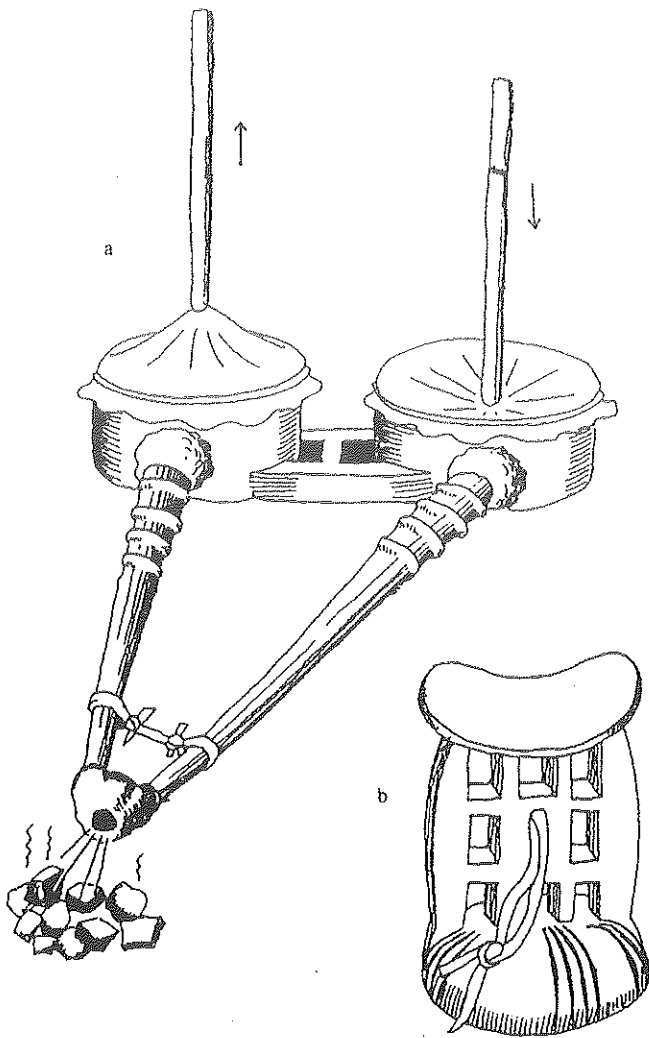
Himba people do little handicraft work themselves. Clay pots, bracelets and other iron goods are usually obtained from other ethnic groups. (Bollig, 1996)

Common utensils owned by most families are wooden milking pails (“omahoro”), gourds (“ozondjupa”), wooden funnels (“ozombako”), woven dishes and baskets (“ovimbara”), wooden spoons (“otutuwo”), head-rest (“ovihavero”) and walking and carrying sticks. (Malan et al, 1974)

Weapons such as knobsticks and bows and arrows are also owned. (Jacobsohn, 1988)

3. THE MARRIAGE IN THE TRADITION

Traditionally Himba girls were often married off at the age of 10 or even younger. This practice is changing and is rarely found. The common marrying age for girls seem to be around 16 and elder. (Hvidsten et al, 1997)



- (a) Thwa furnace bellows, which consist of two carved wooden bowls covered with skin. The air tunnels are made from gemsbok horns, which are protected at the end with a cover of baked clay.
- (b) Carved head-rest; particularly common among the Himba.
- (c) Fire-sticks. A soft slab ("otjiva") is used, on which a harder rod ("ongune") is twirled to make fire.

A variety of spectacles, collectively called "ovimbara", are woven from fibre and leaves of the makalani palm.

The Himba men usually marry at a much elder age. A man must first acquire sufficient livestock for the lobola and the family wealth. Men thus may not marry until in their late twenties or early thirties. (Hvidsten et al, 1997)

4. THE LIVESTOCK IN THE TRADITION

An old Himba legend tells about cattle coming from the north to join some tribesmen at their camp fire. When they did not turn away as did wild animals, the tribesmen decided that they must have been sent to them by the spirits of their ancestors. The Himbas believe that human life sprang from the Omumborombonga (tree: *Combretum imberbe*) and surmised that cattle come from the same source. Associated with this strong linkage between men, cattle and ancestral spirits is the Himba belief that without cattle a man is nothing. (Paskin, no date)

In some clans restrictions are placed regarding the possibility to eat certain foods or the possibility to keep within the herd animals of a particular description or colour (in “Social organisation, economic life, political structure, military organisation and religion”, no date; Kakongo, 1999).

The Himba fundamental philosophy of life gave rise to a class of stock-owing aristocracy in their society. Because their economical, social and religious institutions are so intimately linked with pastoralism, the Himba can envisage no dignified way of life from which cattle are excluded. For this reason, the interest of future generations must be safeguarded now, otherwise they may become impoverished and eventually suffer the fate of the Tjimba who has been degraded to the level of hunter-gatherer (Malan, 1973)

In the Himba tradition health is measured in terms of livestock, personality, intelligence and leadership. (Page, 1976). A goodly portion of the low status people of Kunene North (men in particular) who survive almost entirely from maize horticulture derives from the perception that horticulture is a woman’s activity. Therefore, men making their living this manner are not really men. Cultivation of maize by men to the exclusion of herding livestock is a degradation of manhood. However, men who cultivate maize in addition to possessing livestock do not fall under this stigma. (Crandall, 1992)

The man’s standing is not only indicated by the number of his cattle but also by the age of his oxen and the spread of their horns. (van Warmelo, 1951) The fact that large stock numbers is seen as an indication of wealth contributes to large stock numbers in the area. (Smit, 2000)

5. DEATH IN THE TRADITIONS

5.1. THE “OKUPIRIKA” OR MOURNING PRACTICES

The division of left/right, “oruzo”/“eanda” is the pattern in life. However, in death a reversal occurs. The Himba enter their death with the soles of the feet and the eyes facing East. In life, although the “okuruwo” is situated at the most easterly point of the kraal, the direction in which one approaches the fire is westerly. One’s

face is toward the West and the fire, one's back faces due East (this is how left and right are determined). (Grandall, 1991)

The reversal that occurs in death is reflected in "okupirika" or mourning practices. When a kinsman dies the Himba will loosen and remove certain articles of clothing and jewellery as a symbol of bereavement. This does not indicate whether the deceased is related patrilineally or matrilineally, as in both cases the removal and loosening is the same. However, the specificity is the removal of (mostly) jewellery from either the right side or the left side of the body, from one's hand and legs. If the deceased is related to one through the "eanda" the jewellery from the left side is removed. Therefore if the man's mother dies he removes from the left. If the deceased is an "oruzo" relative, jewellery from the right side of the body is removed. Therefore if the man's father dies he removes from the right side. (Grandall, 1991)

The "okupirika" practices for specific kinsmen reveal precisely on which side of the "oruzo"/"eanda" divide the weight of kinship falls. If a mother and a sister must mourn the loss of a son/brother, he will be mourned as an "eanda" kinsman. If a man's brother dies and he is a full brother, meaning the two are related as brothers in both the "eanda" and the "oruzo", the man will mourn him as an "oruzo" relative. Here the importance of the "oruzo" both religiously and as a social binder and male organisation comes to the fore, as the "okupirika" practices for a man are an institutionalised form of emphasising "oruzo" primacy. (Grandall, 1991)

However, when a husband dies, his wife mourns him with neutrality as far as left/right is concerned. The same applies when a husband mourns his wife's death. Mourning practices reflect that one's spouse is regarded as neither an "oruzo" nor an "eanda" kinsman. A spouse is unrelated. (Grandall, 1991)

The interior of the main hut or "ondjuwo" has got a central pole. Traditionally, this pole must be broken on the death of the man of the house (Jacobsohn, 1988).

If a woman dies in her house her body must be removed through a hole broken into the back wall, as it is believed that moving her body past the central pole could endanger her widower. (Jacobsohn, 1988)

Note that when driving close by a Himba or Herero settlement, it is better to stop and give a greeting to the inhabitants, rather than to rush past. Those who rush on without stopping are regarded as bearers of bad news. (Paskin, 1990)

5.2. GRAVES AND GRAVE YARDS

The graves and grave yards are very important in the Himba tradition and should not be tampered with. (Bollig, 1996)

Table: graveyards along the Kunene River with commentary

Place	Number	Origin	Co-ordinate	Comments
Enyandi	5	Himba	S 17009.475 EO 13033.430	Recent graves
	3	Himba Thwa	S 17008.827 EO 13032.096	Recent graves
	Ca. 15	Himba	S 17008.761 EO 13031.959	Many old graves



Photo: Philippe TALAVERA

A grave yard next to the
Kunene River

Place	Number	Origin	Co-ordinate	Comments
Otjiruuo	2	Himba	S 17007.292 EO 13030.886	Recent graves
	3	Himba	S 17007.388 EO 13030.957	Old graves
	Ca. 10	Himba		Ca. 500m downwards from previous point, many old graves
	3	Himba	S17007.266 EO 13030.529	Recent graves of children
Otjihandjaveru	2	Himba		Ca. 500m upwards from following previous point
	Ca. 10	Himba	S 17005.252 EO 13030.992	Many old grave
Okandombo	Ca. 10	Himba	S 17003.107 EO 13029.319	Mainly old graves
Otjombapa	Ca. 20	Himba	S 17001.746 EO 13028.568	Mainly old graves, situated on island
Omuzororora	1	Thwa	S 17001.473 EO 13028.470	Recent grave
	1	Himba	S 17001.372 EO 13028.221	Recent grave
Oriongwari	1	Himba	S 17001.108 EO 13027.955	Recent grave
Ozondjandja	4	Himba	S 17000.028 EO 13025.371	Recent graves 200 upwards from the measured point
	1	Tjimbundu	S 17000.007 EO 13025.417	Recent grave
	1	Tjimba	S 17000.013 EO 13025.169	Recent grave
	1	Himba	S 16059.925 EO 13024.939	Old grave
Onungurura	1	Thwa	S16059.286 EO 13022.113	Recent grave
	2	Himba	S 16059.218 EO 13022.834	Recent graves
	7	Himba	S 16059.244 EO 13022.204	Recent graves
	3	Himba		Very old graves
	1	Nkumbi	S 16058.717 EO 13021.592	Recent grave
	2	Himba Thwa	S 16058.717 EO 13021.592	Recent graves
	2	Himba Ngmabwe	S 16059.000 EO 13022.536	One old grave
Ohaiuwa	3	Himba		Old graves
	2	Himba		Recent graves

Place	Number	Origin	Co-ordinate	Comments
Omukazeze	2	Himba	S 16059.290 EO 13019.000	Recent graves about 200m up river
	1	Himba	S 16059.447 EO 13018.387	Recent grave
	2	Himba	S 16059.332 EO 13018.360	Old grave
	4	Himba Herero	S 16059.640 EO 13017.559	Recent graves
	3	Himba		Very old graves
	1	Koroka	S 16059.633 EO 13017.530	Recent graves
Ipimbi	4	Himba		Very old graves
Okatamba	3	Himba		Very old graves
Ete	10	Himba	S 16059.820 EO 13016.087	Some old graves
Oriombomi	2	Twa Koroka	S 16059.827 EO 13015.133	Recent graves
Otjipupa	3	Himba	S 17000.007 EO 13015.133	Some old graves
	3	Himba	S 17000.076 EO 13014.704	Some old graves
Okopomutenya	1	Tjimba		Recent grave
Oriomupia	7	Himba	S 17002.505 EO 13013.775	Some old graves
Ovizerombuku	7	Himba	S 17014.450 EO 13011.360	Some old graves
Eyao	2	Himba	S 16059.674 EO 13005.790	Recent graves
Eyao/Mouth	1	Himba		Very old grave
Oriokawe	8	Tjimba		Some old graves
Otjiuu	Not visited			
Otjomborombonga	Not visited			
Onyesu	Not visited			
Otjinungwa	3	Himba	S 17015.791 EO 12026.229	Some old graves

(Bollig, 1996)

5.3. THE "OMBINDI"

Along roadways and bush tracks in Kunene North small piles of stones will often be seen. They mark the places where a funeral procession, carrying a deceased headman on a bier, stopped to rest. Each person passing that way in the future is expected to add a stone to the pile, as a mark of respect for the deceased. (Paskin, 1990)

This information contradicts with Van Warmelo, 1951, whom finding is that there is in Kaokoland quite a

number of places where a large heap of stones lies beside a path. Each passer-by casts a stone or a twig on such a heap, which is called "ombindi", or he puts a stone into the fork of a tree nearby. If he forgets he may not go back to do it, but even so nothing untoward will befall him. The origin of these heaps is mostly not known but the one at Okarundu kozombindi, on the road to Kaoko-Otavi, relate to a doctor named Mbaatakana va Kuhanga, a specialist in keeping enemies out of the country. The legend says that he ordered that all should do at this place as described because it was a sacred place. (Van Warmelo, 1951)

6. MEDICINE IN THE TRADITION

The aspects of diseases and the treatment thereof have extensive religious implications in all Herero societies. According to the tradition, serious diseases almost inevitably have supernatural causes, being ascribed either to ancestor spirits or to the actions of witch-doctors. The influence of the forefathers is by far the more important. Should the ancestor ("ovihuha") cause a person to fall ill (-"huha"), recovery can only be achieved if the kraal head supplicates (-"huhura") on behalf of the patient at the sacred fire. It is then in the power of the ancestor to restore the unfortunate victims of his wrath to health. (Malan et al, 1974)

In the event of serious illness or other adversities, the first action taken is to determine the exact causes and for this purpose the kraal head usually sends a deputation to a diviner ("ombetere"). When it has been established that the misfortune was caused by dissatisfied ancestors, the kraal head will approach the spirits at the sacred fire. An earnest prayer is cried out, followed by a solemn confession of guilt based on the information gained from the diviner. This is often accompanied by the sacrifice of an animal in order to pacify the spirits, thus removing the cause of the disease. It is therefore not adequate to apply remedies aiming at restoring health physiologically. (Malan et al, 1974)

Should the illness be the result of witchcraft, the diviner will refer the visitor to a witch-doctor ("otjimbanda" or "onganga"). Acting on the information received from the diviner, the "otjimbanda" will supply a mixture that will supernaturally eliminate the causes. A potion may also be prepared for the patient. There are also strengthening medicines which are supplied to ensure success during difficult or risky ventures, as well as protective measures which can be taken to obviate the dangers of possible bewitching. (Malan et al, 1974)

The witch-doctor is largely dependant on the local flora in obtaining material for his medicines. However, the species he uses are secrets of his profession. The relationship between the plants used and the final nature and purpose of the medicine is obscure, since the medicine given are usually a mixture of various vegetable and ingredients. (Malan et al, 1974)

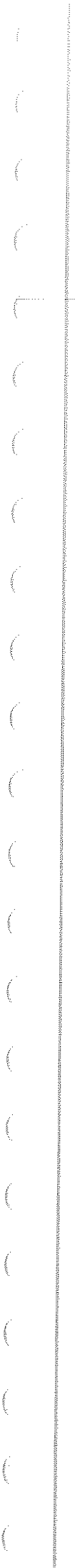
7. IMPACT OF THE CHRISTIAN RELIGION OVER THE TRADITIONAL BELIEFS

Western religion appears to have had little effect on the people in Kunene North. In 1974, it was estimated that only 5% of the local population were church members. In 1990, little has been seen to indicate that this may have changed. (Paskin, no date)

There are about 10 churches in Opuwo and missions scattered all around Kunene North, in places such as Okangwati and Etanga. No record of the number of people frequenting churches are kept and it appears to be difficult to assess whether they are of significance or not. (personal data, Talavera)

Chapter Three

**THE AGRO-ECOLOGICAL
ENVIRONMENT**



Section 16

Climate, Rainfall, Precipitation and Evaporation

1. CLIMATE

According to the Köppen Climate Classification system, the region has a dry, arid climate. The region has been divided into three climatic zones on the basis of rainfall, namely (in “Kunene integrated regional land use plan”, 1998):

- The semi-arid zone of the north-eastern part of the Region
- The arid zone in the central part of the Region
- The hyper-arid (desert) zone along the Atlantic coast.

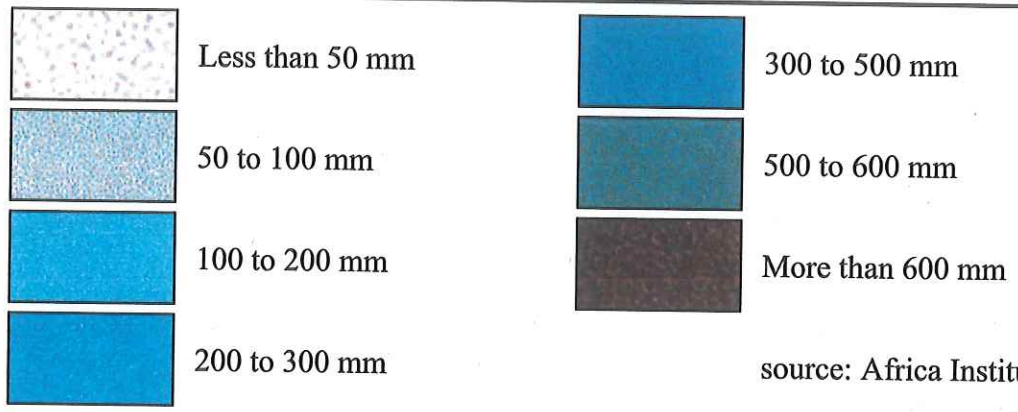
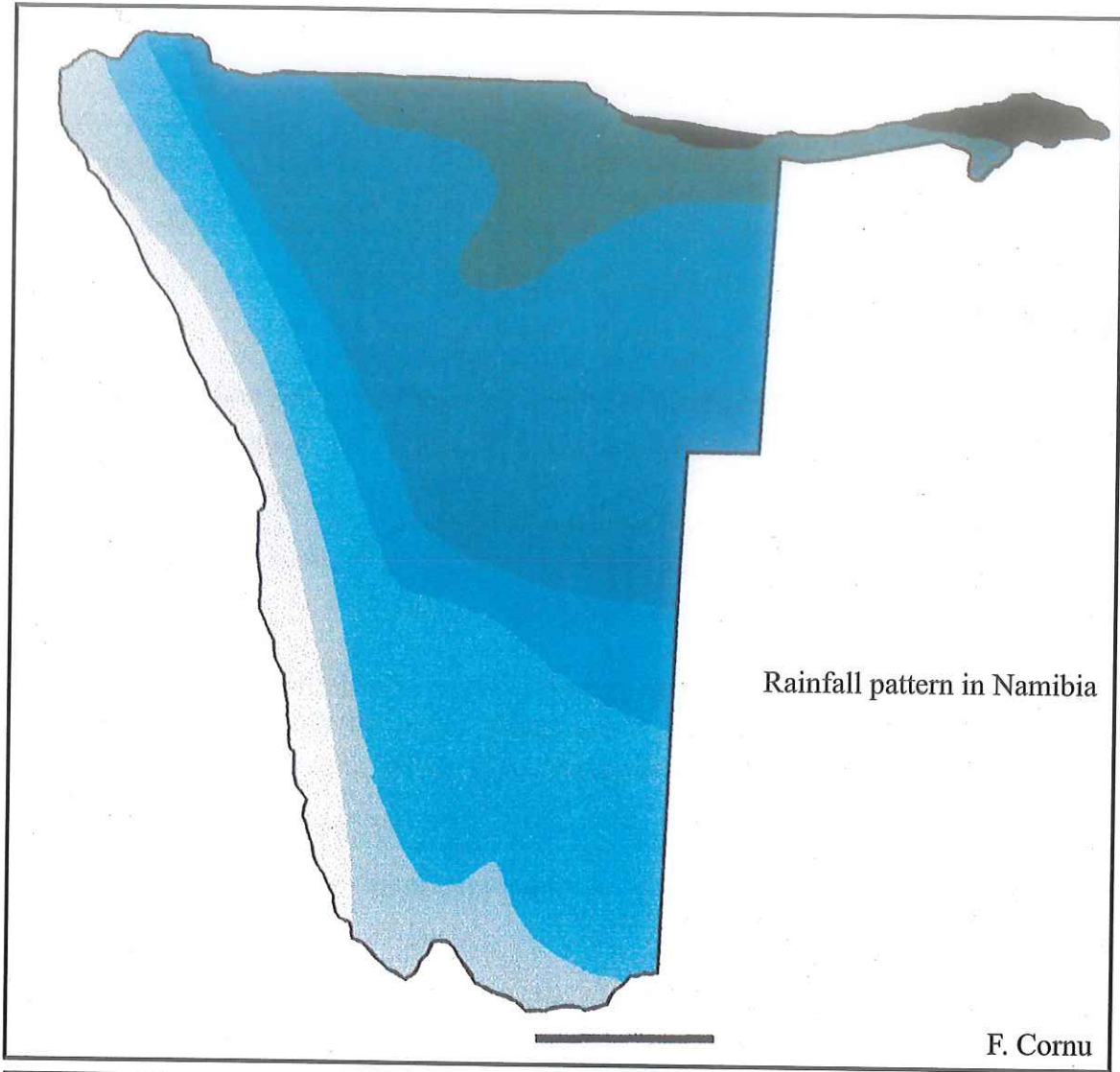
The climate is fairly harsh with high summer temperatures. There is a very short wet season (mainly February to April) with a low annual rainfall (50mm in the west to about 300mm in the east) (Paskin, 1990; in “developing financial services in two regions of the northern Namibia”, 1999)

2. TEMPERATURE

On summer days the temperature often exceeds 35°C and a temperature of 40.4°C has already been recorded in November 1963 in Opuwo. In the valleys the temperature is probably even higher. A variation of about 20°C between day and night can be expected. June to August are the coolest months with a possibility of frost in the lower lying areas (-4°C being recorded), while the period from October till the first rain is the hottest. (Page, 1976; Malan et al, no date; in “Kunene integrated regional land use plan”, 1998; Irving et al, 1999) In summer the day temperatures are about 30°C, and can be up to 40°C. The night temperatures are about 12-15°C on clear nights, but higher otherwise. In winter the day temperatures are about 20-30°C and the night temperatures about 6-8°C on average. Sometimes the night temperatures are about 3-4°C (Hvidsten et al, 1997)

3. PREVAILING WINDS

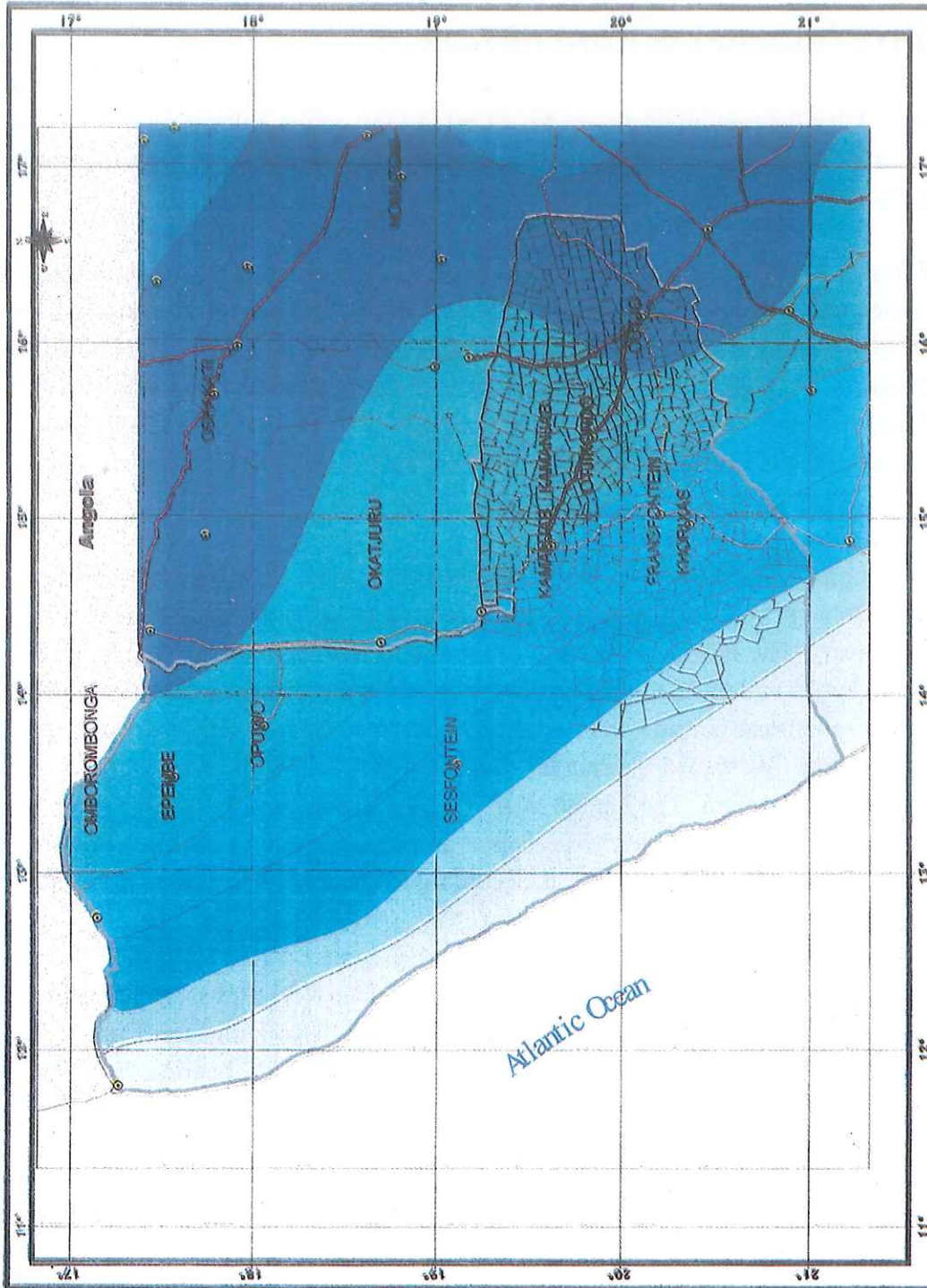
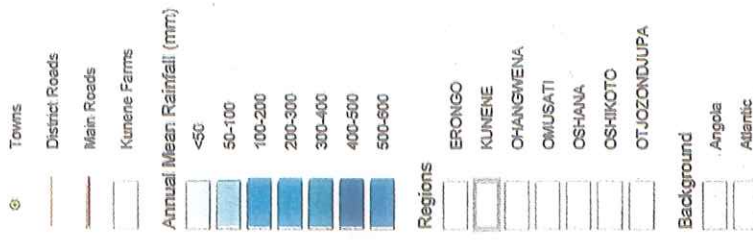
During winter, dry easterly winds derived from anticyclones off the east coast, dominate most of the South West African Highlands (Wellington, 1967; Hvidsten et al, 1997). In early summer a low pressure zone develops over the central Kalahari, which draws a stream of moist air southwards from central Africa. In the



source: Africa Institute of South Africa



Rainfall



Title: Kunene Rainfall Map

By: Gerhard Mouton
 NOLIDEP
 Tsumeb

Kaokoland, the winds at this time are mainly westerlies, also flowing towards the Kalahari Low. Later in the summer easterlies and north-easterlies once more prevail, bringing the long awaited rains. The coastal lowlands are little affected by the interior circulation and here strong south to south-westerly winds blow almost unceasingly throughout the year (Malan et al, 1974)

4. RAINFALL

Inhabitants in Kunene North describe two main seasons: the dry (*Okuni*) and the rainy (*Okuroro*) season and two transitory seasons: after the rain (*Okupepera*) and before the rain (*Oruteni*) (Cornu, 1999)

4.1. ISOHYETAL MAPS IN KUNENE NORTH

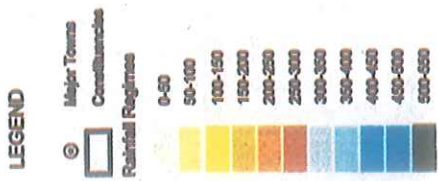
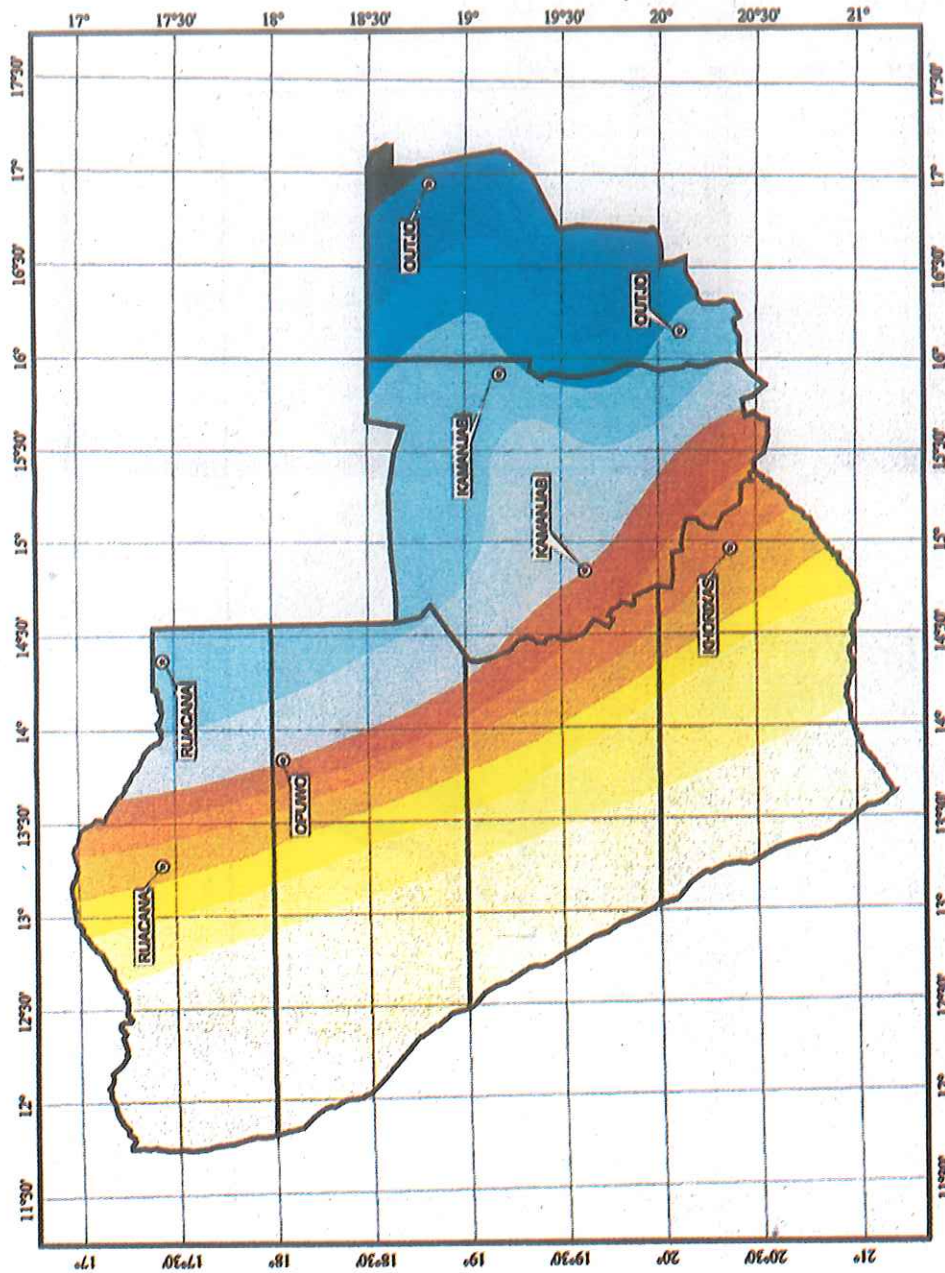
In general, it can be said that the rainfall decreases from East to West across Kunene North, with very little rainfall at the coast. Furthermore, the rainfall in Kunene North is highly variable from place to place and from year to year. (Irving et al, 1999; du Pisani, 2000)

The trend observed from the isohyetal map is that rainfall decreases westward, from the semi-arid part of the region towards the desert along the coast. It also decreases southwards. The rainy season lasts for less than 5 months (from about November to March). The dry season is longer than the rainy season. It is not unexpected to receive the total seasonal rainfall in one or two storms which may come over 2 to 3 months. (in "Kunene integrated regional land use plan", 1998; Sweet, 1998; Irving et al, 1999) According to another author, the rain that falls in the region results from convection currents and occurs late in the summer, usually in March and April. (Page, 1976)

In Kaokoland rainfall is predominantly of the summer convective type, with the first scattered showers usually falling late in October or very early in November. A temporary lull sometimes occurs before the start of the main rains in January. The height of the rainy season is in March, when up to 275mm have been recorded at Opuwo, but by the end of April the rains are over. At Opuwo the mean annual rainfall is about 350mm but the seasonal variation is considerable, with the highest recorded in a single season being 685mm and the lowest under 200mm. Westward the rainfall decreases until below the escarpment it appears to average less than 100mm per annum. The Namib coast rarely receives rain, although light showers do occasionally occur. (Malan et al, 1974) Otjihende receives as an average 200mm of rain per year. Marienfluss valley receives as an average 150 to 200mm per year, according to Diener (1986, quoted in Cornu, 1999) or 100mm per year, according to Malan (1974).

Rainfall events are largely influenced by warm moist air from the Indian Ocean crossing the whole Southern African land mass. By the time this air gets to Kunene Region, it is depleted of moisture. The coastal area, on the other hand, is influenced by the cold Benguela current which is not moisture bearing. When this cool air meets with the warm air from the Indian Ocean, there is a temperature inversion (cold air sits at the bottom of warm air) and air turbulence is not possible. This explains why the coast is a desert (0mm to 50mm of rainfall per year). (in "Kunene integrated regional land use plan", 1998)

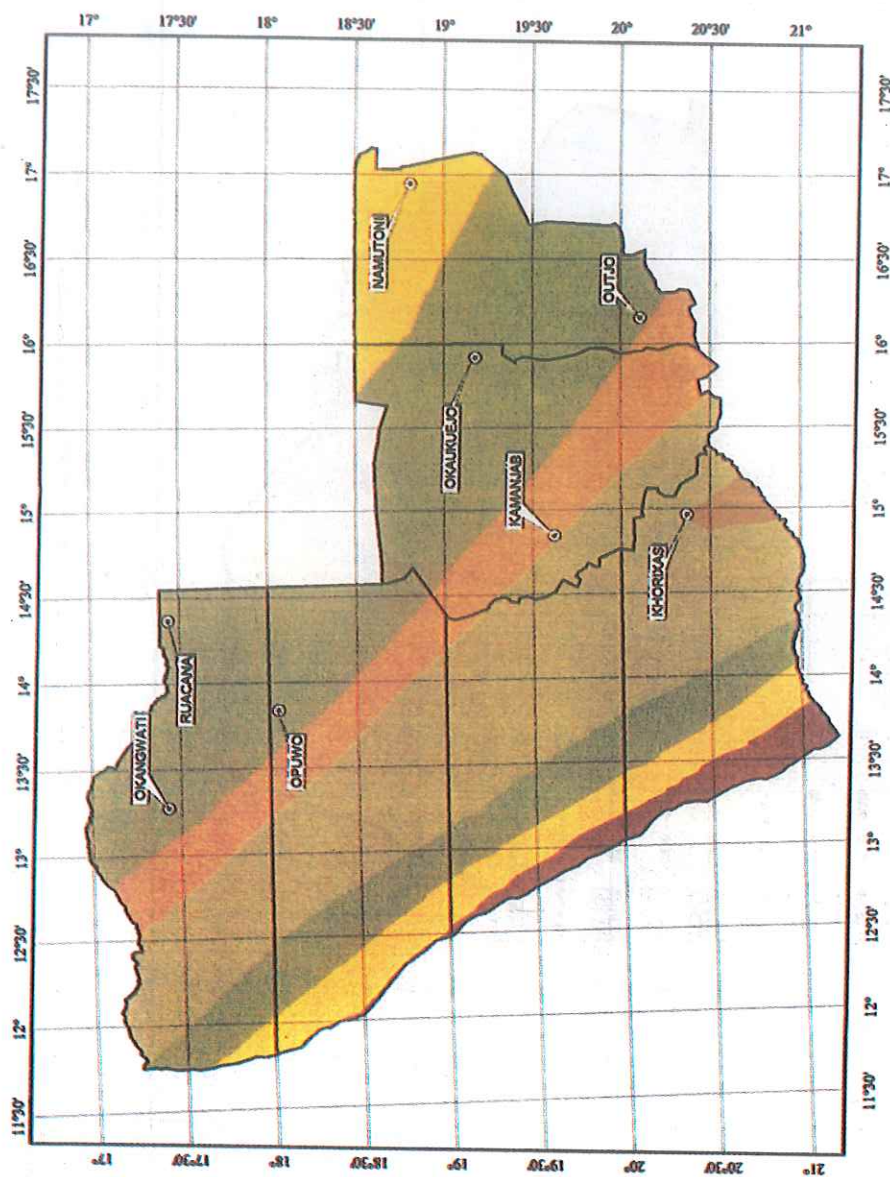
KUNENE REGION RAINFALL



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 October 1998

KUNENE REGION

POTENTIAL EVAPORATION



LEGEND

- Major towns
- Constituencies

Potential evaporation (mm)

2400-2600
2600-2800
2800-3000
3000-3200
3200-3400
3400-3600



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 October 1998

In "Kunene Integrated Regional Land Use Plan, 1998"
 Ministry of Lands, Resettlement and Rehabilitation

4.2. KUNENE NORTH, A DROUGHT PRONE AREA

Kunene Region is arid because it receives low rainfall but it is also drought prone. Drought occurs when the rainfall received at a given place is too low (in successive years) to support biomass production for both cropping and pasture, as well as supporting the potable water needs of human beings. (in “Kunene integrated regional land use plan”, 1998)

Table: rainfall and drought at stations in Sesfontein and Opuwo

Station	Period of complete rainfall records (Years)	Long-term mean rainfall (mm)	Long-term range of rainfall (mm)	Number of years below mean rainfall	Range of number of years below mean rainfall
Sesfontein	22	95,4	27,6 – 259,5	12 (55%)	3-4
Opuwo	23	320,1	87,9 – 685,1	11 (49%)	2-3

(in “investigation into the surface water resources of the Kaokoveld, file number 11/7/3/1, report number 2900/3/1/41”, 1991, also quoted in “Kunene integrated regional land use plan”, 1998)

4.3. RAINFALL RECORDS IN OPUWO – 1941 TO 1948

The elder figures available are recorded in Van Warmelo, 1951

Table: rainfall at Ohopoho in millimetres

	1941/42	1942/43	1943/44	1944/45	1945/46	1946/47	1947/48
Beginning of rainy season	October 1941	March 1943	October 1943	December 1944	November 1945	December 1946	December 1947
End of rainy season	April 1942	April 1943	March 1944	March 1945	March 1946	February 1947 (1)	April 1948
Total season	327,9mm	280,9mm	457,5mm	324,5mm	154,5mm	404,2mm	260,4mm

(1) Except 10,5mm on the 11/4/47
(adapted from: van Warmelo, 1951)

It appears that the earliest rain recorded fell on 10th October, but more usually the first rains come much later. The latest rains recorded fell on 28th April, but again a number of years show no rain in April at all. The pause between the early and late rain occur often in January (often qualify as dry month). Distributions and rate of precipitation are thus the main factors which cause the tremendous variations and make each year seem different from all preceding ones. (van Warmelo, 1951)

In 1941/42, there was a drought considered by the natives to be the worst they ever had. Yet, 229,2mm fell at Ohopoho. However, some places did not receive rain at all. 6,000 cattle and 3,000 small stocks died that season. At Sesfontein, 40% of the livestock were lost. (van Warmelo, 1951)

4.4. RAINFALL RECORDS IN SESFONTEIN AND OPUWO – 1952 TO 1990

Table: seasonal rainfall records for Sesfontein and Opuwo for 50 years

Season	Sesfontein	Opuwo
1952/53	-	248,0
1953/54	-	419,3
1954/55	-	244,0
1955/56	-	261,4
1956/57	224,0	358,7
1957/58	124,5	-
1958/59	27,6	199,6
1959/60	67,5	301,6
1060/61	89,7 (+)	-
1961/62	-	242,0
1962/63	148,1	686,9
1963/64	124,1	-
1964/65	71,5	310,7
1965/66	81,8	283,9
1966/67	51,5	370,9
1967/68	163,1	466,8
1968/69	136,4 (+)	-
1969/70	-	425,8
1970/71	255,4	-
1971/72	-	373,4
1972/73	-	-
1973/74	143,2 (+)	-
1974/75	170,9	-
1975/76	259,5	-
1976/77	35,0	-
1977/78	73,0	-
1978/79	59,0	-
1979/80	81,0	-
1980/81	0,0	-
1981/82	156,8	-
1982/83	73,9	-
1983/84	235,1	-
1984/85	-	-
1985/86	64,0	393,6
1986/87	-	271,4
1987/88	-	345,5
1988/89	130,3	225,9
1989/90	-	156,0

- no record for the whole season or part of months with average > 10mm lost (no reliable estimate possible)

(+) part of rest of season lost, monthly average used to estimate seasonal total

(in “investigation into the surface water resources of the Kaokoveld, file number 11/7/3/1, report number 2900/3/1/41”, 1991)

While the Sesfontein record appears to be representative enough for the long-term, the short Opuwo record

could not be fully representative, being 20% too low. Since the breaks in the record are erratic, this must be attributed to coincidence. (in “investigation into the surface water resources of the Kaokoveld, file number 11/7/3/1, report number 2900/3/1/41”, 1991)

There is great inter-seasonal variability at all stations (Irving et al, 1999). Almost every peak is followed by a low, and the pattern is consistent. In Opuwo, the difference between the highest and lowest rainfall recorded is 527.20 mm (in “Kunene integrated regional land use plan”, 1998) The rainfall varies between 350mm on the eastern plateau and less than 50 mm in the coastal strip. (Page, 1976; in “investigation into the surface water resources of the Kaokoveld, file number 11/7/3/1, report number 2900/3/1/41”, 1991) At Opuwo the annual average rainfall recorded over 23 years (1948-1971) was 348.7 mm, with 99% falling from October to April. At Sesfontein an annual average precipitation of 108.0mm was recorded, with 88% of the rain falling from December to April. (Page, 1976) Another author explained that annual rainfalls vary from 300mm in the east to less than 100mm in the west. It is unreliable and erratic. (Hvidsten et al, 1997)

4.5. THE RAINY SEASON 1999 – 2000 IN OPUWO

Table: rainy season 1999/2000 – Opuwo

Days	November	December	January	February	March	April	May	June
1		0,5mm					2,8mm	
2		26mm						
3						5,5mm		
4				1mm				
5			7mm		6,4mm			
6			3,1mm	3,8mm				
7			50mm		20mm			
8			8mm					
9								
10								
11								
12								
13			0,4mm		10mm		5,6mm	
14	5,8mm	30mm						
15	3,4mm	19mm				3mm		
16		65mm				2mm		
17		34mm				3mm		
18								
19						20mm		
20								
21								
22			14,8mm		16mm			
23					15mm			
24		7mm						
25					9mm			
26								
27		3mm			15mm			
28		2mm						
29								
30	18mm				18mm			
31		42mm			4mm			

(Personal data DEES Opuwo)

Table: total received in Opuwo for the rainy season 1999/2000

	November	December	January	February	March	April	May	June
Total per month	27,2mm	228,5mm	83,3mm	4,8mm	113,4mm	33,5mm	8,4mm	0mm
Total year		499,1 mm						

(Personal data DEES Opuwo)

4.6. MONTHLY MEAN RAINFALL IN SESFONTEIN

Table: statistical analysis of rainfall in Sesfontein:

Month	Mean rainfall	Standard deviation	Coefficient of variation (%)	Median
January	24,8	31	125	19,5
February	20,4	27,7	136	13,5
March	37,9	39,9	10	27,5
April	12,9	17,2	133	5
May	1,6	6,3	394	0
June	0,2	0,8	400	0
July	0	0	0	0
August	0	0	0	0
September	0	0	0	0
October	1,2	4	333	0

(in "Kunene integrated regional land use plan", 1998)

In areas such as Kunene North, the median is a better statistical tool to describe a "normal" rainfall. It is the middle value of an ordered series of observations that divides the series into two equal parts (50% of the observations are below and 50% are above the value). (in "Kunene integrated regional land use plan", 1998)

4.7. RAINFALL AND EROSIVITY

One important characteristics of rainfall in the Kunene region is that it often comes as short-duration high intensity storms of potentially high erosivity (the erosivity being the amount of energy measured in Joules/m²/year that rain drops bear to dislodge soil particles from the soil mass. The erosivity of rainfall is only one of several factors that determine soil loss). Erosivities of over 3000 J/m²/year have been calculated by the Agro-Ecological Zoning project for some parts of Kunene Region. (in "Kunene integrated regional land use plan", 1998)

Rain tends to come in heavy downpours that wash away the thin topsoil and fill the dry riverbeds and streams with a sudden rush of muddy water. (Hvidsten et al, 1997) However, rainfall is important to fill surface water and recharge ground water sources. (Irving et al, 1999)

5. HUMIDITY

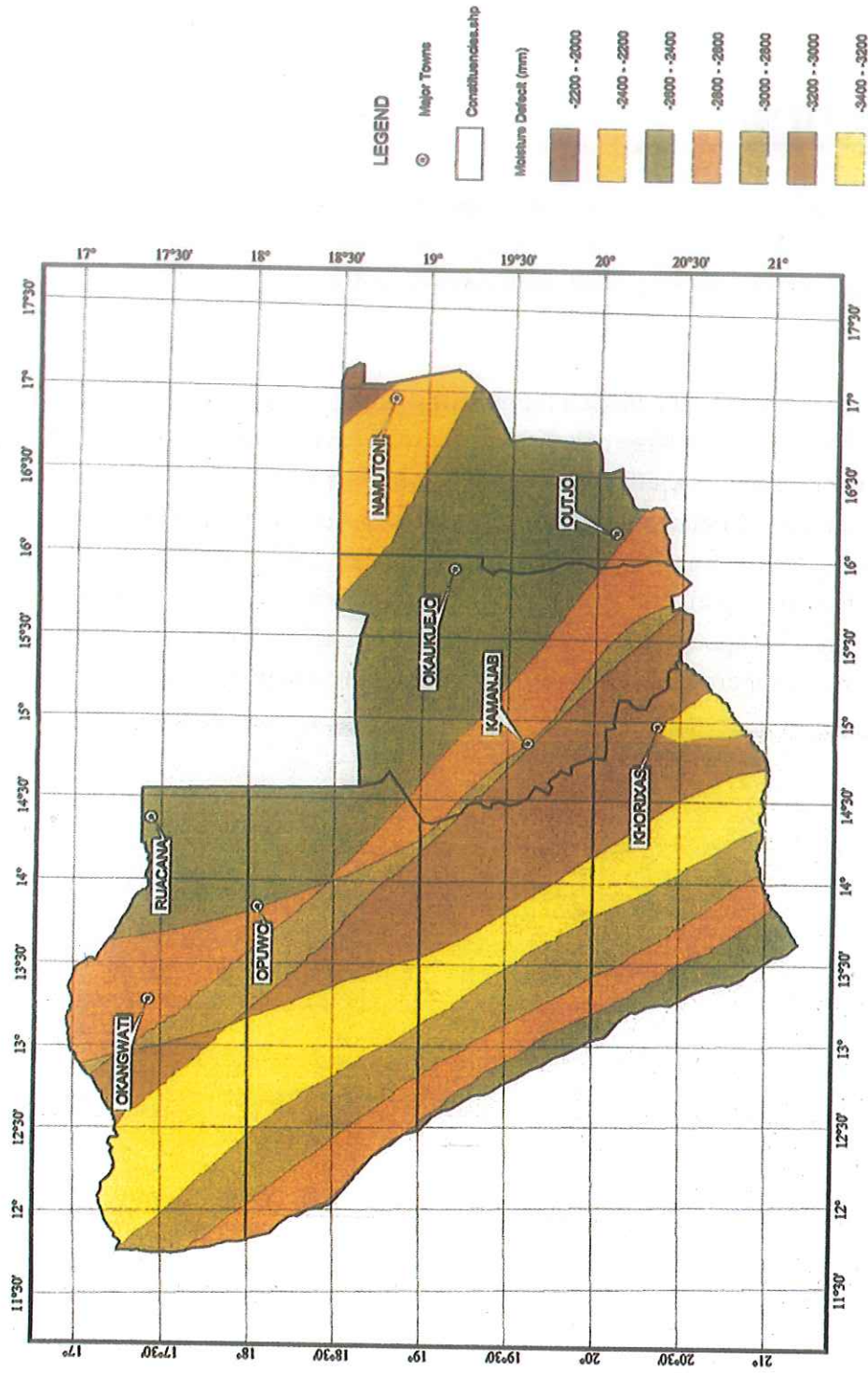
Relative humidity is a measure of moisture held by air. It is fairly low in Kunene Region, rarely going above 63% at inland stations. Humidity is lowest during the cooler part of the year. (in “Kunene integrated regional land use plan”, 1998)

6. EVAPORATION

Temperature and humidity influence the rate of evaporation. The high temperature and low humidity experienced in most parts of the region lead to a very high evaporative demand. Potential evaporation is higher than precipitation, making the Kunene Region a moisture deficit area. (in “Kunene integrated regional land use plan”, 1998)

The Kaokoveld, with its rugged terrain, boast a number of promising sites for dam construction. Due to the impermeable and bare rock surface of large points of the area and to violent and high-intensity rainfall storms, even though these are erratic, there is a potential for good run-off in many rivers. Hence, surface water scheme for the supply of sustainable amount of water is a feasibility. (in “investigation into the surface water resources of the Kaokoveld, file number 11/7/3/1, report number 2900/3/1/41”, 1991; Irving et al, 1999) However, in the north central part of Kunene Region, the deficit (evaporation minus precipitation) is 3375mm. The high potential evaporation has an adverse effect on surface water storage, particularly in small reservoirs, which become “evaporation pans”. (in “Kunene integrated regional land use plan”, 1998)

KUNENE REGION MOISTURE BALANCE



Produced by the NRSC, MET
 Produced for the Ministry of Lands,
 Resettlement & Rehabilitation (MLRR)
 October 1998



In "Kunene integrated Regional Land Use Plan, 1998"
 Ministry of Lands, Resettlement and Rehabilitation

Section 17

Geology

1 THE TERTIARY PERIOD

From a geological point of view, the most important period for Kunene North is the tertiary period. Formations of the tertiary period cover part of the eastern area of the region, with few patches along the coast. The main rock types are sandstone and calcrete. Calcrete is believed to have been brought about by a change from a pluvial (wet) period to present day desert conditions. Wind was believed to have been active in the tertiary period leading to the removal and deposition of single particles size sand. (in “Kunene integrated regional land use plan”, 1998)

Table: the geological formations of Kunene Region

Approximate age in Million years	Geological period	Sequence	Group	Associated rock type
+/- 65	Tertiary to quaternary Cretaceous	Post-karoo	Kalaharri	Unconsolidated sediments, calcrete
+/- 140	Jurassic to Cretaceous	Karoo	Ecca	Basalt sandstone and shale
+/- 345	Cambrian	Post-Damara	Nama	Sedimentary, granite
+/- 570	Namibian	Damara	Swakop and Otavi facies	Sedimentary rocks
+/- 1500	Mokolian	Sinclair		Quartzite, basalts
+/- 2000	Vaalian	Epupa/Kunene	Khoabendus and Haib	Metamorphic rock complex

(in “Kunene integrated regional land use plan”, 1998)

The largest part of the Kunene Region is underlain by rocks of the Damara sequence. These rocks were subjected to a number of forces such as folding and faulting giving rise to the very scenic mountains of Sesfontein and the Baynes mountains. Sedimentary deposits covered the area before being subjected to the current phase of erosion (Otavi facies). The Swakop facies also comprises part of the Damara sequence. The main rock types are schist and quartzite covering a significant part of the region. (in “Kunene integrated regional land use plan”, 1998)

The Karoo sequence rocks are found in the central part of the region. The rock types are mainly basalts. Lying next to the basalts are sandstones and shales. Glaciation is also believed to have taken part during the Jurassic

period. This is what is believed to have brought about a number of present day river valleys, especially the Hoarusib in the North Central part (draining the Purros area) of the region. The various formations have been subjected to different mineralisation. The region has different mineral deposits, mainly base metal deposits. (in "Kunene integrated regional land use plan", 1998)

2. MAJOR GEOGRAPHICAL FEATURES

2.1. THE BASEMENT COMPLEX

The oldest distinguished rocks in Kaokoland are the amphibolite and pegmatite banded granitic gneiss of the Epupa Formation (Martin, 1965). Apart from the Baynes and Zebra Mountains, the Epupa Formation covers much of northern Kaokoland, and outcrops extend southwards to the Hoanib River in the form of an anticlinal ridge. Present information suggests a correlation with the Hoab Formation in south-eastern Kaokoland. The Fransfontein granite, which intrudes into the Hoab Formation, has been dated at 2000 million years. (Malan et al, 1974)

2.2. THE KUNENE BASIC COMPLEX

After a long period of erosion and non-deposition, the next major crustal event was the intrusion of the Kunene Basic Complex dated by L. O. Nocholson (quoted in Martin, 1965) at 1260 million years. This huge anorthosite massif which straddles the Kunene, is the largest known mass of anorthosite and related rocks. In Kaokoland it forms the Zebra Mountains which stretch from Swartbooisdrift to the south of the Epupa Waterfall. (Malan et al, 1974)

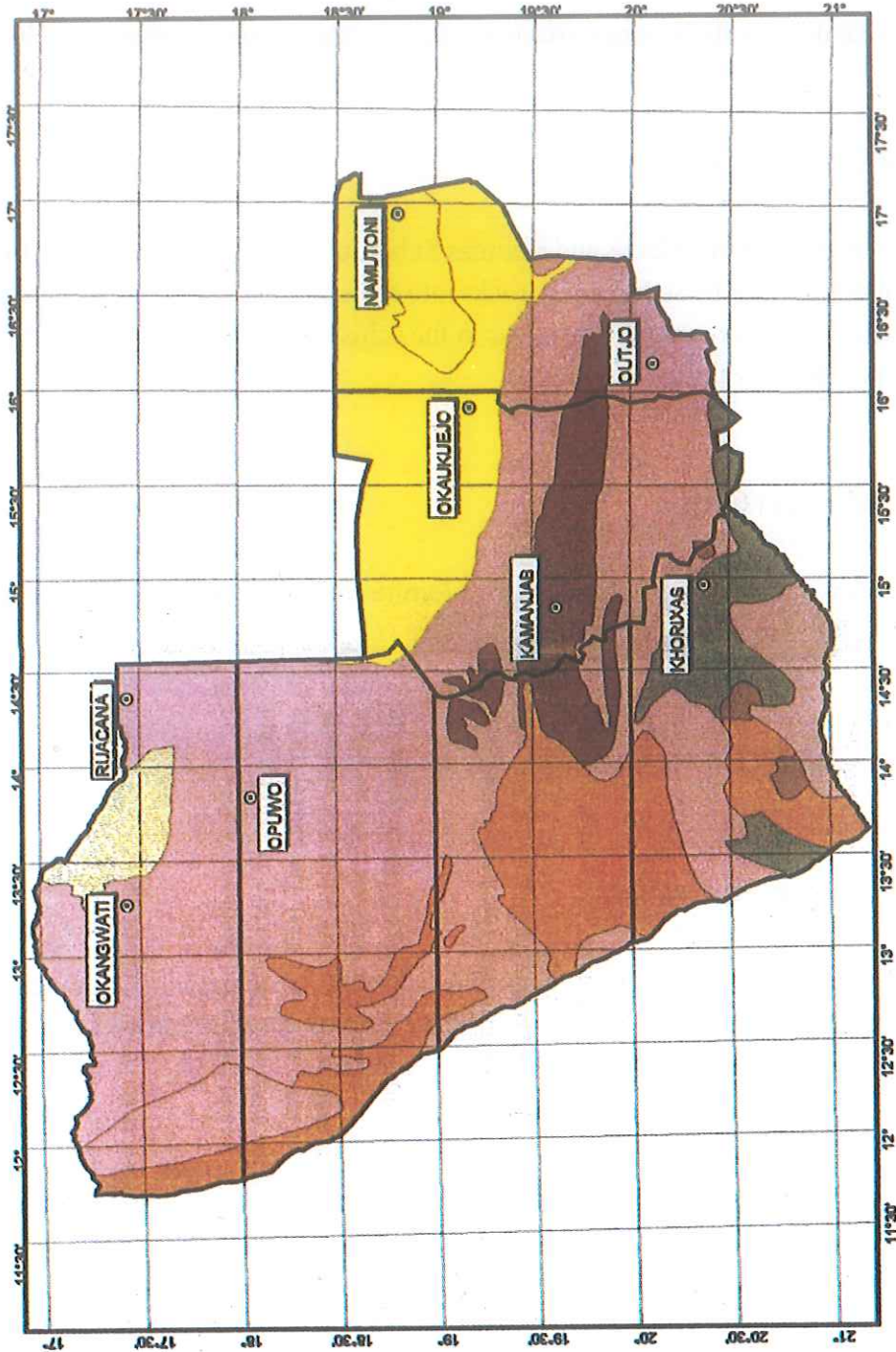
2.3. THE NOSIB-MULDEN EPISODE

Rocks deposited during this episode are late Precambrian in age. The oldest rocks, those of the Nosib Group, are overlain paraconformably by those of the Otavi and equivalent Damara Groups. A thick upper schist and a higher grade of metamorphism serve to distinguish the Damara Group from the Otavi Group. Mulden Group rocks overlie all older rocks unconformably. (Malan et al, 1974)

2.3.1. The Nosib Group

This group, which attains thicknesses of up to 3000 meters in the north-eastern Kaokoland, consists predominantly of pink felspathic quartzite with local pebble conglomerate and occasionally schist. Nosib quartzite makes up much of the Baynes and Otjihipa Ranges, as well as a considerable portion of the central and north-eastern highlands. (Malan et al, 1974)

KUNENE REGION GEOLOGICAL FORMATIONS



Produced by the NRSC, MET
 Produced for the Ministry of Lands,
 Resettlement & Rehabilitation (MLRR)
 October 1998
 Compiled from van der Merwe (1983) and Jacobson (1985)

- Geological Formations**
- Ku Kunene Basic Complex
 - B Basement Complex
 - D Damara System
 - G Salem Granite
 - K Karoo System
 - PC Post Karoo System
 - T Tertiary Systems

- Urban Areas**
- Constituencies



In "Kunene Integrated Regional Land Use Plan, 1998"
 Ministry of Lands, Resettlement and Rehabilitation

2.3.2. The Otavi Group

Corresponding to the Abenab and Tsumeb Subgroups in the Otavi Mountains one finds in Kaokoland two major dolomite units separated by a persistent tillite. Both dolomite units consist mainly of dolomite and dark limestone with intercalated shale and quartzite. The upper unit is sometimes overlain by pink and white limestone and dolomite. The tillite is made up of rounded and angular pebbles and blocks of quartzite, dolomite and granite set in a calcareous or shaly matrix. Two large iron ore deposits are associated with the tillite south-west of Kaoko Otavi. Otavi dolomite, which is only slightly metamorphosed, covers most of eastern and south-eastern highlands, as well as a small area in the Baynes Mountains. (Malan et al, 1974)

2.3.3. The Damara Group

In the west the Nosib Group is overlain by the Hakos and Khomas Subgroups of the Damara Group. Here high grade metamorphism has transformed pelitic sedimentary rocks into schist, gneiss and in places even granite. Intercalations of amphibolite, derived from mafic lava occur in the schist and veins of white quartz and are common throughout the group. (Malan et al, 1974)

2.3.4. The Mulden Group

Rocks of this group transgress unconformably over the Otavi dolomite and Nosib Groups near Otjipemba in the Baynes Mountains and on the Omuhongaberg. (Malan et al, 1974)

2.4. THE KAROO GROUP

2.4.1. The Dwyka Formation

Dwyka tillite and associated shale occurs along the Kunene River east of Swartbooisdrift and again thirty kilometers below Epupa waterfall. Further Dwyka outcrops are found north-west of Opuwo and west of the escarpment near Purros and north and west of Orupembe. (Malan et al, 1974)

2.4.2. The Stormberg Formation

In a belt stretching from Purros to about forty kilometres north of Orupembe, the Dwyka sediments are overlain by aeolian sandstone which is in turn overlain by basaltic lava. The horizontally stratified Stormberg basalt contrasts strikingly with the neighbouring intensely folded Damara sediments. (Malan et al, 1974)

2.5. THE KALAHARI BEDS

Unconsolidated Kalahari sands overlie the Otavi dolomites in the far east of Kaokoland. (Malan et al, 1974)

3. GEOLOGICAL STRATIGRAPHY IN KAOKOLAND

Among other (Malan et al, 1974):

- Kalahari Beds (unconsolidated sand)
- Karoo Group (such as Stormberg formation: Aeolian sandstone overlain by basalt)
- Epupa Formation (granite gneiss and intrusive granit)
- Hoab Formation (granite gneiss and intrusive granit)

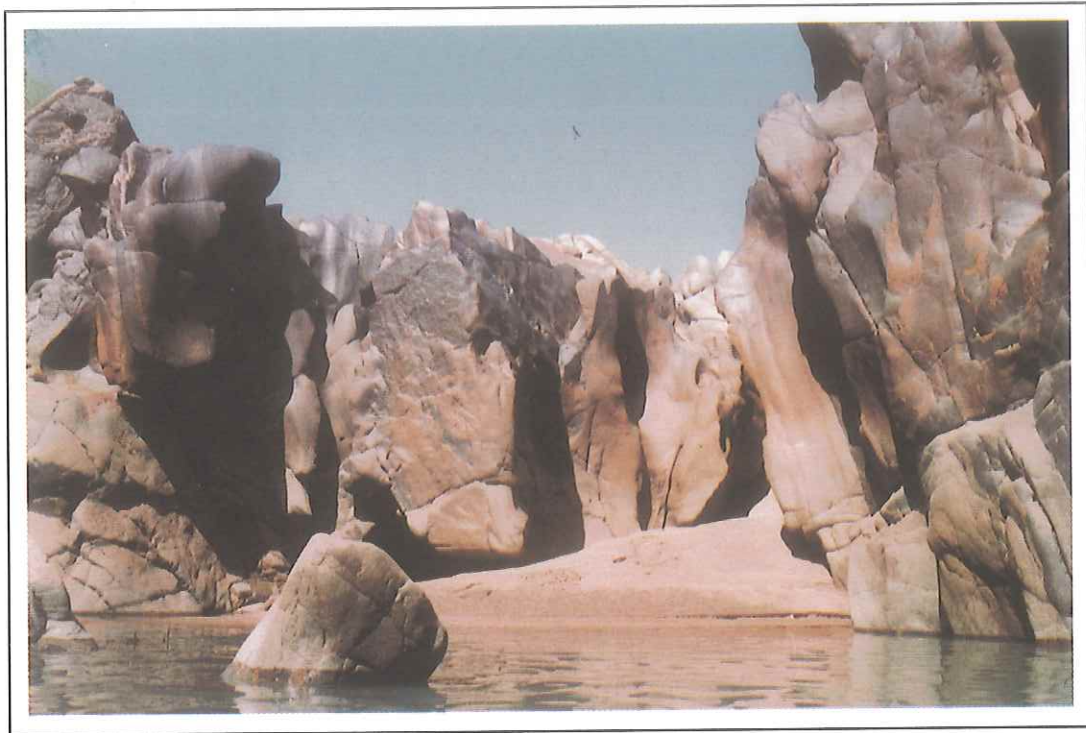
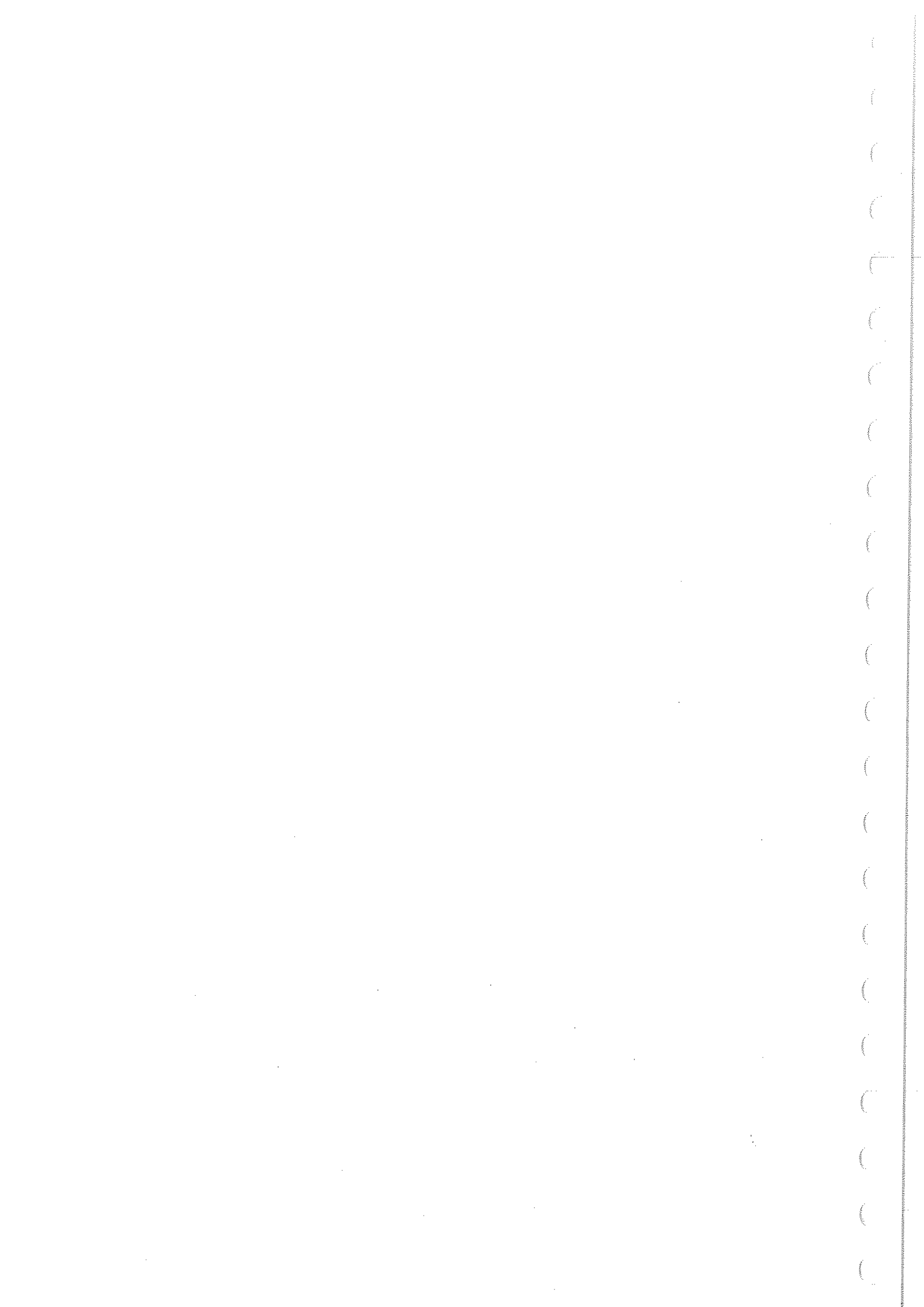


Photo: Philippe TALAVERA

Geological formations nearby the Kunene River.
Age and erosion are affecting rock formation in the area



Section 18

Topography

Kaokoland is divided into

- two main topographic regions: the interior highlands and the western pro-Namib plains with valleys that are deeply incised by the river system (Malan et al, 1974; Page, 1976)
- or six main land types (in “Kunene integrated regional land use plan”, 1998)

Both divisions are of interest and are therefore presented in the following paragraphs.

The Kaokoveld is a hilly, in parts even exceedingly broken, country shelving down westwards from the Ovamboland plateau to the sea. The altitude of Opuwo is estimated to be 3594 feet above sea level. A broad belt nearest to the sea is desert and waterless Namib. Further inland the country is also extremely dry, but broken formations collect water and lead it underground in such a manner as to give rise to perennial springs and waterholes (Van Warmelo, 1951)

1. THE TWO MAIN TOPOGRAPHIC REGIONS

1.1. THE INTERIOR HIGHLANDS

The average altitude of the Kaoko highlands varies from 1000 to 1300 meters with peaks rising to over 1800 meters in the north. Traversing the region are the deeply incised valley systems of the Hoanib River in the south, the Hoarusib River in the west centre and the Kunene river with its larger tributaries in the north. (Malan et al, 1974)

In the far east the Otavi dolomite is overlain by deep beds of unconsolidated Kalahari sands forming a broad sandy plain stretching into Ovamboland. Under the prevailing semi-arid climate the predominant gneiss and quartzite of the northern highlands has proved less resistant to weathering than the harder dolomite and limestone of the south. Consequently in the north broad pediments separating residual ranges are found, characterising a mature stage of erosion. The southern highlands is made up of rolling hills divided only by relatively youthful valleys. (Malan et al, 1974)

The highly porous southern dolomite further influences the topography by reducing water run-off, which results in the formation of few large watercourses in this region. The lack of developed drainage systems is, however, amply compensated for by the abundance of permanent springs typically associated with limestone and dolomite. (Malan et al, 1974)

The western edge of the highlands consists of rugged mountain ranges which fall away steeply to the lower lying plains of the pro-Namib (Malan et al, 1974)

The highlands are divided into 3 sub-zones (Malan et al, 1974)

1.1.1. The Eastern Sandveld

At the eastern border of the highlands the topography consists of sand veld over calcrete: from the Kalahari sediments of the Owambo Plateau to the dolomite hills of Opuwo and the Joubert mountains. In these sandy plains the draining is inland to localised pans that sometimes contain water for several months after the rainy season (Page, 1976)

Along the eastern margin of the territory, the Kalahari sediments of the Owambo plain overlap into Kaokoland forming a flat and, except for a few low ridges, featureless region. It stretches westward as far as the Joubertberge and the dolomite hills east and north of Opuwo. In the vicinity of Omutambo Mawe the deep sands form parallel, stabilised, low dunes. The eastern sandveld is extensively underlain by calcrete formed by secondary subsurface deposition. Outcrops are widespread but more conspicuous near the western hills. Most of the region is drained by a series of centripetal systems which seasonally flood into pans or vleis. Some of the larger pans retain water for many months (Malan et al, 1974)

1.1.2. The highlands in the north

They are also called the OvaHimba highlands (Page, 1976)

North of the Hoarusib River is a region of broad plains divided by high ridges and mountain ranges. In the north-west, virtually unfolded quartzites of the Nossib Group form the table-topped features of the eastern Baynes Mountains (Malan et al, 1974)

Westward across the deep valley of the Otjipemba River, the strata becomes folded and forms part of the escarpment. East of the Baynes Mountains rise the unusual conical peaks and ridges of the Zebraberge or Zebra Mountains. On the steep slopes of this range thickly bushed belts alternate with vertical bands of bare loosely piled black boulders, giving the range a striped aspect. Because of the hard nature of the component anorthosite, valleys in the Zebraberge, particularly in the east, are recent and very narrow. (Malan et al, 1974). In the area, the Otjihipa Mountain is also worth mentioning (Page, 1976)

These mountains vary in height between about 1600m and 2000m. (Malan et al, 1974; Page, 1976) Towards the south the Valimba highlands are bisected by the prominent Ehomba (1860m), the Etoroha (1850m) and the Steilrant (1964m) mountains stretching in an east-west direction. They form the watershed (division) between the Kunene and the Hoarusib. (Malan et al, 1974; Page, 1976)

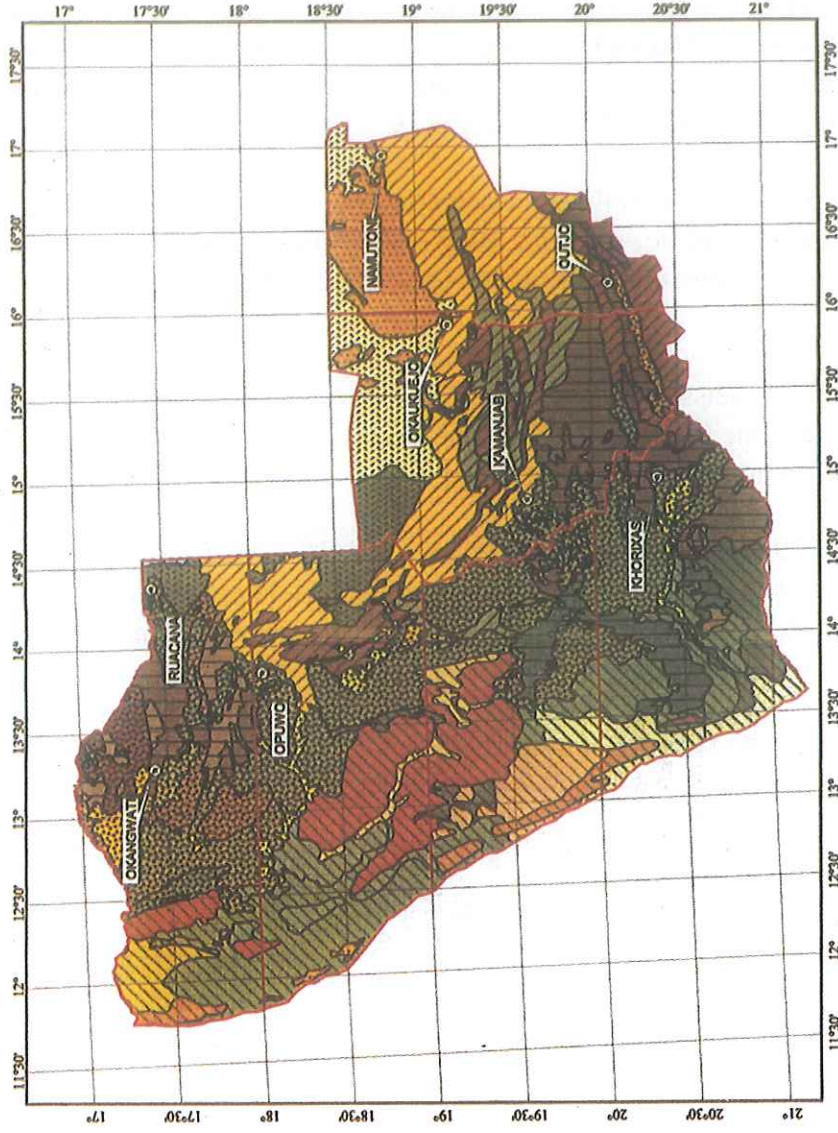
The Granite gneiss koppies are common in the north and west. Although at a distance the intermontane pediments appear flat, they are in fact usually undulating and dissected by numerous small watercourses (Malan et al, 1974)

1.1.3. The Southern dolomite hills

West of the sandveld plain, the highlands take on a much more mountainous appearance. (Malan et al, 1974). The landscape is formed by peaks of 1600m and higher. Amongst these are the Tonnesen and the Giraffen Mountains with steep valleys in between (Page, 1976)

In the south the ranges are formed mainly from the dolomite and limestone of the Otavi Group with Nosib quartzite protruding in the west and south-east. The relief in this sub-region is generally low with few peaks reaching over 1600 meters. Hill and ridge crests are usually rounded, although rugged scarps do occur, particularly in the south. In the east, the rolling hills are divided by alluvial valleys, but westward the aspect

**KUNENE REGION
LAND TYPES**



LEGEND

- ⊙ Major Towns
- Constituencies

Land Types

- Very High Mountains
- Hills - Round Summits, Upper Concave Slopes
- Hills - Sharp Ridges, Steep Concave Slopes
- Long Steep Slopes
- Rolling Upland
- Undulating Upland
- Inter-Montane River Terraces
- Inter-Montane Valley Slopes
- Association of Flat Valleys and Steep Ridges
- Nearly Level Upland
- Flat to Gently Undulating Upland, Dissected by Streams
- Level Accord and Summits, Separated by Steep Valley Slopes and Flat Valley Floors
- Gently Sloping Land at Intermediate Elevations
- Flat With No Pans
- Flat With Pans of Various Sizes
- River Bank and Leaves



- Nearly Level Coastal Sand Drift
- Gently Sloping Bare Rock Terraces
- Gently Sloping Terrace Covered by Sand
- Sand and Rubble Drift
- Hills with Pointed Ridges and Steep Concave Slopes
- Low Transverse Dunes
- Flat Valleys and Sand Filled Stream Channels
- Valley Slopes
- Association of Hills and Valleys
- Karst Hills and Valleys
- Karst Undulating and Nearly Level Lowland
- Karst Narrow Flat Valleys
- Pans Outside Etanha
- Rock (Undifferentiated)

- Coastal Desert
- Etanha Region
- Karst Areas
- Mountainous Area
- Plan
- Plateau Region
- Rivernal/Lowest
- Rock



Scale: 1:3 000 000

Produced by the NRSC, MET
Produced for the Ministry of Lands,
Resettlement & Rehabilitation (MLRR)
October 1988
Source: FAO (AG/DP/NAM/78/004) 1983

becomes more rugged as the region merges into the folded ranges of the escarpment (Malan et al, 1974)

1.2. THE ESCARPMENT RANGES AND THE WESTERN OR PRO-NAMIB PLAINS

Between 60 and 90 kilometers from the coast a rugged range of folded mountains divides the interior highlands from the lower lying coastal plains. In the north, the western edge of the Otjihipa Mountains forms an almost unbroken wall rising steeply up to 1500 meters above the Marienfluss plain. Between Otjiha and the Hoarusib River, however, the escarpment is dissected by many river courses, some of which have incised considerable valleys. South of the Hoarusib the range once again forms a virtually unbroken chain, linking with the arid mountains west of Sesfontein (Otjiha-Hartmann mountains, Giraffe mountain and few others). The highly metamorphosed sediments of the escarpment mountains are intensely folded and scored by numerous gorges and ravines throughout their length. (Malan et al, 1974; Page, 1976)

Below the escarpment is a region of broad river valleys and semi-desert plains divided by weathered ranges usually of folded, highly metamorphosed pelitic sediments. Between the Otjihipa mountains and the coast in the north the landscape is very broken, especially in the area of Orupembe and Sanitatis. (Malan et al, 1974; Page, 1976)

In the central sub-region the schist and gneiss is overlain by unfolded basalt which has eroded into numerous mesas and spitzkop butes which flank the Khumib and Hoarusib Rivers. Westward the pro-Namib merges into the gravel and sand flats of the Namib desert (Malan et al, 1974)

Between the Namib dunes and the 500m contour line below Orupembe and Sanitatis the coastline forms deep indents in the mountains in the courses of the Khumib and the Hoarusib rivers. The western coastline that falls outside of the region consists of gravel and sand of the Namib with high moving sand dunes at places. (page, 1976)

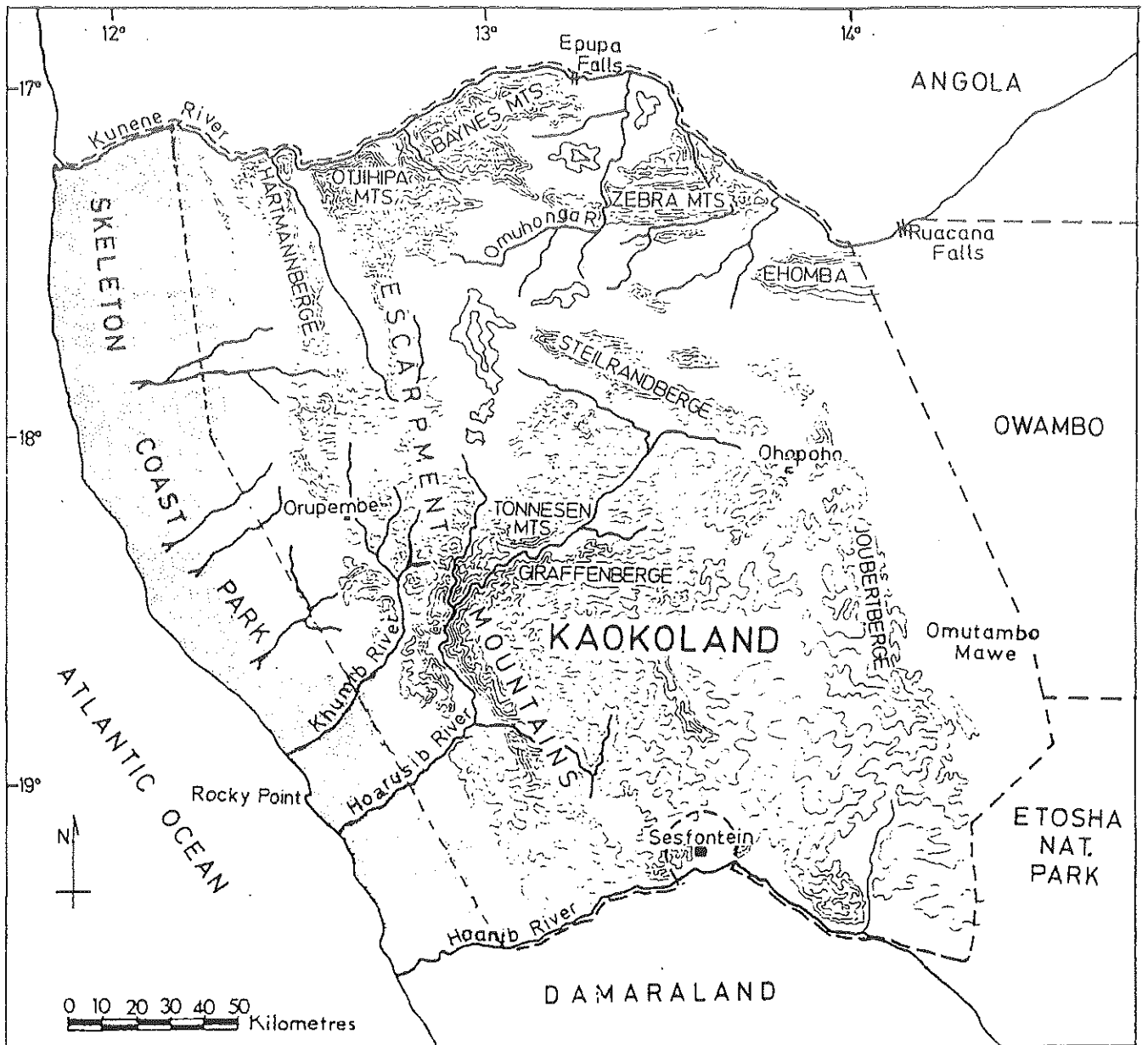
The beach area of on average 4km width consists of dunes that slowly move northwards as a result of the prevailing south-westerly winds. Some dunes reach heights of 200m (Page, 1976)

2. THE SIX MAIN LAND TYPES IN THE REGION

The topography of the region is very diverse. A mountain, valley and plain type of topography characterise the region. Altitude ranges from sea level along the coast to about 2100m above sea level over the Baynes mountains in the North Central part of the region. (in "Kunene integrated regional land use plan", 1998)

2.1. THE MOUNTANEOUS AREAS

This area covers the very mountainous of the northern and central parts of the region, including the Baynes, Zebra, Steilrand, Otjihipa, Hartmann, Giraffe and Joubert mountains. These mountains have long steep slopes. Hills with sharp ridges run along the central part of the Kunene Region in a more or less North-South direction. Associated with mountains and hills is a system of inter-montane river terraces and valley slopes that dissect them. These are more prominent in the north-central and southern part of the region. (in "Kunene integrated regional land use plan", 1998)



Kaokoland: Borders and topography.

2.2. THE PLATEAU REGION

It is typified by an association of flat valley and steep ridges and escarpments. The plateau summits are often level to undulating and largely dissected by streams and gullies. These are some of the most eroded areas in the region. (in "Kunene integrated regional land use plan", 1998)

2.3. THE RIVERINE AND LACUSTRINE AREAS

Geological processes in the Region have brought about a network of streams and rivers. Erosion and deposition have given rise to steep riverbanks and alluvial plains respectively. There are as well narrow alluvial plains along the Kunene River. (in "Kunene integrated regional land use plan", 1998)

2.4. THE COASTAL DESERT

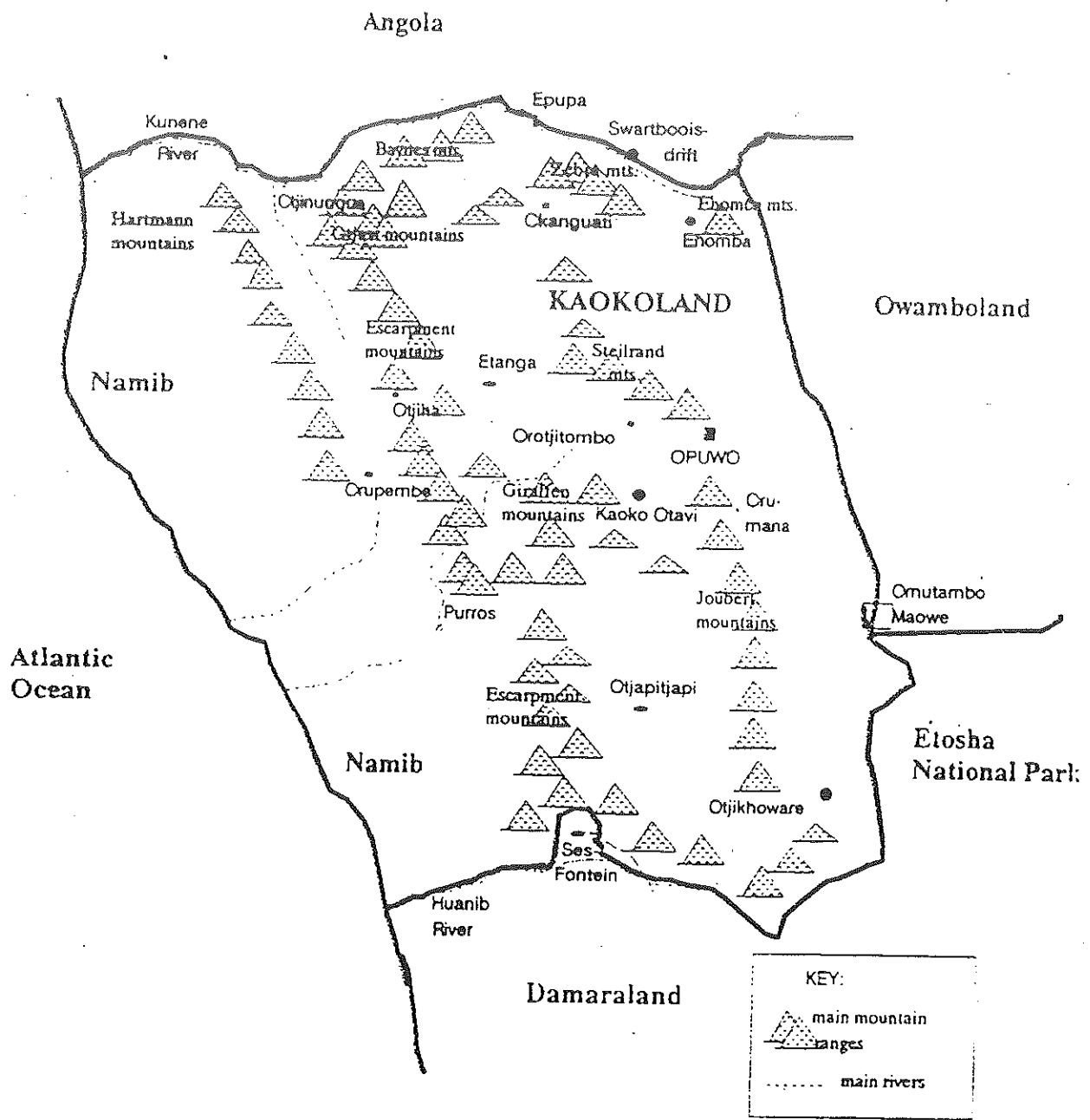
The Namib desert is typically a monotony of shifting sand and gravel plains interspersed with occasional low hills with sharp ridges and concave slopes. Transverse sand dunes of low amplitude cover the central and northern coastal areas as narrow strips which do not go far inland. Gently sloping bare rock terraces are found in the south, close to the coastline. A number of river valleys from the hinterland reach the sea as flat sand filled open channels. Some of the sand is brought down by flash floods and deposited as flow velocity decreases in the desert area. The rest of it is deposited by wind as river channels form barriers that block wind flow. (in "Kunene integrated regional land use plan", 1998)

2.5. THE KARST AREA

These are limestone/ dolomite-influenced areas giving a variety of landforms. The underlying rock consists of rocks that are readily dissolved by water. The development of typical karst topography is limited but it is believed that springs in the central part of the region, at Kaoko-Otavi, Ombombo, Ehomba and Sesfontein may be of karst origin (Irish, 1991, quoted in "Kunene integrated regional land use plan", 1998)

2.6. THE ETOSHA REGION

This is the area within the national park. (in "Kunene integrated regional land use plan", 1998)



Kaokoland Topography.

3. TOPOGRAPHY OF THE OHANDUNGU AREA

The Ohandungu area is 47 km North-Northwest of Opuwo, immediately South of Epembe on the very edge of the great Hoarusib catchment (17.32°N, 13.20°E; 17.32°N, 13.55°E; 17.58°N, 13.20°E; 17.58°N, 13.55°E). It is a remote area of rugged mountains divided by broad plains and reasonable incised valleys (Mouton, 2000)

Detailed landforms of the Ohandungu area are (Mouton, 2000):

- Gravel calcareous mounds and plains: they are characterised by mountains in all directions, mainly under light to medium dense tree or shrub canopy, on brown to red loamy soils with reasonable grass cover. This is the most important unit around Ohandungu. It is characterised by the intersections of shallow drainage lines also known as “omurambas” by inhabitants. This landform is classed with the AEZ code KAO2 (sediment plains), with 60% lithic leptosols, associated with 30% chromic cambisols and including 10% luvic calcisols. This landform has been described to have an average growing period of 35 days.
- The mountains: they are under dense tree canopy cover, on very steep slopes between rocks and boulders with reasonable developed shrub stratum and grass layers. This landform comprises a series of west-east stretching ridges of dolomite, limestones, shall and metamorphic rocks. This landform can be classified with the AEZ code KAO4 (mountains and hills).
- Dissected inselbergs: these are hills or small mountains rising abruptly from its surrounding, with moderate grass cover under open tree or shrub canopy, on red loamy top soils. It occurs scattered throughout the entire area. The soil is shallow and strewn with stony detritus from the underlying rock. This landform is dominated by *Colophospermum mopane* and *Terminalia prunioides*.

Section 19

Soils and rocks

1. SOIL FORMATION IN KUNENE NORTH

Soils of the region have been studied extensively by Loxton et al (1974). In the Kunene Region, soils are relatively young due to the slow rate of rock weathering due to lack of moisture. (in “Kunene integrated regional land use plan”, 1998)

The original granite shield was first, after considerable weathering covered with the Damara-super group of volcanic and sedimentary rock formations. After this, the landscape was over flown with a new eruption of granite. Much later the Karoo sedimentary rock formations covered the largest area of the region, with additions of basalt, sandstones and shales. Most of the Karoo layers are removed through later weathering processes, but the Dwyka glaciers pushed rubble into the deep valleys of the Kunene, the Hoarusib and others, where it still forms part of the land scope. The youngest edition consists of alluvial river terraces and dune sand. (Page, 1976)

The main pedogenetic process that seems to be at work in most parts of the region is the migration and accumulation of soluble salts such as calcium carbonate leading to the formation of soils such as calcisols (Simmonds et al, 1995; quoted in “Kunene integrated regional land use plan”, 1998). The other process is rock exfoliation, brought about by the expansion and contraction of rocks due to differences between day and night temperatures. This leads to the accumulation of gravel on the colluvial plains giving rise to soils such as regosols. (in “Kunene integrated regional land use plan”, 1998)

2. DESCRIPTION OF SOIL TYPES

2.1. GENERAL CHARACTERISTICS

Soils in Kunene North can be described as mainly poorly developed, shallow to deep (in alluvial localities), coarse grained sands, loamy sands and patches of sandy clay loams in the top soil underlain by more or less the same textures in different localities. The soil pH is mainly in the alkaline range, suggesting a strong calcrete influence. Most of the soils are very low in organic matter and deficient in phosphate. They are therefore of low inherent fertility. (in “Kunene Region, Appraisal report by Regional Co-ordinator”, 1996; in “Kunene integrated regional land use plan”, 1998)

There is a close relationship between soils and landforms. (in “Kunene integrated regional land use plan”, 1998)

2.2. SOIL TYPES IN THE RAINFALL AREA OF 150 – 350 MM PER ANNUM

Table: soil types in the rainfall area of 150-350mm per annum

Origin	Landscape	Soil type
Residual of granite and quartzite	Hills and steep slopes	Shallow coarse sand to lime
Residual of schist	Hills and steep slopes	Shallow pale grey stones
Rubble and rough mother rock formations	Foothills	Red, deep to shallow, well drained sandy lime to clay soil
Wind blown sand over calcrete plains	Rolling plains	Deep yellow to yellow-brown sand with a high calcrete content. At the water holes black clay also occur.
Colloidal and alluvial precipitates	(a) Deep in a very wide valley floors (b) Shallow colloidal precipitates on wide plains and very moderate slopes (c) Flood plains	(a) Brown to dark brown yellow-brown sandy-lime. Containing salt at the depth. (b) Dark red sandy-lime and sandy-clay on calcrete (c) Quite deep dark red sandy-lime to sandy-clay-lime

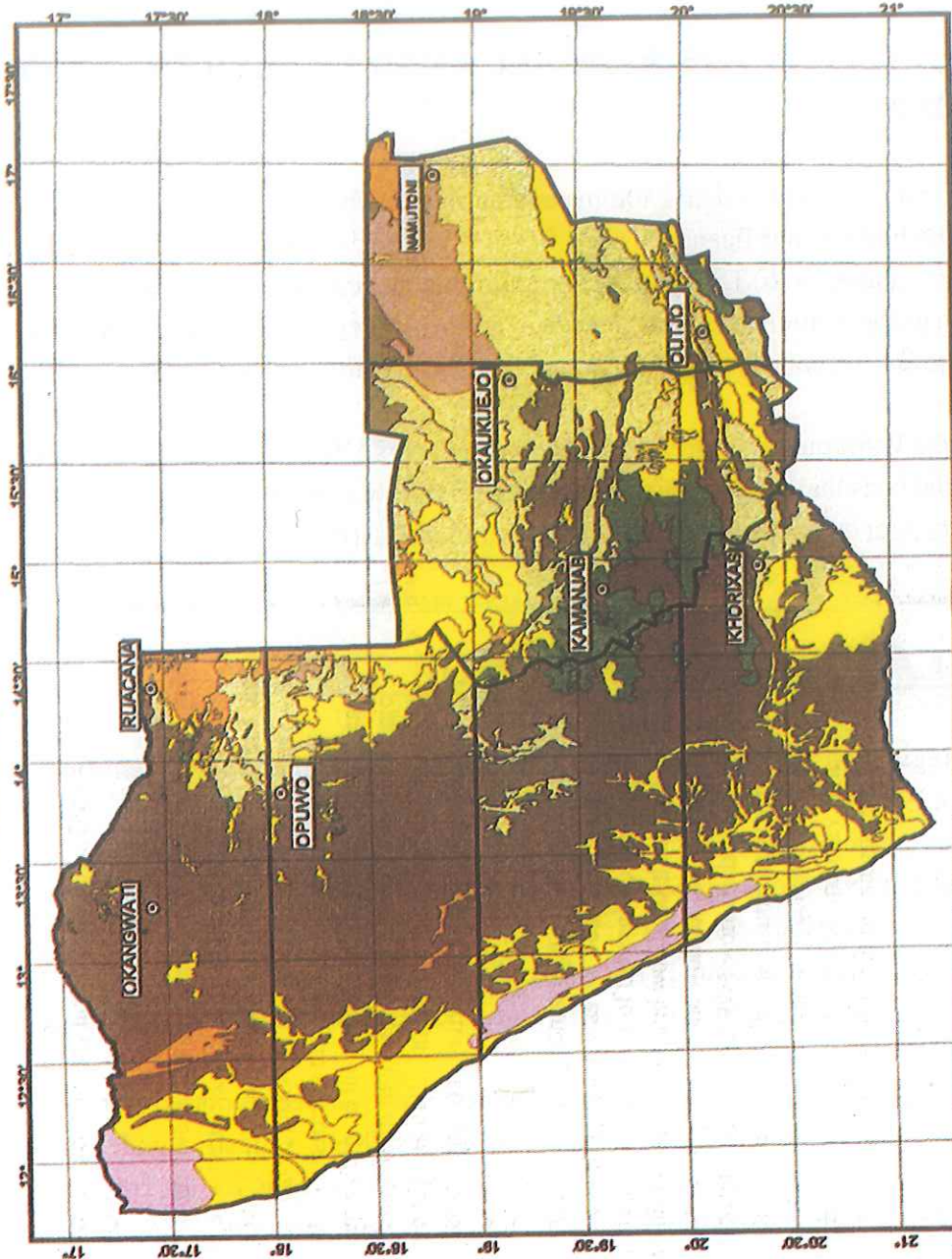
(Page, 1976)

The soils in western and central areas vary according to the fact that they are on the upper slopes or on the lower slopes, or in the valley bottoms or next to the rivers. The soils on upper slopes are shallow and sandy with a lot of rocks and stones. They vary in colour from red to dark grayish-brown. (Irving et al, 1999)

The soils in the eastern areas of Kunene North vary according to whether they are on the sand plains, on the calcrete ridges or in the pans and low-lying areas (Irving et al, 1999):

- The soils of the sand plains are usually deep, but because they are sandy, they do not hold water or nutrients much. They are therefore not very fertile, and so the quality of grazing is low.
- Soils on the calcrete ridges are also sandy, but not as deep as they are on the sand plains (for example at Otjekwa near Etoto).
- Soils in pans and depressions contain more clay and water can collect in these areas after rainfall. Hand-dug wells are frequently dug in these areas. However, the water collected in such wells can be of poor quality as salts collect in areas where the water does not drain away.

KUNENE REGION SOIL ASSOCIATIONS



Produced by the NRSC, MET
 Produced for the Ministry of Lands, Resettlement & Rehabilitation (MLRR)
 October 1998
 Data Source: Lexton (1974)

0 100 Kilometers

Major Urban Areas
 ○ Major Urban Areas
Constituencies
 ~ Constituencies

Soil Associations
 Various Associations (very small polygons)
 1 Dark Coloured Soils of the Kaliheld
 2 Red Grey Brown Soils of the Kaliheld
 3 Red Colluvial Soil Associations non - Calcareous
 4 Unknown

5 Unknown
 6 Unknown
 7 Undifferentiated Rock
 8 & 9 Ebasha Pan

In "Kunene integrated Regional Land Use Plan, 1998"
 Ministry of Lands, Resettlement and Rehabilitation

The potential for crop production is very poor on these soils and it is not recommended, except in the stretching valleys on the highlands in the Kaoko-Otavi- Ombombo area with the highest rainfall. 15 000 ha is also indicated on the highlands that would be suitable for irrigation, if water could be made available. There is still an additional 65 000 ha of marginal quality spread throughout the region. (Page, 1976)

There are alluvial deposits along the Kunene River and some seasonal rivers and colluvial deposits at the base of mountain slopes, but such soils (common in many of the major valleys) are often calcareous and saline with limited potential for irrigated agriculture. (in "Kunene Region, appraisal report by Regional Co-ordinator", 1996)

2.3. SOIL TYPES IN THE RAINFALL AREA OF LESS THAN 150MM PER ANNUM

In the areas where the rainfall is lower than 150mm per annum, only the broad valleys of the Marienfluss and Gomatum are distinguished for significant soil classification, where the soils are red lime to grey coarse sand in the dry watercourses. (Page, 1976) The broad plains adjoining the pro-Namib rivers are either covered with superficial sand, such as the Marienfluss, Giribesvlakte. and Orrumwe plains or have their course gravelled with stones, such as the areas around Orupembe, Sanitatas and especially Purros. (Malan et al, 1974)

In the lower areas of the Warmquelle stretching valley there appears a deep dark brown sandy-lime to sandy-clay-lime in the alluvial beds that are sometimes flooded with floodwaters from elsewhere. The potential for crop production is very poor on these soils and it is not recommended. (Page, 1976)

3. LOCAL CLASSIFICATION OF SOIL TYPES

Within the Kunene Region, various land units and associated soil types have been identified by local key informants.(Warmelo, 1951):

- The Omaha or red sandy area,
- The Hamuheke or !Nani-/ous in "Sesfontein" itself and the immediate surrounding.,
- The Omatendeka in the hilly country south, south east and south west of Sesfontein,
- The Namib or Omatjana (flat country) along the south
- And the Kaoko proper , the more typical semi-highland area from Otjitoko to the Kunene River.

A more recent survey highlighted such a classification. For instance it has been reported that:

- The soil type in the 'Omuramba' (flat area) is clay loam soil and is mostly flooded during the rainy season. (Analysis of the farming system in Otuan, Kunene North FSR/E Unit, 2000)
- While the soil type of the 'Ondama' (Dam) land unit at Ouozonduwombe is clay-loam to clay. ("Use of PRA tools in Ouozonduwombe", 2000)
- The 'Ekongo' area consists of gravel, rocks and pebbles. ("Use of PRA tools in Ouozonduwombe", 2000)
- The dry riverbed consists of sandy soil. ("Use of PRA tools in Ouozonduwombe", 2000)
- Mountain foot slopes, middle slopes, and mountaintops consist of pebbles, stones and rocks. ("Use of PRA tools in Ouozonduwombe", 2000)

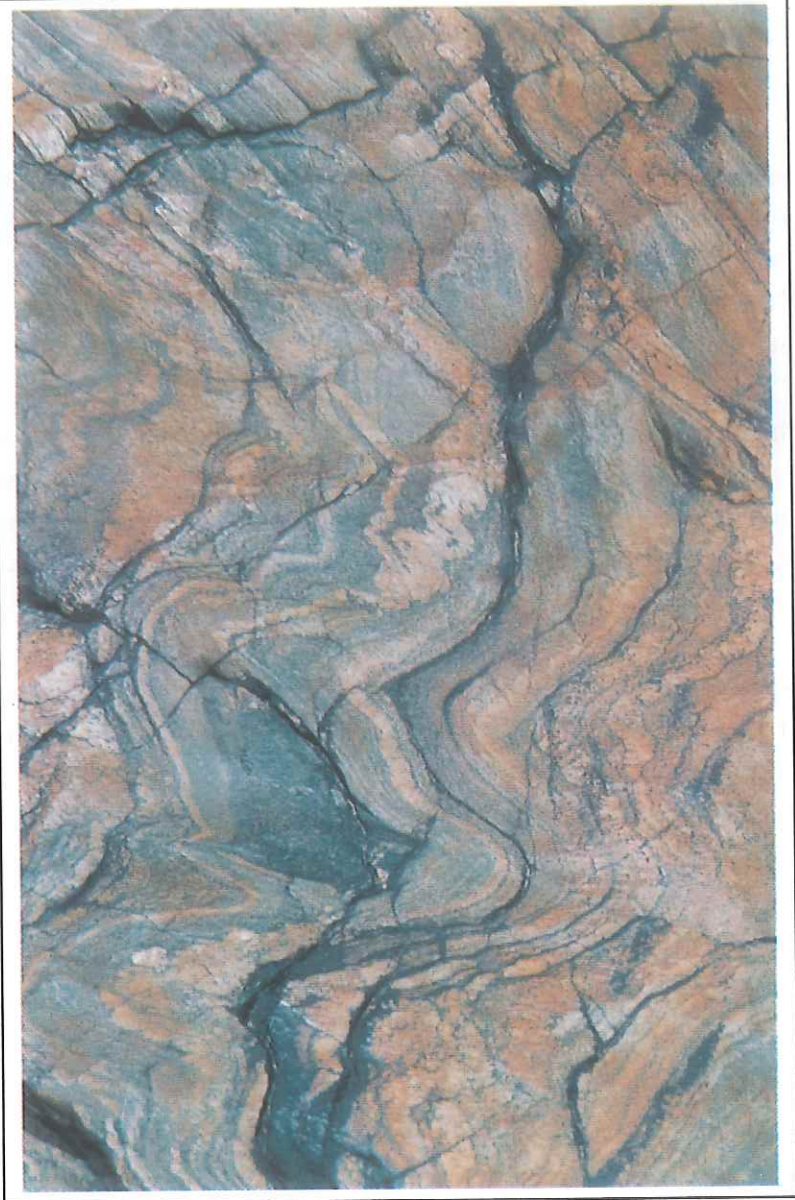


Photo: Philippe TALAVERA

Rocks in Kunene North can take different shapes and different colors, mainly because of the rain and the wind.



Photo: Christophe RIGOURD

4. MINERAL AND SEMI-PRECIOUS STONES CONTENT OF THE SOILS IN KUNENE NORTH

The following minerals occur in the region: iron, copper and sodalite, lead and sink. Nickel, phosphate rocks and salt also occur and can be processed in the region. Calcium stone, dolomite and marble also occur over large areas and can be extracted for building materials. Clay (tested by a research institute in South Africa) for good quality bricks, when mixed with nosib shale is also available in the region. However, more research needs to be done as far as the minerals in the region are concerned. (Page, 1976)

At the time, due to the lack of infrastructure in the region, such mineral rich areas did not hold any promise. (Page, 1976) However, nowadays numerous mineral exploitation licences have been issued. Mining is most probably a land use of the future. If mining should develop, it is likely to conflict with other land uses such as eco-tourism, as mining requires high infrastructural development. (in "Kunene integrated regional land use plan", 1998)

There is only one active mine where the semi-precious stones diopside and chrysocolla are extracted (Murray, 1993, quoted in "Kunene integrated regional land use plan", 1998). Two mines have gone out of production, Sarusas in the northern part of the Skeleton Coast Park where amethyst and agate were mined and Swartbooisdrift in Ruacana constituency where sodalite was mined. (in "Kunene integrated regional land use plan", 1998)

5. SOIL EROSION

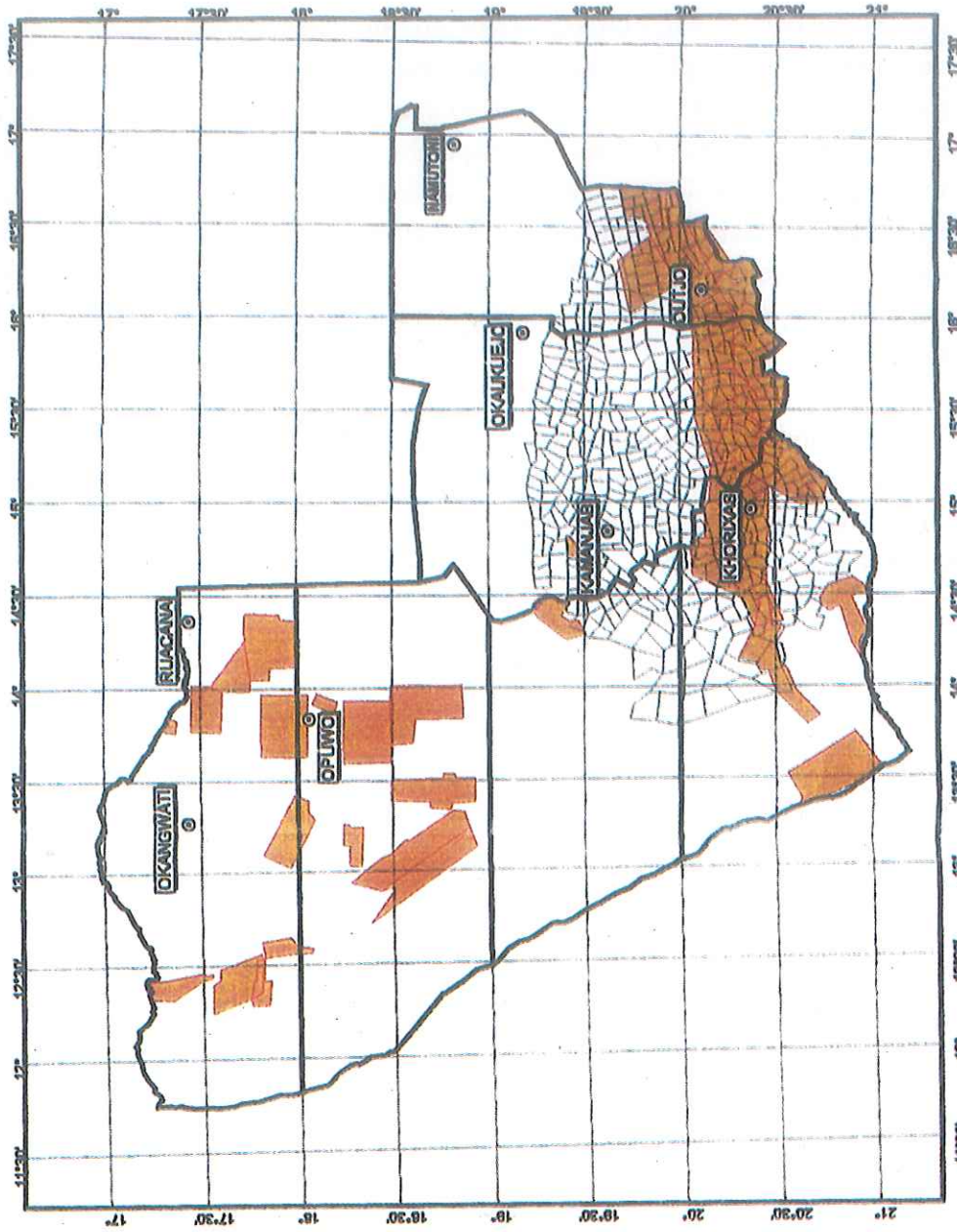
The arid conditions of the region are favourable to aeolian erosion. This has led to the formation of shallow soils such as leptosols. Areas where wind erosion has been active have been left with thin sandy soils called arenosols, which cover a good part of the Eastern part of the region. Wind has blown away the finer sand particles leaving behind the more coarse component. (in "Kunene integrated regional land use plan", 1998)

Strong easterly winds from July to September and local winds and whirlwinds during the summer season heavily cause soil erosion. Deep and extensive gully erosion is a common sight on the sandy flats between the hills and mountains this can be attributed to the generally poor soils, being either sandy or stony. (Hvidsten et al, 1997)

Most soils of the region are susceptible to erosion, natural and accelerated. The poor structure of the soils, the fine textures observed in some localities make the soils fragile and vulnerable. This is especially true of the alluvial soils along the main river valleys. Most of the degradation is observed around livestock watering points. Boreholes are located on some of the most vulnerable soils, in the river valleys. Erosion is rampant in most places, leaving compacted layers which are subject to sealing. The compaction and sealing lead to the generation of more run-offs. Erosion hazard mapping would be extremely useful in the region to indicate the most susceptible areas. (in "Kunene integrated regional land use plan", 1998)

In the woodlands the ground is bare during the dry season. The first spring rains cause a veneer of soil, which has been broken by livestock trampling, to be transported by sheet flow. Where bush wood is present, a considerable amount of this valuable topsoil, which would otherwise be lost, collects among the rotting branches. (Malan et al, 1974)

KUNENE REGION MINING LICENCE AREAS



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 Produced for the Ministry of Lands,
 Resettlement & Rehabilitation (MLRR)
 October 1998

100 0 100 Kilometers

Urban Areas
 Constituencies
 Individual Farms
 Mining Licence Areas (Exploration only)

In "Kunene Integrated Regional Land Use Plan, 1998"
 Ministry of Lands, Resettlement and Rehabilitation

The transition from perennial dominated to annual dominated pastures results in a considerable reduction in plant cover during the critical period preceding the first rains, with a consequent increased rate of water run-off and soil erosion. The deep red-brown colour of flooding seasonal rivers as well as the severity and frequency of dry seasons dust storms testify the volume of topsoil being lost annually. (Malan et al, 1974)

In the pro-Namib, under natural conditions thin crusts form on the surface, which resists the wind erosion even in the absence of plant cover. In areas only inhabited by wild ungulates this crust is largely maintained because these animals always move along regular paths, except when feeding. In contrast, the bunching of herded livestock results in the soil horizon being broken on a broad front. This process is further influenced by the frequency of visits to water points. The phenomenon of unstable soil horizons is characteristic of many of the heavily grazed areas in the pro-Namib. When exposed to even a light breeze, the finer sand particles become mobile and severe dust storms often occur. At Orupembe, Sanitatas and Purros, where intensive utilisation has been more frequent and prolonged, the strong westerly wind that sweeps the adjoining plains have removed most of the finer materials from the top soil, and all that remains over large tracts is a rather sterile substrate of stones and coarse gravel. Near Purros the massive dunes that have built up against the slopes of the escarpment range are mute testimony to the tremendous volume of sand transported by wind action. (Malan et al, undated)

Soil erosion and topsoil loss are most severe within an approximately 30 km radius around Opuwo, and severe denudation is obvious all along both sides of the Ruacana-Kamanjab road to the east of Opuwo. The only places in these areas that still have viable grazing, are those parts where the wind pump/diesel pump has been out of order for a number of years. (Paskin, 1990)

Section 20

Rivers and catchments

1. THE PERENNIAL RIVERS

There is only one perennial river in Kunene North: the Kunene River. (in “Kunene Region, appraisal report by Regional Co-ordinator”, 1996)

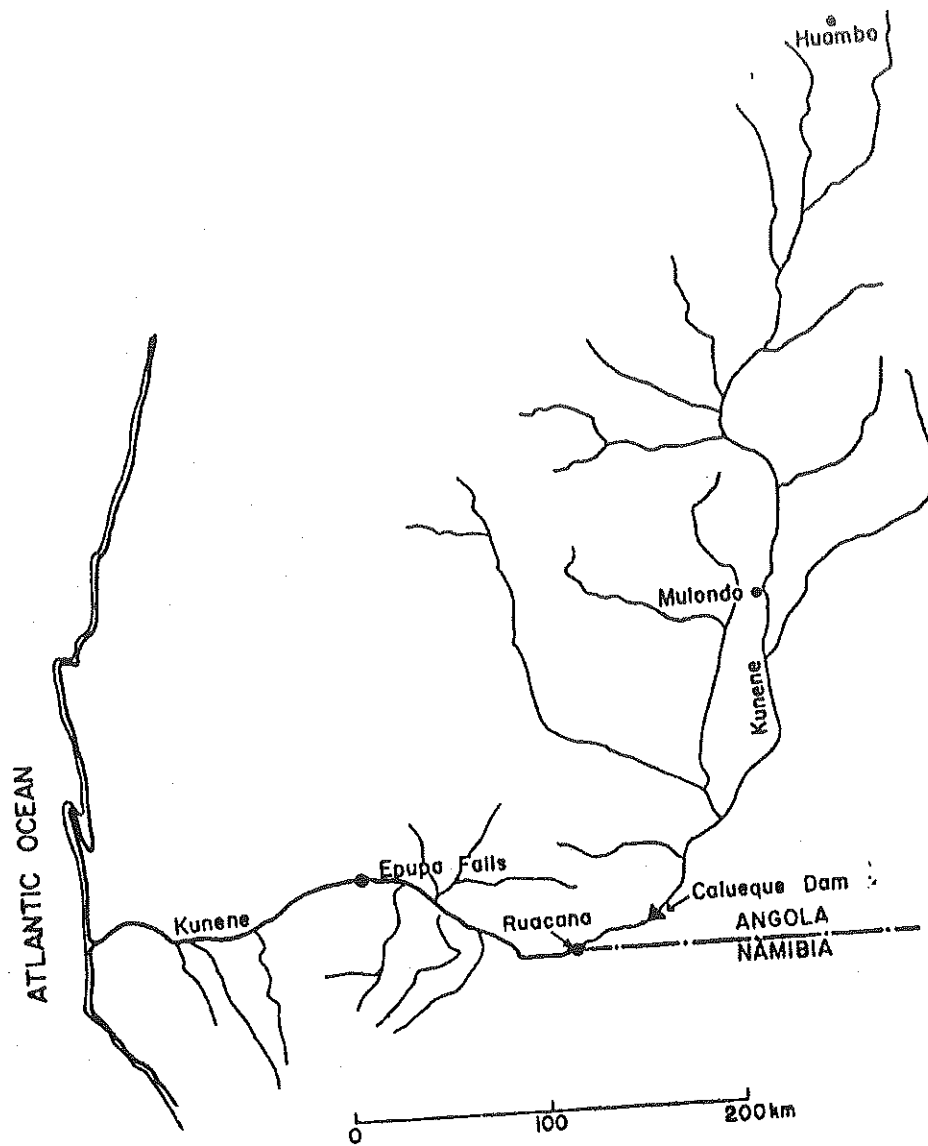
The Kunene River is the third largest river in Namibia and rises in Angola near Huambo. It flows south for 500km, first down steep mountains, and then it flattens out towards the Callueque Dam. After rushing down the Ruacana Falls, the river flows westwards for 340 km, through rugged mountains most of the way, over the highest waterfall, Epupa Fall, and onto the Atlantic ocean and constitutes the border between Namibia and Angola. The rainfall at the source of Kunene is very high (1300mm per annum) and because of this the river flows strongly in late summer. The amount of rainfall drops to 100mm or less per year where the river passes through Namibia, so very little water in the river comes from the lower tributaries. Most of the river water comes from far inland. (“Investigation into the surface water sources of the Kaokoveld”, 1991; “More about water in Namibia, Part II of a resource package to develop awareness of water”, 1994)

The Kunene River being a perennial river plays a significant role in the supply of water to the people, their livestock and wildlife living in the vicinity. (Malan et al, 1974; Irving et al, 1999) The Kunene river has three main ephemeral tributaries (Ondoto, Omuhonga and Otjitango), draining a catchment area of 14,300 km², forming part of the Kunene catchment area. (in “Kunene Region, appraisal report by Regional Co-ordinator”, 1996)

2. THE THREE MAJOR EPHEMERAL RIVERS

There are three major river catchment areas, the Khumib, Hoarusib and Hoanib, which cover the central and southern parts of Kunene North. These ephemeral rivers and their tributaries, during good rainy seasons, give rise to floods originating from heavy rains in the upper catchments, and provide essential water for people, livestock and wildlife living in the lowest desert reaches of these rivers. (in “Kunene Region, appraisal report by Regional Co-ordinator”, 1996)

The OvaHimba highlands are the catchments for almost all the major rivers rising in the region, with the Steilrandberge forming the divide between the rivers flowing into the Kunene and those running south into the Hoarusib. Although these rivers only flow on the surface after rains, there is an underground flow throughout the year and the water is periodically forced to emerge because of rocks obstructing its course.



In "more about water in Namibia, part II of a resource package to develop awareness of water"

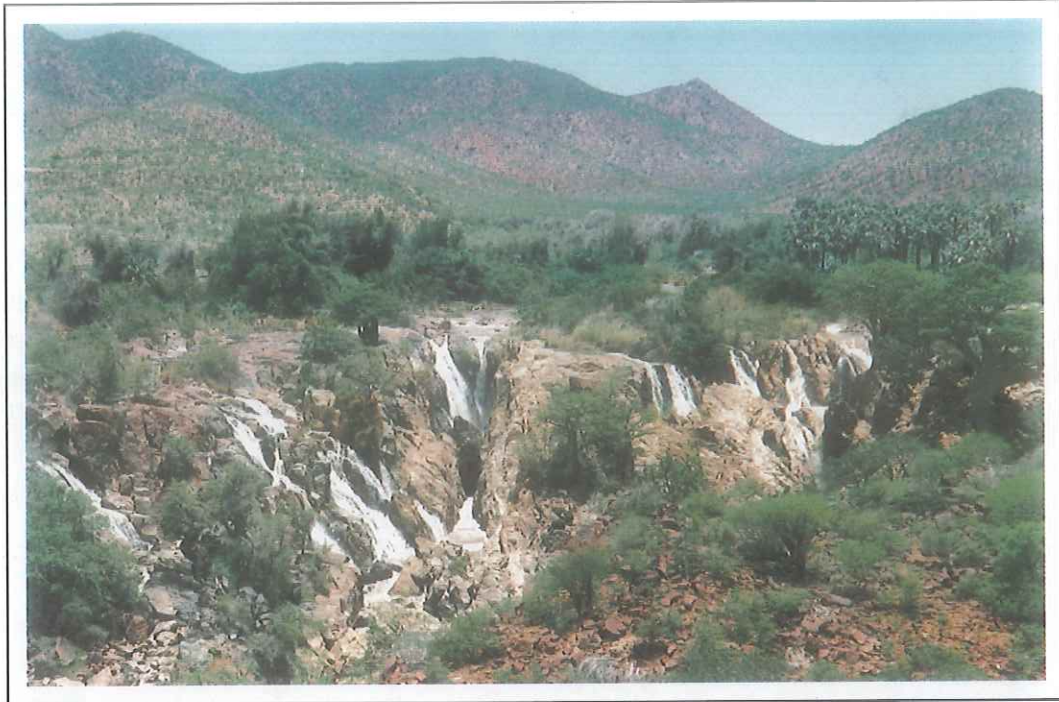


Photo: Philippe TALAVERA

Epupa Falls, in the Kunene
River, at the border between
Namibia and Angola.

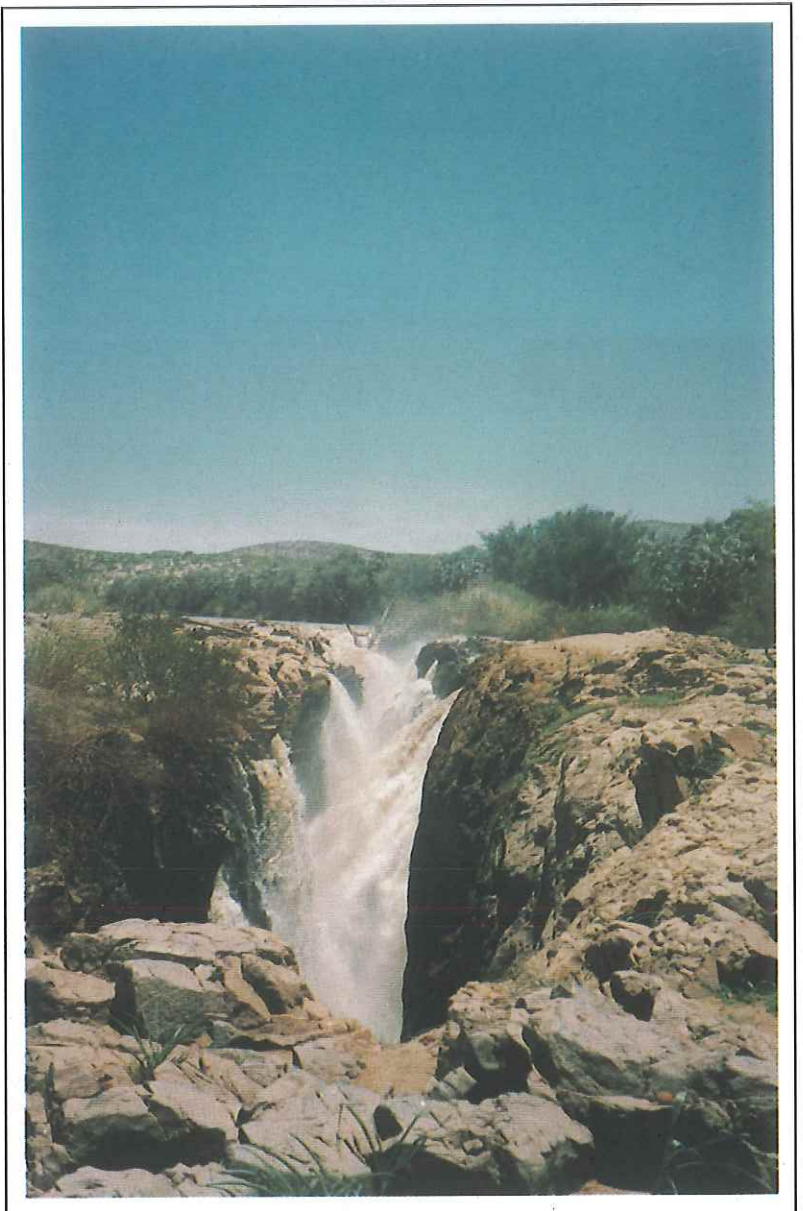
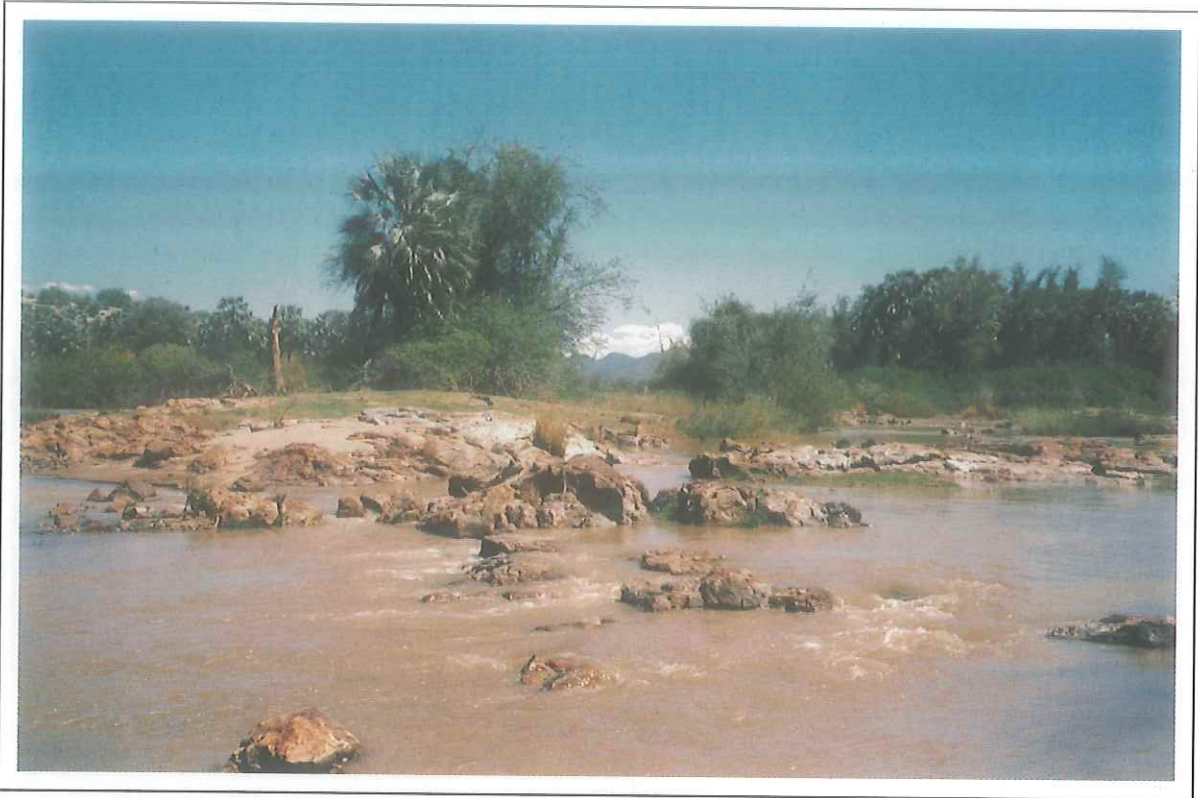


Photo: Philippe TALAVERA



The Kunene River, a permanent river flooding from Angola to the border with Namibia.

Photo: Philippe TALAVERA

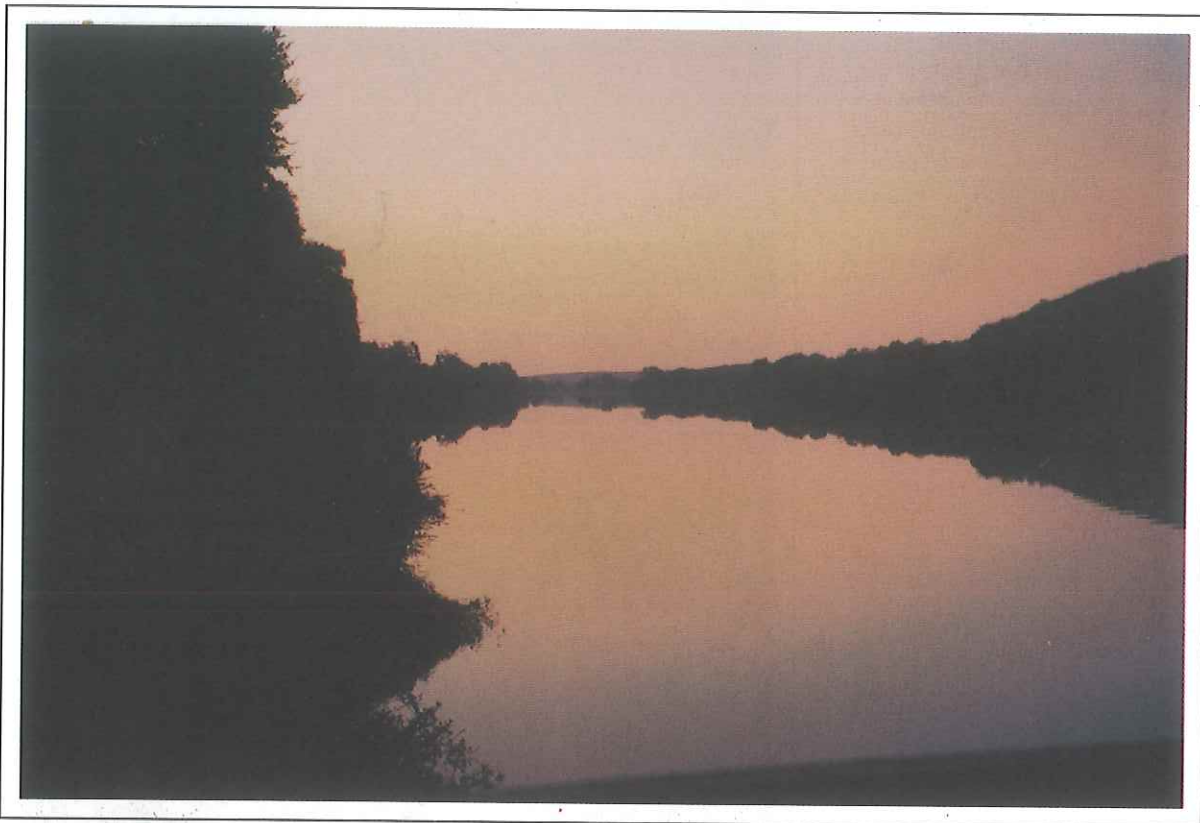


Photo: Philippe TALAVERA

Sunset on the Kunene River, next to Swartbooisdrift.

Natural springs are then formed. For instance, a strong thermal spring yielding 15 000 gallons per hour is situated at Otjiyandjasemo. (Malan et al, 1974)

2.1. THE EPHEMERAL KHUMIB RIVER

The ephemeral Khumib River has small catchments but has a regular surface flow and occasionally reaches the sea. It supplies water to nomadic pastorals in this arid areas as well as tourists. (Malan et al, 1974; Irving et al, 1999)

2.2. THE EPHEMERAL HOARUSIB RIVER

The ephemeral river Hoarusib has large mountainous catchments (15,100 km²), flows regularly and reaches the sea nearly every year. The capital of the region, Opuwo, draws its water from this river. Approximately 50 km west of Opuwo the river turns Southwest, forming a deep valley between the Tonnesen and Giraffenberge before cutting through the mountains of the escarpment to the arid western plains. (Malan et al, 1974; Irving et al, 1999) The Etanga community lies within this catchment. (in "Kunene Region, appraisal report by Regional Co-ordinator", 1996)

2.3. THE EPHEMERAL HOANIB RIVER

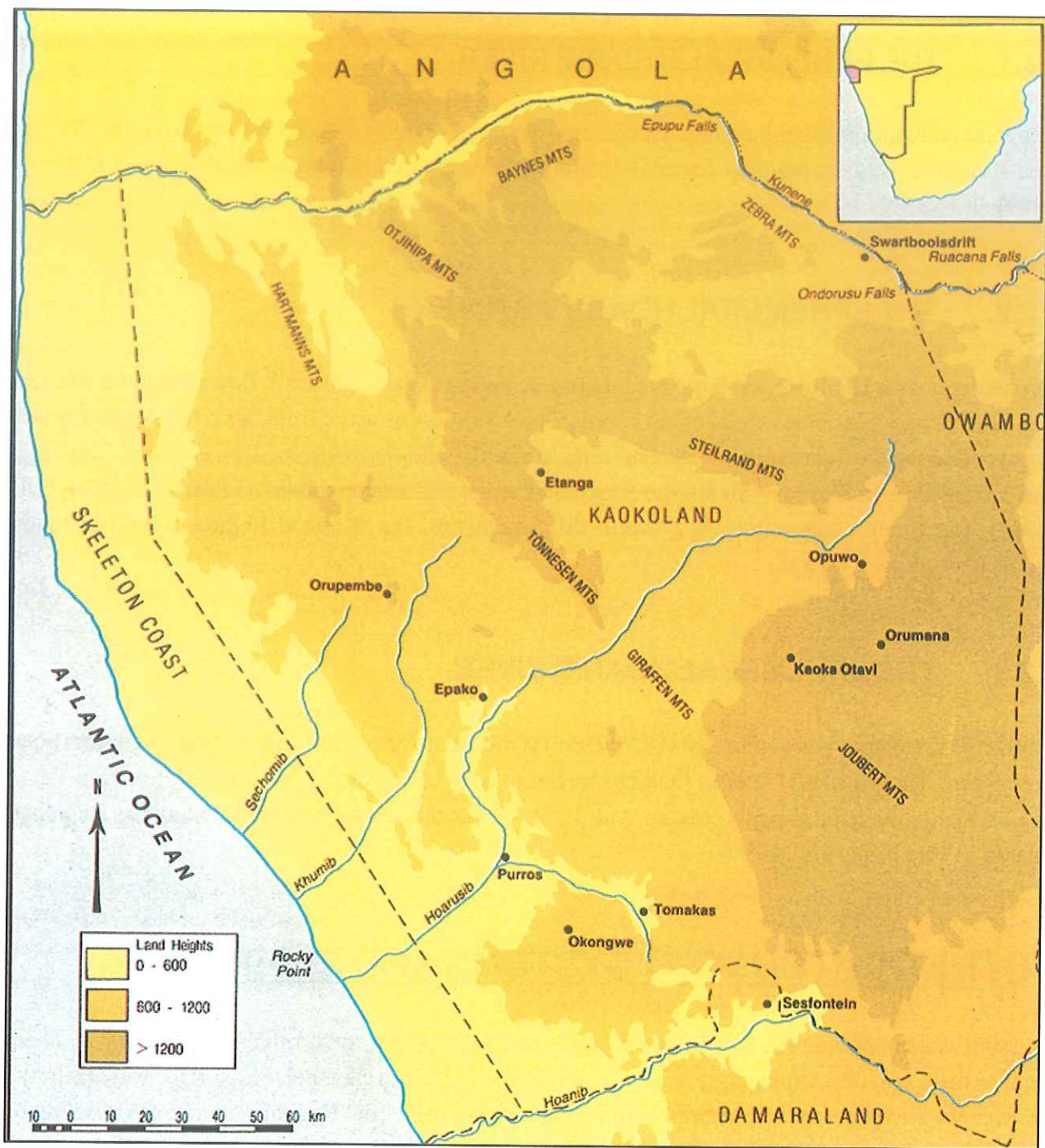
The ephemeral Hoanib river catchment (18,800 km²) is the focus for agricultural, mining and tourist potential in the region. The populated centre, Omuramba South and Sesfontein areas draws water from the many springs, which rises in the Hoanib. (Malan et al, 1974; in "Kunene Region, appraisal report by Regional Co-ordinator", 1996; Irving et al, 1999)

3. OTHER CATCHMENT SYSTEMS AND RIVERS

The eastern sector of Kunene North has virtually no river systems with reliable surface flow. This area belongs to the Etosha Pan drainage system, which is fed by the Etako Channel. The surface water is limited to a few minor water pans, as most runoff infiltrates the sandy soils. (in "Kunene Region, appraisal report by Regional Co-ordinator", 1996)

The majority of people and their livestock are dependent on groundwater supply. However, all rivers are not synonymous of easily accessible water (Mbinga et al, 1999):

- One river is going through the Otuan community but the water is too deep and not easily accessible. Only boreholes can manage and extract it.
- The Okamako River is crossing the Omuhonga community. Water is not far (a few meters from the ground) and easily accessible. The community members are using this river especially during the dry season, digging hand-dug wells.



Kaokoland and its location in Namibia.
The main ephemeral rivers

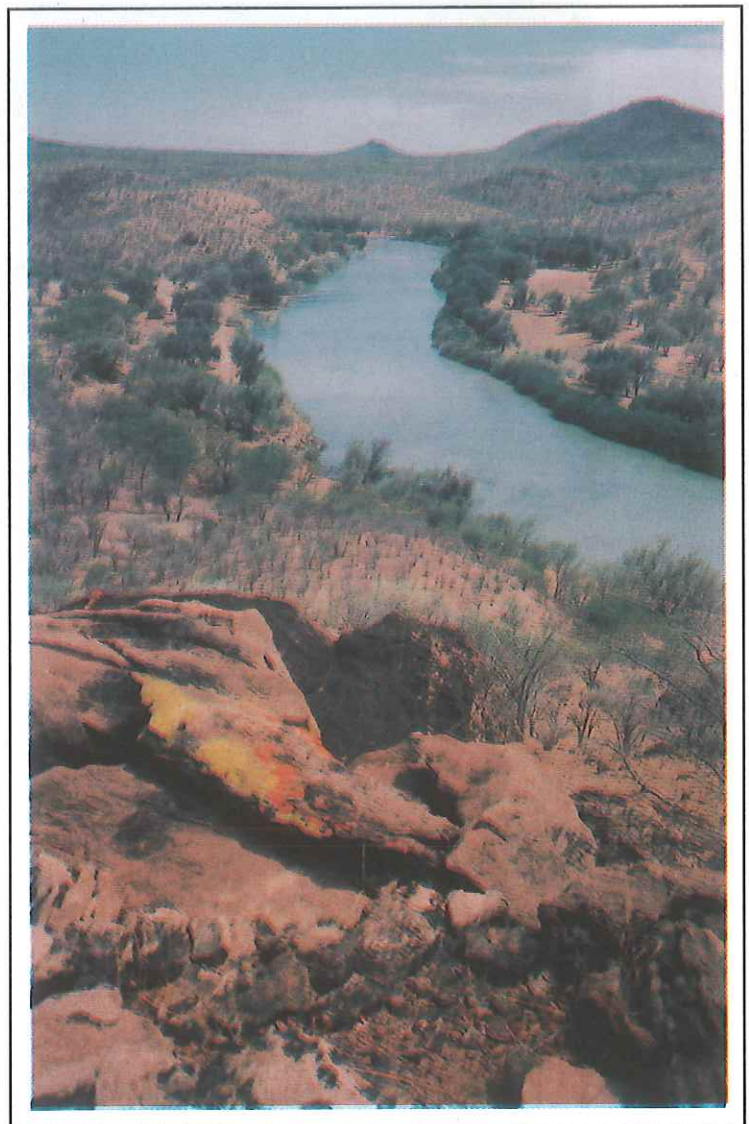
Dr Antje BURKE

In "Vegetation resources of NOLIDEP pilot communities - Etanga and Orongoto, Kunene Region" May 1998



Photo: Philippe TALAVERA

In December 1997, just before the rain, the Kunene River, large at times, looked pretty empty.



The Kunene River, next to Swartbooisdrift, during the dry season. The vegetation is still green only on the edge of the river.

Photo: Philippe TALAVERA

There are over 1,000 permanent groundwater sources (boreholes, natural springs and wells). The springs are found in the highlands and in wetland areas. Simple hand-dug shallow wells are most commonly found in river beds. (in "Kunene Region, appraisal report by Regional Co-ordinator", 1996)



Photo: Philippe TALAVERA

An ephemeral river during the dry season.

Section 21

Agro-ecological zones in Kunene North

From the topography, soil formation and soil characteristics, eight agro-ecological zones have been identified in Kunene North (Agro-Ecological Zoning Programme, Ministry of Agriculture, Water and Rural Development).

Table: Agro-ecological zone description in Kunene North:

EZ code	AEZ name	Landform type	Dominant soil formation	Associated soil formation
KALK-4	Kalkveld, average growing period 61-90 days, very short dependable growing period	Plain	50% petric calcisols	20% calcic vertisols 20% gleyic solonetz
KAO1	Kaokoland, high plateau	Plateau	80% lithic leptosols	
KAO2	Kaokoland, pediment plains	Pediment	60% lithic leptosols	30% chromic cambisols
KAO3	Kaokoland, intermontane low plains	Valley	50% lithic leptosols	30% chromic cambisols
KAO4	Kaokoland, mountains and hills	Mountains	80% lithic leptosols	
KAO5	Kaokoland, strongly dissected foothills	Hills and footslopes	60% lithic leptosols	20% luvic arenosols 20% chromic cambisols
KAO6	Kaokoland, intermontane narrow valleys	Valley	30% luvic arenosols 30% calcareic fluvisols 30% chromic cambisols	
NAM7	Namib desert, dissected plains with complex cover	Plain	50% leptosols	20% gypsisols 20% calcisols

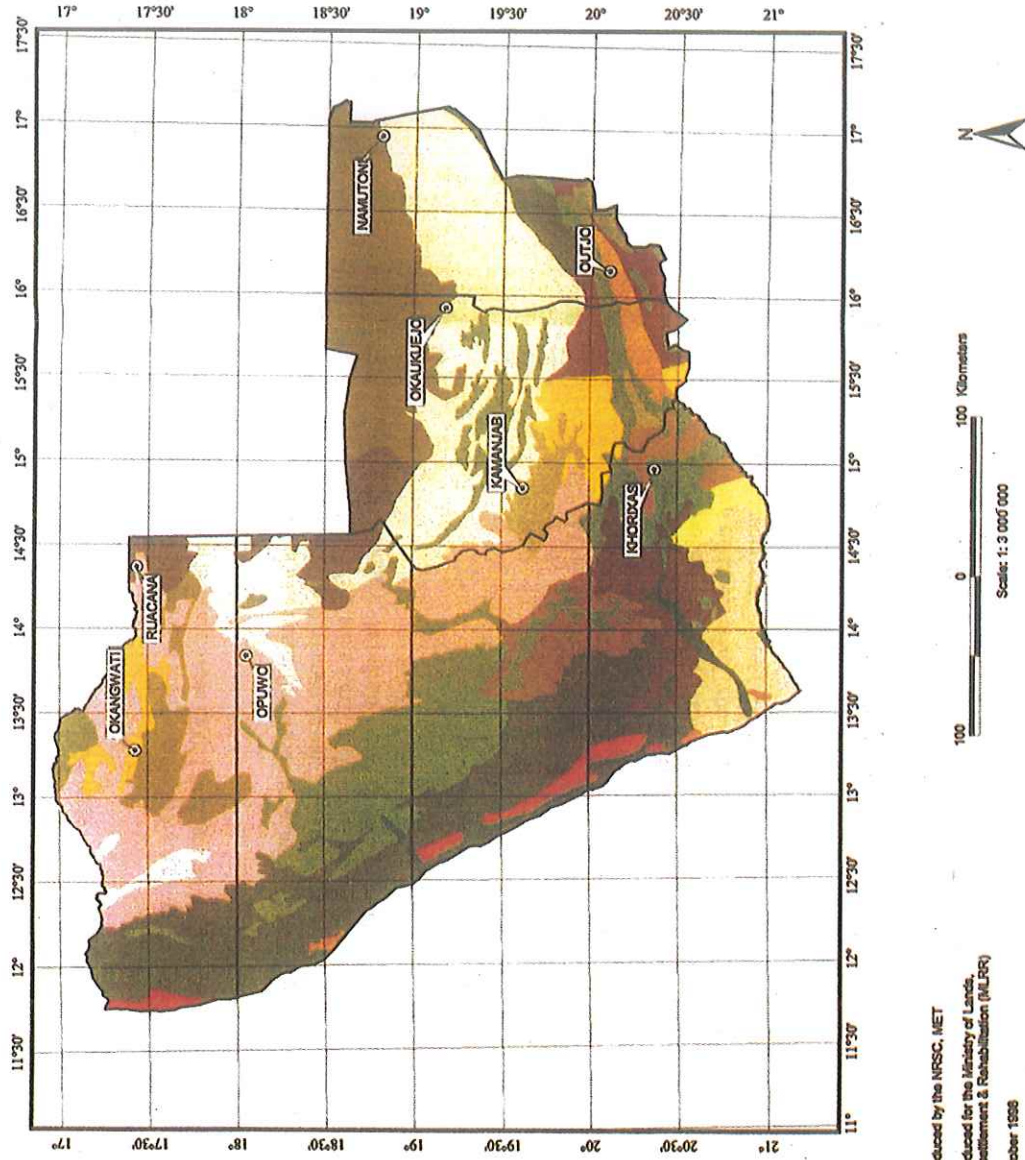
(in "preliminary Agro-Ecological Zones. Addendum to the Agricola 1998/99, 2000)

A simpler agro-ecological division has been given by the Kunene North Farming System Research and Extension Unit, describing four main units (Mbinga et al, 1999):

- The main central rocky and mountainous area (comprising Opuwo, Okangwati, Otuni and Etanga areas)
- The eastern sandy area (comprising Omakange)
- The northern riverine area (comprising Epupa, Enyandi and Swartbooisdrift)
- The western plain area (comprising Orupembe and Purros)

KUNENE REGION

AGRO-ECOLOGICAL REGIONS



LEGEND

Major Towns

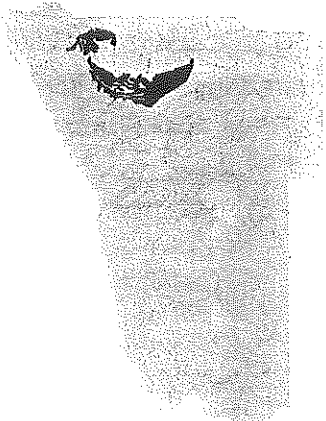
Constituencies

Agro-Ecological Zones

- Central Plateau, Red Kalkveld, Average Growing Period 61 - 90 Days
- Central Plateau, Red Kalkveld, Average Growing Period 31 - 60 Days
- Central Plateau, Fringe Plains
- Central Plateau, Strongly Dissected Plains, Average Growing Period 61 - 90 Days, Very Short Dependable Growing Period
- Central Plateau, Strongly Dissected Inesberg Plains, Average Growing Period 41 - 80 Days
- Central Plateau, Strongly Dissected Inesberg Plains, Average Growing Period 21 - 40 Days
- Central Plateau, Strongly Dissected Inesberg Plains, Average Growing Period < 10 - 20 Days
- Demaraland Basalt Table Mountains
- Demaraland Hill/Footslope Association
- Demaraland Lowland Hills
- Elosha Pan
- River Canyons
- Kalahari Sands, Plateau, Stabilised Sand Drift with a few Plains, Average Growing Period 61 - 90 Days, Very Short Dependable Growing Period
- Kalkveld, Average Growing Period 61 - 90 Days, Dependable Growing Period 60% of Average
- Kalkveld, Average Growing Period 61 - 90 Days, Very Short Dependable Growing Period
- Kaokoland, High Plains
- Kaokoland, Piedmont Plains
- Kaokoland, Intermontane Low Plains
- Kaokoland, Mountains and Hills
- Kaokoland, Intermontane Low Plains
- Namib Sand Sea, Low Transverse Dunes
- Namib Coastal Salt Pans
- Namib Desert Plains, Gravel and Rock Pavement
- Namib Desert Plains, Dissected Plains with Complex Cover
- Undifferentiated Rocky Hills and Inesberg Mountains

Produced by the NRSSC, MET
 Produced for the Ministry of Lands,
 Resettlement & Rehabilitation (MLRR)
 October 1998
 Source: MAUWRD, AEZ Project

AGRO-ECOLOGICAL ZONE DESCRIPTION

EZ Code	KALK-4	
AEZ Name	Kalkveld, average growing period 61-90 days, very short dependable growing period	
AEZ Area	24 508 km ²	
Summary of Landform Information		Codes
Landform type	plain	[I]
General altitude range	1 100 m - 1 400 m	
Regional slope range	0 - 2 %	
Relative relief	< 10 m: very low relative relief	
Drainage pattern	weakly oriented	
Geological substrata	Damara dolomite, limestone, phyllite, quartzite	
SOTER landform	plains	[LP]
SOTER lithology	organic sediments → limestone, other carbonate rocks	[SO1]
	basic metamorphic → slate, phyllite (pelitic rocks)	[MB1]
	acid metamorphic → quartzite	[MA1]
Summary of Growing Period Information		
Dominant Zone	3	Average growing period 83 days, dependable growing period 52days (60 % of average)
Summary of Soils Information - FAO Soils Units and Fertility Capability Classification		
Dominant	50 % Petric Calcisols	sandy to loamy topsoil, high lime concentrations in indurated form in subsoil, associated with very dry moisture regimes
Associated	20 % Calcic Vertisols	dark cracking clays (> 35 % clay) with deficient drainage, calcium enrichment in the subsoil
	20 % Gleyic Solonetz	sodic soils with poor drainage, evidence of periodic waterlogging
Included	10 % Haplic Arenosols	modal sandy soils, low nutrient status
Agricultural Potential		
Ranking	3 rd	
Suitability	large stock grazing	

AGRO-ECOLOGICAL ZONE DESCRIPTION

AEZ Code **KOA1**

AEZ Name **Kaokoland, high plateaux**

AEZ Area 3 762 km²



Summary of Landform Information

Codes

Landform type	plateau	[t]
General altitude range	1 200 m - 1 450 m	
Regional slope range	2 - 5 %	
Relative relief	10 - 30 m: low relative relief	
Drainage pattern	weakly oriented	
Geological substrata	gneiss, granites, dolomite, limestone, chert	
SOTER landform	plateaux	[LL]
SOTER lithology	acid metamorphic → gneiss, migmatite	[MA2]
	acid igneous → granite	[IA1]
	organic sedimentary → limestone, other carbonate rocks	[SO1]
	acid metamorphic → quartzite	[MA1]

Summary of Growing Period Information

Dominant Zone	8	Average growing period 25 days, no dependable growing period
Associated Zone	9	Average growing period 15 days, no dependable growing period
	4	Average growing period 63, dependable growing period 6 days; very short dependable growing period
Included Zones	10	Average growing period 8 days, no dependable growing period
	7	Average growing period 35 days, no dependable growing period
	6	Average growing period 48 days, no dependable growing period

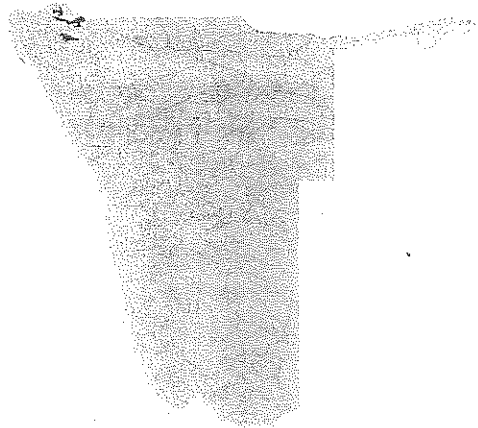
Summary of Soils Information - FAO Soils Units and Fertility Capability Classification

Dominant	80% Lithic Leptosols	very shallow soils, limited in depth by hard rock or cemented material
Included	10 % Chromic Cambisols	moderately developed soils with strong brown or red colours, loamy topsoil
	10% Luvic Arenosols	sandy soils with clay-enriched subsoil, low nutrient status

Agricultural Potential

Ranking 8th

Suitability sheep grazing only

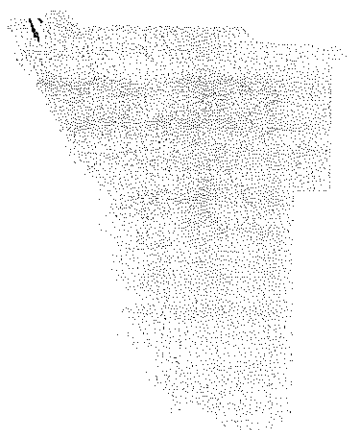
AGRO-ECOLOGICAL ZONE DESCRIPTION		
AEZ Code	KAO2	
AEZ Name	Kaokoland, pediment plains	
AEZ Area	2 012 km ²	
Summary of Landform Information		Codes
Landform type	pediment	[e]
General altitude range	800 m - 1100 m	
Regional slope range	2 - 5%	
Relative relief	10 - 30 m: low relative relief	
Drainage pattern	weakly oriented	
Geological substrata	acid metamorphic rocks and granites	
SOTER landform	plateaux	[LL]
SOTER lithology	acid metamorphic	[MA]
	acid igneous → granite	[IAI]
Summary of Growing Period Information		
Dominant Zone	7	Average growing period 35 days, no dependable growing period
Associated Zone	8	Average growing period 25 days, no dependable growing period
Summary of Soils Information - FAO Soils Units and Fertility Capability Classification		
Dominant	60 % Lithic Leptosols	very shallow soils, limited in depth by hard rock or cemented material
Associated	30 % Chromic Cambisols	moderately developed soils with strong brown or red colours, loamy topsoil
Included	10 % Luvic Calcisols	soils with loamy topsoil, high lime concentrations and clay enrichment in the subsoil
Agricultural Potential		
Ranking	7 th	
Suitability	mixed large stock and sheep grazing	

AGRO-ECOLOGICAL ZONE DESCRIPTION

AEZ Code **KA03**

AEZ Name **Kaokoland, intermontane low plains**

AEZ Area 827 km²



Summary of Landform Information

Codes

Landform type	valley	[V]
General altitude range	300 m - 750 m	
Regional slope range	2 - 5 %	
Relative relief	10 - 30 m: low relative relief	
Drainage pattern	weakly oriented	
Geological substrata	acid metamorphic rocks	
SOTER landform	valleys	[CV]
SOTER lithology	acid metamorphic	[MA]

Summary of Growing Period Information

Dominant Zone	10	Average growing period 8 days, no dependable growing period
Included Zone	9	Average growing period 15 days, no dependable growing period

Summary of Soils Information - FAO Soils Units and Fertility Capability Classification

Dominant	50 % Lithic Leptosols	very shallow soils, limited in depth by hard rock or cemented material
Associated	30 % Chromic Cambisols	moderately developed soils with strong brown or red colours, loamy topsoil
Included	10 % Luvic Calcisols	soils with loamy topsoil, high lime concentrations and clay enrichment in the subsoil
	10 % Petric Calcisols	sandy to loamy topsoil, high lime concentrations in indurated form in subsoil, associated with very dry moisture regimes

Agricultural Potential

Ranking	10 th
Suitability	sheep grazing only

AGRO-ECOLOGICAL ZONE DESCRIPTION

AEZ Code KAO4

AEZ Name **Kaokoland, mountains and hills**

AEZ Area 26 217 km²



Summary of Landform Information

Codes

Landform type	mountains	[m]
General altitude range	900 m - 2 000 m	
Regional slope range	30 - >60 %	
Relative relief	>300 m: very high relative relief	
Drainage pattern	weakly oriented	
Geological substrata	metamorphic rocks, dolomite, limestone, shale	
SOTER landform	medium-gradient mountains	[SM]
SOTER lithology	acid metamorphic	[MA]
	basic metamorphic	[MB]
	organic sediments → limestone, other carbonate rocks	[SO1]
	clastic sediments → shale	[SC4]

Summary of Growing Period Information

Dominant Zone	6	Average growing period 48 days, no dependable growing period
Associated Zone	10	Average growing period 8 days, no dependable growing period
Included Zone	9	Average growing period 15 days, no dependable growing period
	8	Average growing period 25 days, no dependable growing period
	7	Average growing period 35 days, no dependable growing period
	4	Average growing period 63, dependable growing period 6 days; very short dependable growing period

Summary of Soils Information - FAO Soils Units and Fertility Capability Classification

Dominant	80 % Lithic Leptosols	very shallow soils, limited in depth by hard rock or cemented material
Included	10 % Luvic Arenosols	sandy soils with clay-enriched subsoil, low nutrient status
	10 % Chromic Cambisols	moderately developed soils with strong brown or red colours, loamy topsoil

Agricultural Potential

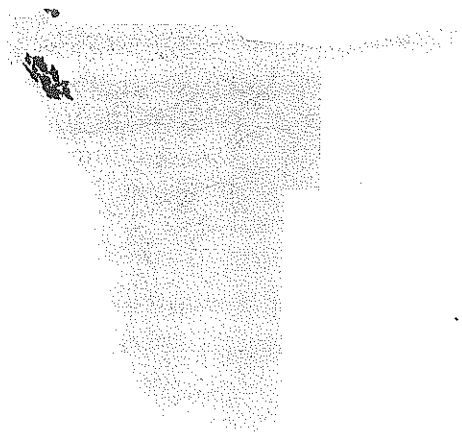
Ranking	6 th
Suitability	mixed livestock and sheep grazing

AGRO-ECOLOGICAL ZONE DESCRIPTION

AEZ Code **KA05**

AEZ Name **Kaokoland, strongly dissected foothills**

AEZ Area 9 645 km²



Summary of Landform Information

Codes

Landform type	hills and footslopes	[hf]
General altitude range	600 m - 1 200 m	
Regional slope range	15 - 60 %	
Relative relief	100 - 300 m: high relative relief	
Drainage pattern	weakly oriented	
Geological substrata	metamorphic rocks	
SOTER landform	high-gradient hills	[TH]
SOTER lithology	acid metamorphic	[MA]
	basic metamorphic	[MB]

Summary of Growing Period Information

Dominant Zone	11	No growing period
Associated Zone	10	Average growing period 8 days, no dependable growing period
Included Zone	7	Average growing period 35 days, no dependable growing period

Summary of Soils Information - FAO Soils Units and Fertility Capability Classification

Dominant	60 % Lithic Leptosols	very shallow soils, limited in depth by hard rock or cemented material
Associated	20 % Luvic Arenosols	sandy soils with clay-enriched subsoil, low nutrient status
	20 % Chromic Cambisols	moderately developed soils with strong brown or red colours, loamy topsoil

Agricultural Potential

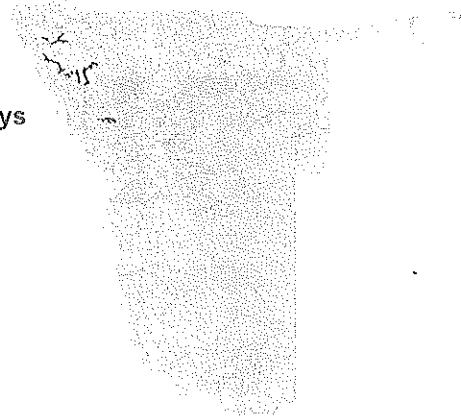
Ranking	11 th
Suitability	unsuitable for grazing

AGRO-ECOLOGICAL ZONE DESCRIPTION

AEZ Code **KAO6**

AEZ Name **Kaokoland, intermontane narrow valleys**

AEZ Area 2 558 km²



Summary of Landform Information

Codes

Landform type	valley	[V]
General altitude range	500 m - 900 m	
Regional slope range	2 - 5%	
Relative relief	<10 m: very low relative relief	
Drainage pattern	weakly oriented	
Geological substrata	metamorphic rocks, recent colluvium / alluvium	
SOTER landform	valleys	[CV]
SOTER lithology	acid metamorphic	[MA]
	basic metamorphic	[MB]
	unconsolidated colluvial	[UC]
	unconsolidated fluvial	[UF]

Summary of Growing Period Information

Dominant Zone	10	Average growing period 8 days, no dependable growing period
Associated Zone	9	Average growing period 15 days, no dependable growing period
	6	Average growing period 48 days, no dependable growing period
Included Zone	11	No growing period

Summary of Soils Information - FAO Soils Units and Fertility Capability Classification

Dominant	30 % Luvic Arenosols	sandy soils with clay-enriched subsoil, low nutrient status
	30 % Calcaric Fluvisols	calcareous alluvial soils, sandy to loamy topsoil, basic reaction
	30 % Chromic Cambisols	moderately developed soils with strong brown or red colours, loamy topsoil
Included	10 % Lithic Leptosols	very shallow soils, limited in depth by hard rock or cemented material

Agricultural Potential

Ranking	10 th
Suitability	sheep grazing only

AGRO-ECOLOGICAL ZONE DESCRIPTION

AEZ Code NAM7

AEZ Name **Namib Desert, dissected
plains with complex cover**

AEZ Area 19 981 km²



Summary of Landform Information

Codes

Landform type	plain	[I]
General altitude range	0 m - 900 m	
Regional slope range	0 - 15 %	
Relative relief	10 - 30 m: low relative relief	
Drainage pattern	strongly oriented, parallel	
Geological substrata	Karoo volcanic and Damara metamorphic rocks	
SOTER landform	plains	[LP]
SOTER lithology	basic igneous → basalt	[IB2]
	acid metamorphic	[MA]
	basic metamorphic	[MB]

Summary of Growing Period Information

Dominant Zone 11 No growing period

Summary of Soils Information - FAO Soils Units and Fertility Capability Classification

Dominant	50 % Leptosols	undifferentiated shallow soils, loamy topsoil, subsoil is rock or other hard root-restricting layer
Associated	20 % Gypsisols	undifferentiated soils with high gypsum concentrations in the subsoil, loamy topsoil, basic reaction, associated with very dry moisture regimes
	20 % Calcisols	Undifferentiated soils with high lime concentrations in the subsoil, sandy to loamy topsoil, basic reaction, often with > 15% % gravel or stones, associated with very dry moisture regimes
Included	10 % Rock	

Agricultural Potential

Ranking 11th

Suitability unsuitable for grazing

Section 22

Land suitability and indigenous use of the land units

Land use at any given place and time is influenced directly or indirectly by man's biophysical and socio-economic circumstances. In Kunene Region, land use is largely influenced by rainfall distribution, with land use intensity decreasing from East to West as rainfall decreases. (in: "Kunene integrated regional land use plan", 1998)

1. THEORETICAL AGRICULTURAL SUITABILITY OF THE VARIOUS AGRO-ECOLOGICAL ZONES

Table: agricultural suitability of the various agro-ecological zones

EZ code	Agriculture potential
KALK-4	Large stock grazing
KA01	Sheep grazing only
KA02	Mixed large stock and sheep grazing
KA03	Sheep grazing only
KA04	Mixed livestock and sheep grazing
KA05	Unsuitable for grazing
KA06	Sheep grazing only
NAM7	Unsuitable for grazing

(in "preliminary Agro-Ecological Zones. Addendum to the Agricola 1998/99, 2000)

Most of the soils are very low in organic matter and therefore have low inherent fertility. The main agricultural (crop production) limitations are shallow depth, low water holding capacities, stones, surface crusting in places and salinity. (in "Kunene integrated regional land use plan", 1998)

There is however a small possibility that irrigation schemes could be laid out along the Kunene River. The Loxton report estimates a total surface area of 125 hectares that could be placed under irrigation. However, the danger of the floods discards any large scheme. (Page, 1976) Small irrigation schemes are possible in areas such as Sesfontein (in: "Kunene integrated regional land use plan", 1998)

2. ADAPTATION OF THE PASTORAL GROUP TO THE ENVIRONMENT

The OvaHimba and the OvaZemba inhabit or use an area stretching from the Hartmann's Valley in the north-west to Ruacana in the north-east, with the Kunene river as a boundary for their area to the north. To the south the area stretches from south-west of Puros roughly along a line eastward to the north-west corner of the Etosha National Park. The boundary to the west is the gravel flats to the east of the Skeleton Coast Park. The boundary to the east is the gravel road from Kamanjab to Ruacana, route MR 67. This constitutes a total area of almost 40 000 square km. The land is mainly a rugged plateau broken up by ranges of mountains and hills. Altitudes vary from around 700m above sea level in the south-east, with around 1200m as the average altitude of the central plateau. The highest peaks reach up to 2000m above sea level (Hvidsten et al, 1997)

Under conditions of extreme variability, cattle farmers "track the environment" for forage and water. Cattle are often moved over greater distances than small-stock. (in: "Kunene integrated regional land use plan", 1998)

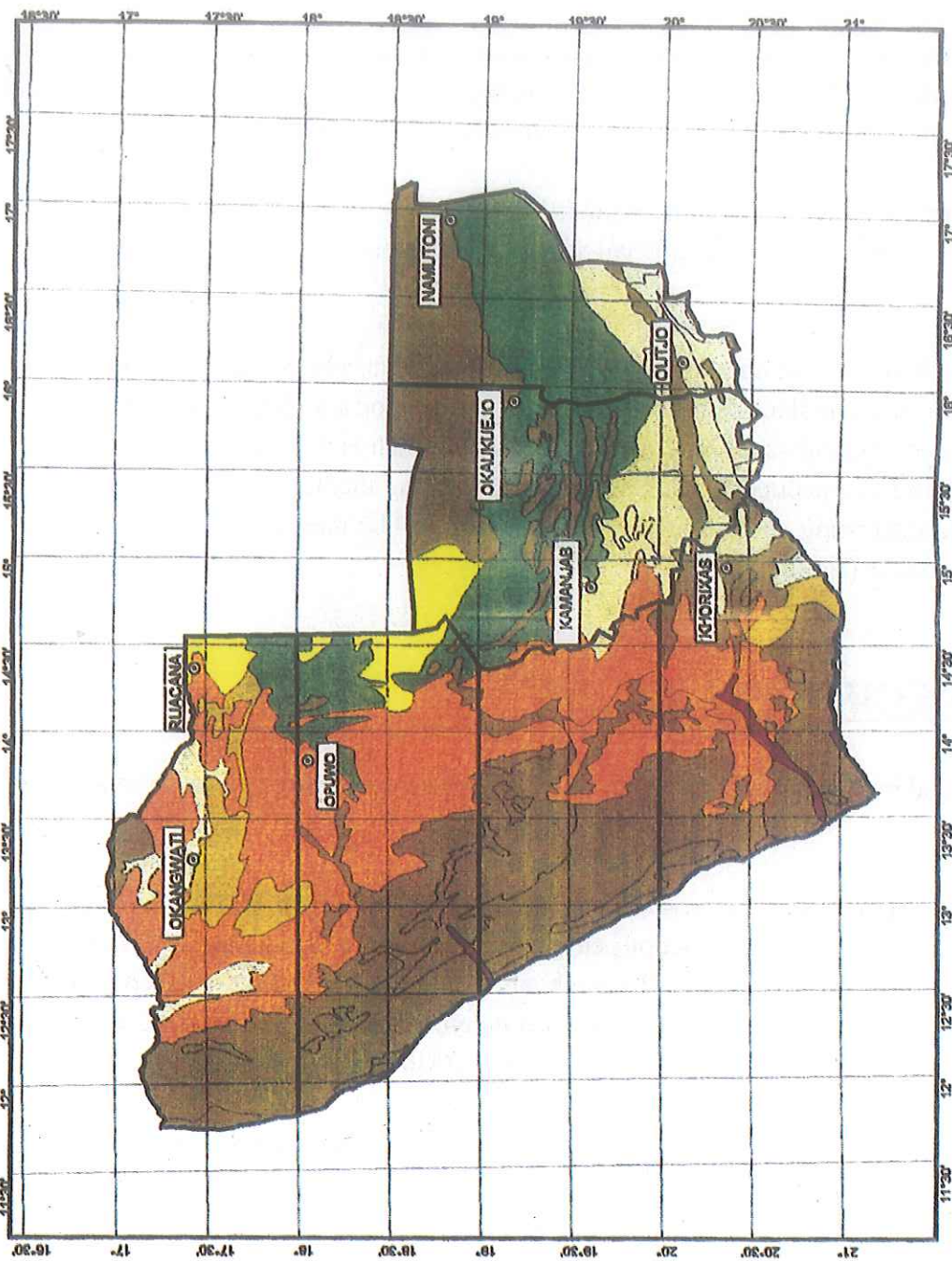
During the rainy season, the number of households increases at places like Enyandi, Omuzorora, Omaroubwa, Oronditi and Omukazeze, as these places offer very good alluvial soils for gardening. In 1995, six households gathered in Omukazeze for cultivating on soils which had been inundated during the rainy season (usually the place is inhabited by three households). During the height of the dry season, riverine places again become interesting as they offer plenty of fodder. The numerous *Faidherbia albida* trees produce high quality fodder. (Bollig, 1996)

3. SOME SPECIFIC EXAMPLES

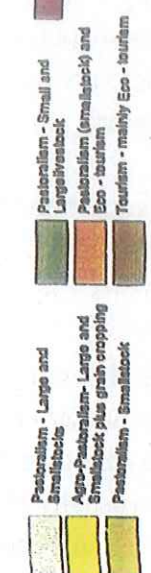
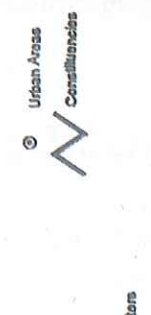
The land suitability and indigenous use of the land units can be analysed using various Participatory Rural Appraisal tools:

- Community mapping: it is the recording of available resources and infrastructures (water points, facilities such as crush pens and auction pens, households, shops, schools and cattle posts) of a given community. The Farming Systems Research and Extension Unit of the northern Kunene region conducted community mapping in Otuni, Ohandungu, Omuhonga Ouozonduombe and Enyandi. Resource maps were produced for these communities. (Mbinga et al, 1999)
- Transects: it is the description of geomorphological units within a specific area, its use by the population present and its vegetation cover. Transects have been undertaken in Otuni, Ohandungu, Omuhonga, Enyandi and Ouozonduombe. (Mbinga et al, 1999)
- Land and vegetation survey: it is the recording of the main land units and main vegetation units in an area. The Northern Regions Livestock Development Programme Range Management Specialist, supported by the Kunene North Farming System Research and Extension Unit, undertook such survey in Ohandungu. (Mouton, 2000)

KUNENE REGION LAND SUITABILITY



Produced by the MRSC, MET
 Prepared for the Ministry of Lands,
 Resettlement & Rehabilitation (MR, R/R)
 October 1998



In "Kunene integrated Regional Land Use Plan, 1998"
 Ministry of Lands, Resettlement and Rehabilitation

3.1. INDIGENOUS USE OF LAND UNITS IN OHANDUNGU

During a vegetation survey carried out in the Ohandungu area (Mouton, 2000):

- Three land-form units have been identified:
 - Gravel calcareous mounds and plains (AEZ code KAO2 – sediment plain)
 - Mountains (AEZ code KAO4 – mountains and hills)
 - Dissected inselbergs (hills or small mountains rising abruptly from its surrounding, scattered throughout the entire area)

- Four vegetation units have been identified:
 - *Acacia erubescens* – *Colophospermum mopane* shrubbed woodland
 - *Colophospermum mopane* – *Terminalia prunioides* wooded shrubland
 - *Combretum epiculatum* – *Commiphora mollis* – *Colophospermum mopane* wooded shrubland
 - *Kirkia acuminata* – *Commiphora mollis* – *Commiphora glaucescence* woodland

A thorough analysis of the distribution of villages and infrastructures in the area shows that all make use of only one agro-ecological unit, namely the gravel calcareous mounds and plains landform / *Colophospermum mopane* – *Terminalia prunioides* Unit. This is probably because the landform is quite flat, easily accessible and the soil characteristics are good enough for crop production. In this area, due to intensive use, land degradation is observed (bare patches and areas dominated by the aromatic shrub *Pechuel Loeschea leubnitziae*). (Mouton, 2000)

Few cattle posts are making use of the agro-ecological unit calcareous mounds and plains landform / *Acacia erubescence* – *Colophospermum mopane* shrubbed woodland. The other areas are hardly used. (Mouton, 2000)

The landform units comprising the Mountains and dissected inselbergs are not properly used. They are more difficult to access but are suitable grazing areas. The main constraint experienced is the absence of water in both units, making its use pretty difficult. (Mouton, 2000)

Furthermore, in Ohandungu, farmers recognise different geomorphological units (in “analysis of the farming systems in Ohandungu”, 2000):

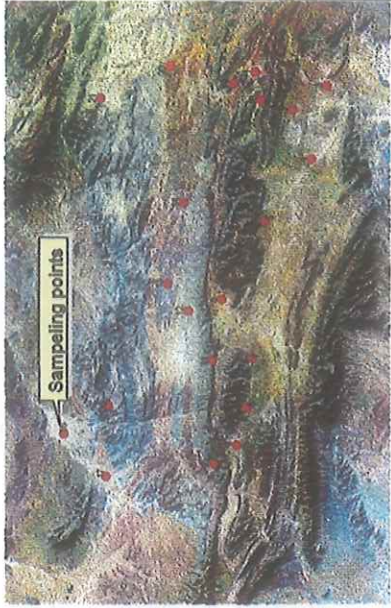
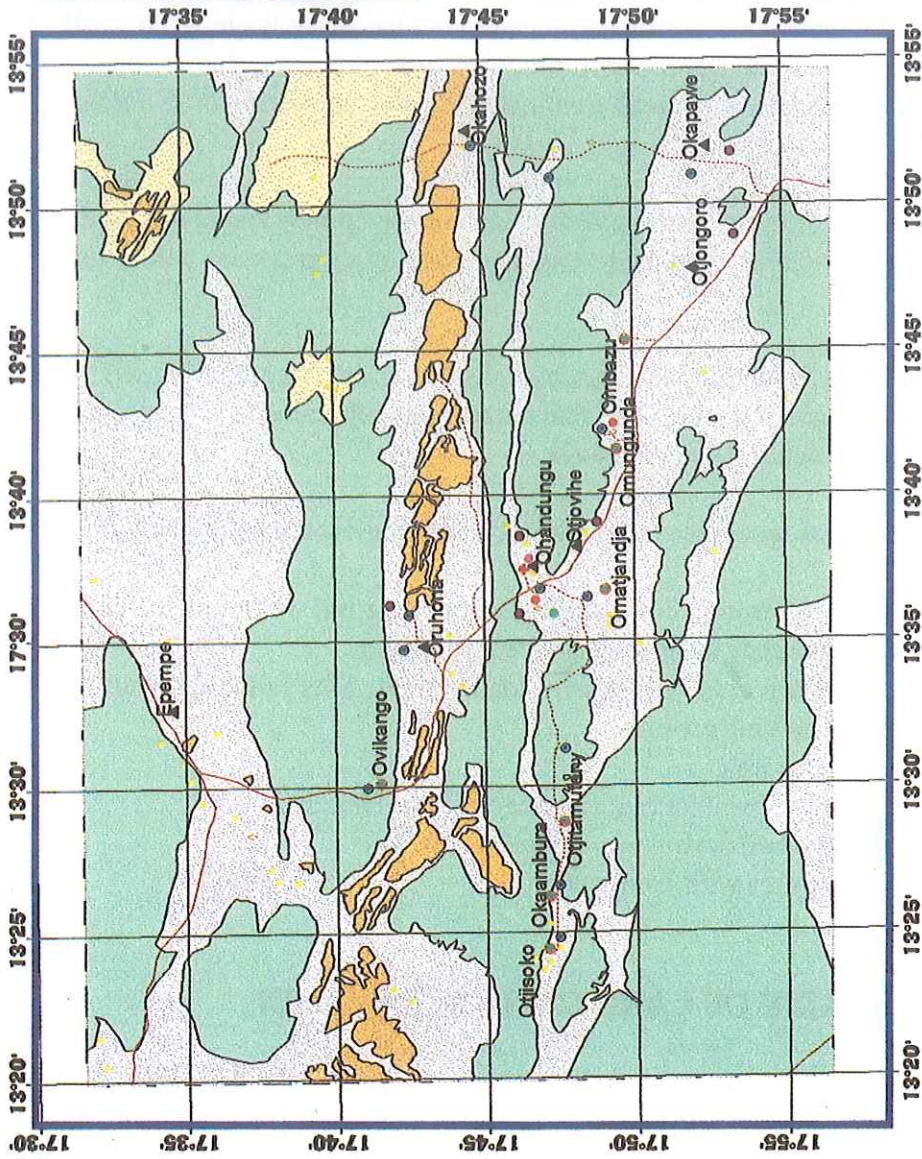
- “Otjikoro tjondundu” or “omirungu”: it is the foot-slope of a hill or mountain. The soil is sandy, gravel and rocky. Rocks cumulate water during the rainy season.
- “Orutjanda”: it is a flat plain area with loamy loamy sand. This is the cultivation area for the community, most gardens making use of it.
- “Ekongo”: this is a flat, rocky area.
- “Ondama”: this is an excavated soil for rainwater harvesting. The soil is sandy.
- “Omurora”: it is a small riverbed or stream, with a clay soil
- “Okandunda”: it is a sloppy area with sandy soil.

3.2. INDIGENOUS USE OF LAND UNITS IN ENYANDI

Enyandi is situated between steep mountains and the Kunene river, leaving a narrow strip or area for grazing (Mbinga et al, 1999). It seems that based on geomorphology, the landform of the Enyandi community are classified into units (in “use of PRA tools in Enyandi”, 1999):

- “Otjitumba”: it is a flat part of the riverbank, in between the area called “Otjikere” and the area called “Ondunda”. The soil is probably loamy sand. People plant tobacco or maize on this area. Sometimes, farmers even flatten this part of the riverbank to prepare gardens. This process allows to

Ohandungu Resource Map

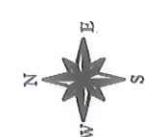


LEGEND

- Primary school: +
- Clinic: +
- Homesite: ■
- Village: ▲
- Cattle posts: ●
- Borehole: ●
- Earth dam: ●
- Cattle crushes: ◇
- Gas pipe: ◇
- Gas suction pipe: ◇
- Track: —
- Main road: —

Vegetation types:

- Acacia erubescens-Coleophospermum mopane* shrubbed woodland.
- Coleophospermum mopane-Terminalia prurioides* wooded shrubland.
- Combretum apiculatum-Commiphora mollis-Coleophospermum mopane* wooded shrubland.
- Keteleeria-Crotonia mollis-Commiphora glaucescens* woodland.



PROJECTION
 Transverse Mercator
 Central Meridian: 16E
 Reference Latitude: 18S
 Spheroid: WGS84
 May 2000

Map compiled by
 NOLIDEP
 (Northern Regions Livestock Development Project)
 Box 272 Tsumeb
 Tel: 067 - 220263

- take advantage of the flood and the fall of the river.
- “Omuronga” or river (Kunene River): cattle always come and drink in the river, all year round, either every day or every second day.
- “Ondundu”: this area has got a fair amount of fodder and livestock usually stay there during the rainy season.
- Other units of less importance for the community are Otjikere, Opoukoto and Ekongo

3.3. INDIGENOUS USE OF LAND UNITS IN OTUANI

It seems that based on geomorphology, the landform of the Otuani community are classified into units:

- the “Omuramba” is a flat area, mostly flooded during the rainy season. It can be used as a first grazing area (there is more grass and it is flat) after the rain. It can also be used for cropping (it is flooded, not rocky and it has a suitable soil type. units (in “analysis of the farming systems in Otuani”, 2000)
- the footslope of the mountain is used for habitation and as a second grazing area for animals. units (in “analysis of the farming systems in Otuani”, 2000)
- the mid slope of the mountain is usually hardly grazed because it is abrupt. This area is of little use for the community (Mbinga, 1999)
- the hill top is always the last area where animals go for grazing. Animals can use small paths crossing the mid-slope area and reach the hill top, which is less abrupt. This is the third grazing area for the community. (Mbinga, 1999)

3.4. INDIGENOUS USE OF LAND UNITS IN OUOZONDUUOMBE

It seems that based on geomorphology, the landform of the Ouozonduuombe community are also classified into units. However, only two units have been identified by the community for their specific use (in “use of PRA tools in Ouozonduuombe”, 2000)

- The “Ondama” or dam: it is an excavated soil for rain-water harvesting. Animals come to drink. This area is deteriorated as there are abundance of tribulus. This can be seen as a result of trampling effect caused by lots of animals coming to drink to the dam.
- The dry river: because of the high water level underground, the vegetation is green almost throughout the year. This land is therefore extremely suitable for livestock raising.

3.5. SUITABILITY OF SOME AREAS ACCORDING TO PAGE

Due to the steep slopes of many of the areas in the region, the following flatter areas were suggested for future development by Page (1976):

- The Omuhonga valley, that stretches from Omuhonga in the West over Okangwati (Otjijandjasemo), Otjikwejo and Swatbooisdrift on the Kunene;
- The highlands that include the sandy plain for a width of plus minus 30 kilometres from the eastern border from Ombuarundu to the Southern border of the Etosha National Park. This area of plus minus 120 kilometres in length includes in its western border Opuwo, Orumana and Omutambo Maowe.
- The belt that stretches from Opuwo to Kaoko-Otavi, with a width of about 20 kilometres. The area from Kaoko-Otavi to Ombombo, even if of secondary importance, could be considered.

Kunene North FSR-E Unit
 In "Analysis of the farming systems in Otunani"

OTUANI TRANSECT

OMURAMBA

Landform : flat plains

Soil : clay loam

Vegetation :

- > Trees : A. Hebecladæ, A. Fleckii, A. Mellifera, A. karoo
- > Grasses and herbs : everything has been grazed at the time of the transect

Note : this is the most important area because it is used as a grazing area and an area for cropping.

HILL TOP

GPS readings :
 S 18° 34' 08,2"
 E 13° 39' 47,0"

Landform : hill top

Soil :

- Lime-stone rocks
- Pubbles
- Gravel

Vegetation :

- > Trees : 2% cover, Commiphora glaucescens
- > Shrubs : Mundetia Seretse, Mopane, A. Erubescens, A. reficiens, Maetenis Senegalensis
- > Grasses : 15% cover, Stipagrostis Uniplumis, Eneapogon Cenchrroides, Microchloa Caffra, Aristida Suptata, Eragrostis Nindensis
- > Finga-burria Africana
- > Herbs : Sispalia

MID SLOPE

GPS readings :
 S 18° 34' 0,4"
 E 13° 39' 48,1"

Landform : mid-slope

Soil :

- Lime-stone rocks
- Pubbles
- Gravel

Vegetation :

- > Trees : 3% cover, Mopane, Commiphora glaucescens
- > Shrubs : Mopane, A. Erubescens
- > Grasses : Eneapogon Cenchrroides, Sipagrostis, Aristida Ascensionis, Eragrostis Nindensis

FOOT SLOPE

GPS readings :
 S 18° 34' 03,8"
 E 13° 39' 46,7"

Landform : foot slope

Soil :

- Lime-stones rocks
- Pubbles
- Gravel

Vegetation :

- > Trees : 5% cover, Mopane
- > Shrubs : Mopane, Albizia
- > Grasses : Eneapogon, Aristida, Sipagrostis, Eragrostis Superba, Eragrostis Nindensis

KUNENE REGION PROPOSED LAND USE ZONING



11°30' 12° 12°30' 13° 13°30' 14° 14°30' 15° 15°30' 16° 16°30' 17° 17°30' 18°

17° 17°30' 18° 18°30' 19° 19°30' 20° 20°30' 21° 21°30'

Produced by the NRSC, MET
 Produced for the Ministry of Lands,
 Resettlement & Rehabilitation (MLRR)
 October 1998

0 100 Kilometers

Urban Areas
 Residential
 National Parks
 National Parks
 Mining Licence Areas
 Veterinary Control Fence
 Constabularies
 Colonial Farms

In "Kunene integrated Regional Land Use Plan, 1998"
 Ministry of Lands, Resettlement and Rehabilitation

Section 23

The use of trees in Kunene North

1. MAIN USE OF TREES IN KUNENE NORTH

The main use of trees is for construction material, live fencing, fodder and medicinal purposes. Shrubs are mainly used for construction, as fodder or fruit production. (in "Analysis of the farming system in Ohandungu", 2000)

Various dwellings, stock enclosures and grain storage bins are constructed from timber. The semi-permanent villages of the Herero, Zemba, Hakaona and Ovambo people requires a considerable amount of timber in the form of stout poles for cattle pens and hut frames. A single onganda (kraal) necessitates felling many hundreds of trees, all cut locally, with result that the immediate vicinity of the settlements soon becomes denuded, except for a few large specimens which are retained for their shade. Virtually all-building material for huts, cattle enclosures and fences, including twine and roping, is derived from local flora. (Malan et al, 1974)

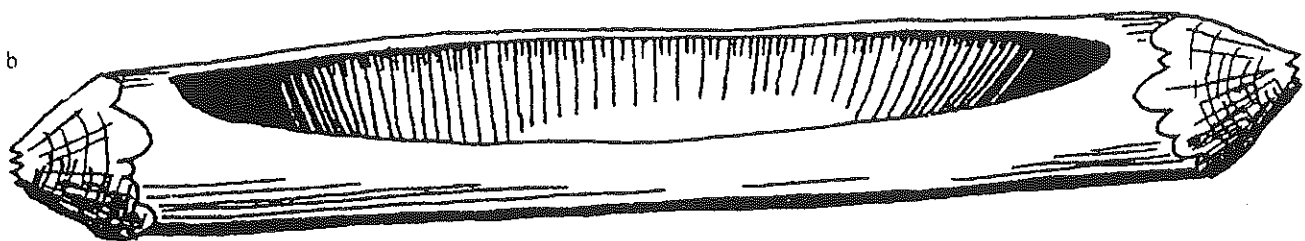
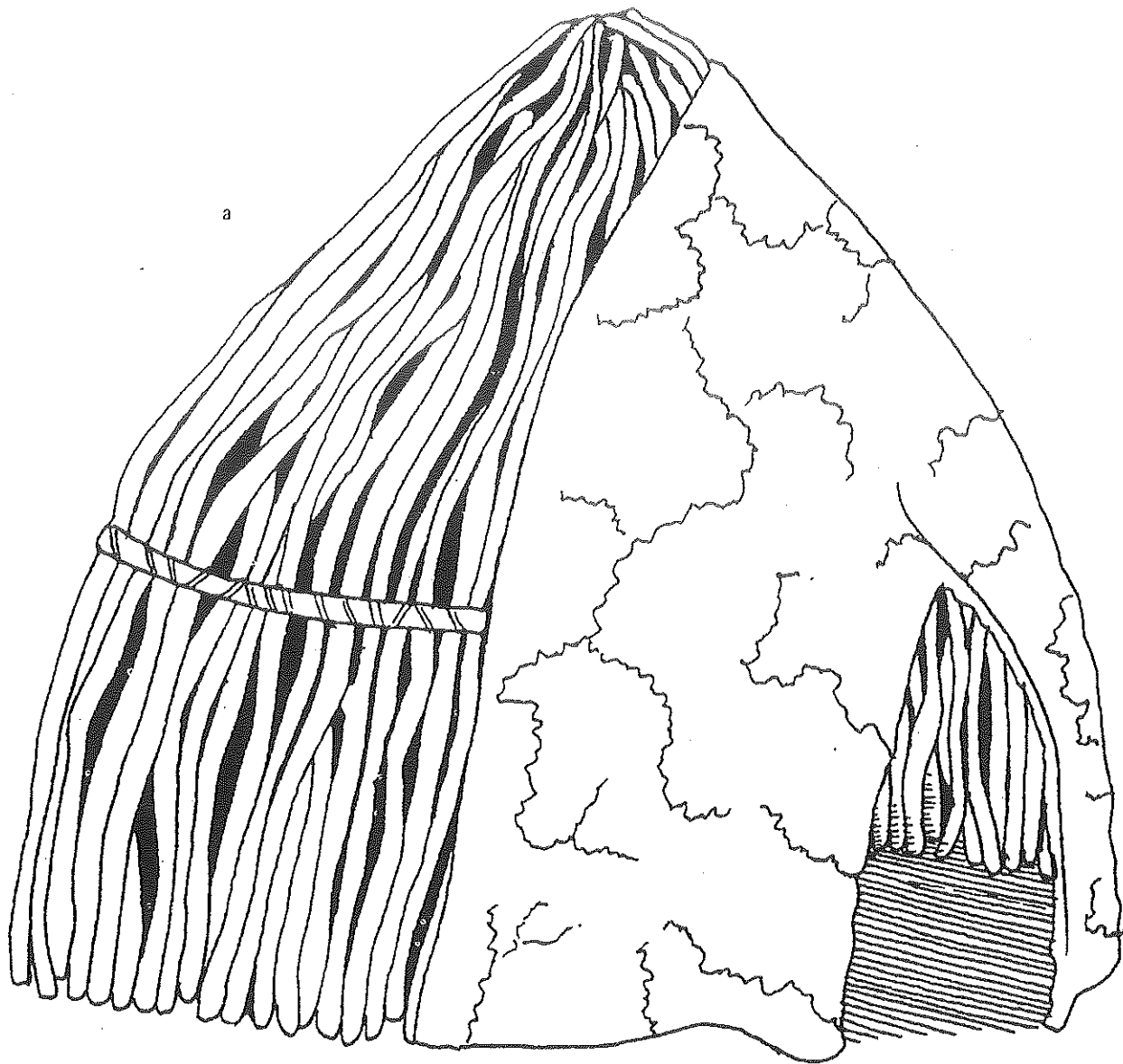
Unlike adjoining territories, no commercial woodwork is practised in the Kunene North. All implements manufactured are purely for and fill an immediate domestic need; consequently soft wood species favoured for carving-notably the genus of *Commiphora*, are only lightly exploited and still occur abundantly throughout the territory. Weapons such as knob sticks and bows and arrows require suitable wood. (Malan et al, 1974)

2. FIREWOOD COLLECTION

Although gathering firewood is generally restricted to dead timber, the shortage of fuel in the vicinity of unusually large settlement such as Opuwo and Orumana is resulting in the destruction of many local trees. A further, and possibly significant effect of fire wood collecting is the complete removal of all dry branches and brushwood from the ground near villages. (Malan et al, 1974)

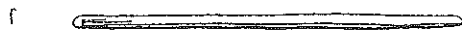
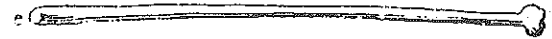
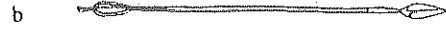
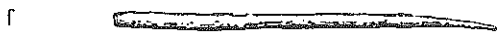
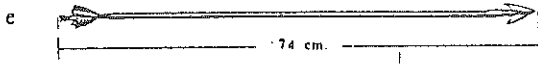
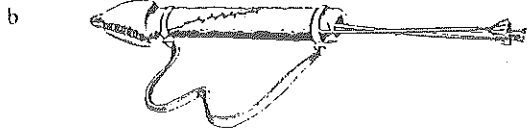
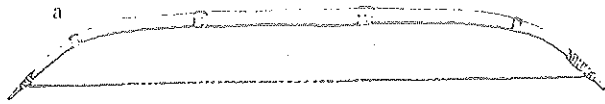
The ecological role of this brushwood is threefold (Malan et al, 1974):

- Firstly, in heavily grazed areas it frequently forms the only protection for young seedlings of palatable species. The importance of this protection is well demonstrated along the banks of many large seasonal rivers, where the seedlings of *Acacia giraffae* and *Faidherbia albida* are browsed by goats as soon as they protrude above the ground. The only young plants able to survive to a size where they are capable of withstanding heavy browsing occur where the seedlings have germinated



(a) A large number of flexible saplings are needed to construct the Himba hut. These are almost invariably cut from *Colophospermum mopane*

(b) Drinking trough for livestock.



- (a) Tjimba bow. The string is made from kudu skin.
- (b) The leather quiver is designed to prevent arrows from falling out.
- (c) The barbed arrow-head carries a thick layer of poison. The arrow sticks firmly in the hunted animal thus giving the poison enough time to dissolve properly.
- (d) Strong feathers, preferably those of the Kori bustard are needed for the arrow-shaft.
- (e) The stout Tjimba arrow is about 70 cm long.
- (f) Digging-sticks are usually cut from the very common bush *Rhigozum brevispinosum*.

- (a) Himba bow cut from a leafstalk of the makalani palm (*Hyphaene ventricosa*).
- (b) The wood for arrow-shafts comes mostly from *Grewia* species.
- (c) Knife with wooden sheath.
- (d) Short club used for hunting.
- (e) General-purpose knobkierie.
- (f) Carrying-stick.

under a cloak of dead branches. In many parts of the region the lack of immature trees of economically valuable species-particularly *Faidherbia albida*-warrants concern.

- Secondly in overgrazed areas fallen trees and brushwood also protect a few perennial grass tufts, which form an important reservoir for re-colonisation.
- The third benefit derived from the accumulation of old brushwood is in controlling soil erosion.

3. VELD FIRES

Regular veld burning as a deliberate method of managing rangelands is not practised in Kaokoland. This is largely because most pastures on the highlands area are composed primarily of sweet annual grasses, which have considerable nutritional value even when dry. A further factor is the general very low grass density just prior to the first rains, which makes it impossible to start a fire in many areas. In the past, when perennial grasses were more abundant, it is likely that veld burning was periodically employed in local areas to clear old tufts and promote fresh growth. (Malan et al, 1974)

Section 24

Wildlife

1. WILDLIFE SPECIES AND NUMBERS

The desert and desert border areas where the rainfall is less than 100mm per year can only sustain wild life and is not appropriate for any livestock farming (Page, 1976)

The pro-Namib plains are seasonally utilised by a variety of wild herbivores. The mayor rivers and watercourses are particularly important as natural corridors along which large mammals, including elephant, rhinoceros and giraffe, penetrate deep into the desert (Malan et al, 1974)

The pro-Namib has always been the home of large herds of springbok, oryx and hartmann's zebra. After rain, these wild ungulates gather in considerable numbers on the fresh grazing. In good seasons they are also joined by springbok and burchell's zebra from the western highlands. As the summer pans dry up and the grass becomes sparse, the migrant animals return to the highlands while the large resident congregations disband into smaller groups, which disperse across virtually the whole region (Malan et al, 1974)

Because of the wild animals ability to utilise wide range of succulent plants, coupled with anatomic adaptations for better metabolic conservation of body fluids, wild indigenous herbivores are capable of surviving for long periods without water. The foraging range of these animals is hereby considerably extended. (Powel, 1993)

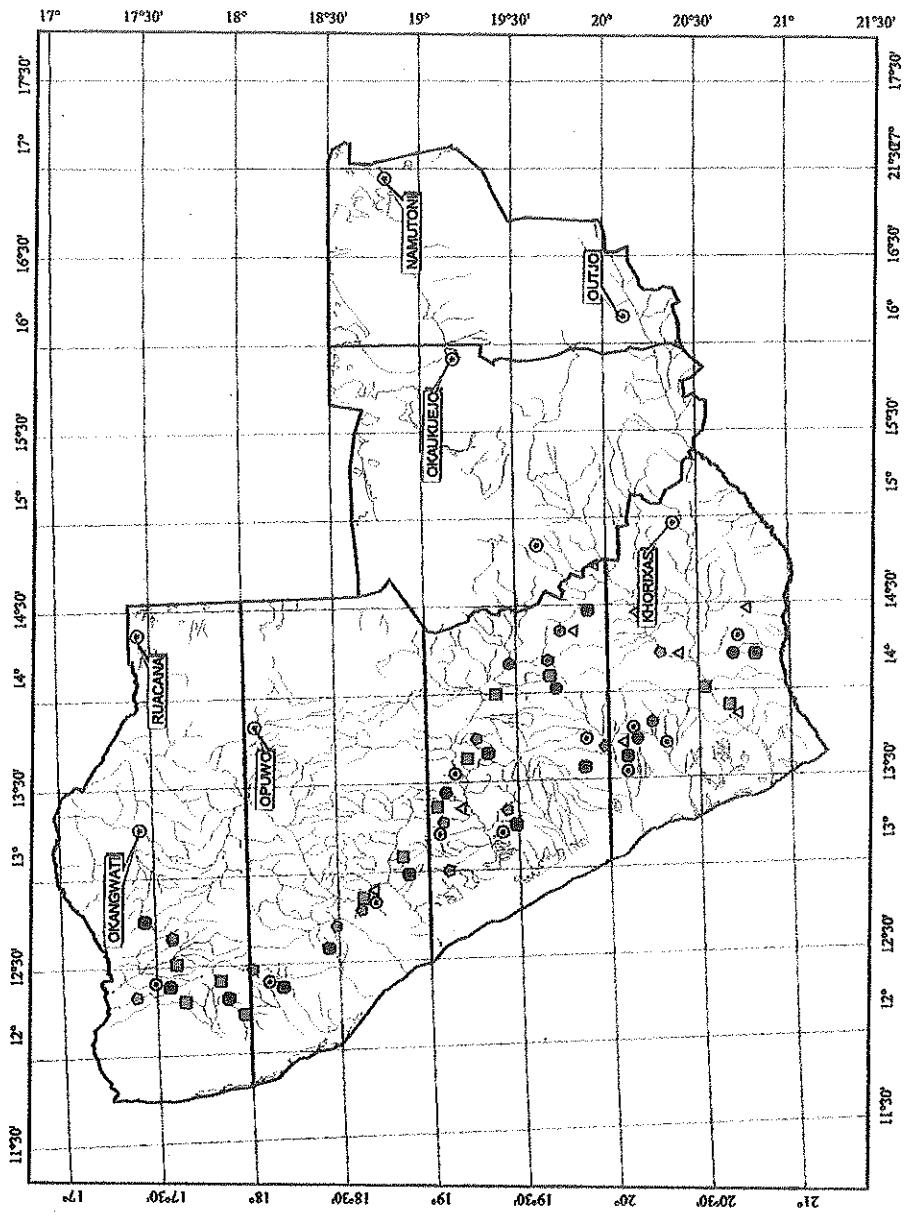
1.1. THE WILDLIFE BEFORE 1969

At this period, approximately two third of the Kaoko veld district (the northern part) was a proclaimed game reserve. (van Warmelo, 1951)

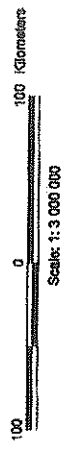
Various wild animals were roaming in Kaokoland, such as Elephants, Rhino, Zebra, Lions, Leopard and numerous species of Antelopes. (van Warmelo, 1951), Eland, Buffalo, Black hartebeest, Blue hartebeest, Warthog and Kudu (Page, 1976). Porcupine and numerous birds were present. (in 'analysis of the farming systems in Otuani community', 2000) Mountain lions, Black nosed red antelope, "dik dik" and the Kaokoland "dassie" were also counted. (Page, 1976)

There was no wildebeest in Kaoko veld (van Warmelo, 1951)

KUNENE REGION
DISTRIBUTION OF GAME IN COMMUNAL AREAS



- LEGEND**
- ▭ Constituencies
 - ⊙ Major Towns
 - Wildlife**
 - Black Rhino
 - △ Elephant
 - ⊙ Gambok (Oryx)
 - ⊙ Giraffe
 - ⊙ Hermann's Zebra
 - ⊙ Kudu
 - ⊙ Ostrich
 - ⊙ Springbok
 - ⊙ Rivers



Produced by the NRSSC, MET
 Produced for the Ministry of Lands,
 Resettlement & Rehabilitation (MLRR)
 October 1998
 Source: MET

1.2. THE GAME COUNTS IN 1969 AND 1975

Table: game counts in 1969 and 1975

Game species	1969	1975
Plain Zebras	1476	323
Mountain Zebras	735	803
Kudus	336	13
Elephants	434	190
Oryx	636	590
Springbok	1060	1528
Giraffe	58	79
TOTAL	4736	3526

(Page, 1976)

Note: In the 1969 census the grazing areas of the springbok in the Marienfluss Valley were not covered completely.

The occurrence of game in 1975 was as follow (Page, 1976):

- Area A. This area lies in the southern corner of the region in the mountains between Kowaris, Otjiwarongo and Warmquelle. Were recorded 218 Mountain Zebras, 134 Plain Zebras, 27 Elephants and an abundance of Oryx and Giraffes.
- Area B. This area lies in the Marienfluss river valley between the Hartmann and the Otjihipa mountains. Were recorded 16 Oryx, 1000 springboks and 15 Ostriches.
- Area C. This area lies to the west of area B by the Marienfluss and over the Hartmann mountains, against the coast between the Kunene river in the North and the Ondondujengo River in the south. Were recorded 340 Mountain Zebras, 280 Oryx, 190 Springboks and other game.
- Area D. This area lies east of Sanitadis and is bordered to the south by the Hoarusib and to the east by the Tonneson Mountains. Were recorded 91 Mountain Zebras and springboks.

1.3. THE DECLINE AT THE BEGINNING OF THE 1980S'

At the beginning of 1980 Kaokoland experienced a serious decline in overall wildlife abundance (Powel, 1993) The whole Kaoko veld was then subject to poaching by government officials, private individuals from outside the area and local people. Due to poaching and the severe drought from 1979 to 1981 game numbers declined considerably. (Powel, 1993)

Table: decline in wildlife abundance in Kaokoland between 1970 and 1982

Animals	Approximate population in 1970	Approximate population in 1982
Elephant	600-800	70-100
Hooked-lipped Rhino	100-150	10-15

Animals	Approximate population in 1970	Approximate population in 1982
Giraffe	80	45
Hartman's Zebra	2500	300
Oryx	1500-200	200-300
Springbok	5000-8000	200-500

(Owen – Smith, 1983; quoted in Powel, 1993)

1.4. THE ELEPHANT COUNT IN 1991

Mention is made to a report by R. Loutit and I. Douglas Hamilton about an Elephant count in the Kunene Province, 10 to 21 October 1991 (in Jones, 1993):

366 Elephants between the Huab and the Hoarusib rivers have been counted. The report concluded that “there is an increasing conflict between Elephant and communal farmers, especially south of the veterinary cordon fence, with more Elephant south of the cordon fence” and “much of the current Elephant problems are due to water development which may play the unwitting role of attracting Elephants. The Elephants like clear water” (Jones, 1993)

2. WILD LIFE AREAS AND CONSERVANCIES

Before 1981 the only official conservation presence in Damaraland and Kaokoland was maintained by personnel from the Skeleton Coast Park, who occasionally went beyond the jurisdiction of the park in an attempt to maintain some control in adjoining areas. (Powel, 1993)

The first conservation official for Damaraland and Kaokaoland, C. Eyre, was appointed in 1981 and was based in Khorixas. With only one assistant, L. Mbomboro, he was responsible for 95 000 km² of land. (Jones, 1993)

In 1981 a group of conservationist in Namibia formed the Namibia Wild Life Trust and employed one person to work in Kaokoland. Another person financed by the South African-Based Endangered Wild Life Trust, soon joined him. (Jones, 1993)

In 1983 Mrs. Blythe Loutit and others from the Namib Branch of the Wildlife Society set up a Save The Rhino Trust Fund. By 1986 it has developed into the Save The Rhino Trust, a Non Governmental Organisation focussing mainly on rhino monitoring, anti-poaching and public awareness (Jones, 1993)

The Community Game Guards programme has been up in the Kaoko veld since 1983 and is still currently running. (Powel, 1993)

Reference is made to the “report to the commission of the European communities, Namibia Independence year 1990, Aerial and land Survey of Wild Life Populations in the Skeleton Coast Park, Damaraland and Kaokoland, North and West Namibia”. This report suggests the area in Kaokoland North and West of the Veterinary Cordon fence, with the Hoanib river forming the northern boundary and the skeleton coast park the western boundary, to be classified as “zone category IV – Nature Conservation Reserve/ Managed Nature reserve/ Wild Life Sanctuary”. It is suggested that manipulative management techniques are applied to

guarantee the stability or survival of certain plants and animals by protecting breeding population, feeding or breeding areas and habitat critical to protecting rare and endangered species of flora and fauna. (Jones, 1993)

In recognition with the wildlife diversity, Purros was chosen by the Ministry of Wildlife, Conservation and Tourism as one of the areas for a wildlife restocking programme in 1990 and again in 1991, with 29 oryx and 20 giraffe being translocated there from Etosha (Powel, 1993)

Since 1991, quotas for “hunting seasons” have been issued every two years for certain species only (for instance springbok at Orupembe in 1995). (in “Kunene region, appraisal report by Regional Co-ordinator”, 1996)

The long-term future for wildlife in the region appears to be under threat, due to increasing pressures by the human population’s demands for agricultural and water development. This may affect wildlife habitats. However, there is a potential for combining wildlife utilisation with livestock keeping in communal areas, with wildlife utilisation acting as a complementary income source boosting farmers incomes, diversifying risk and reducing vulnerability to drought (in “Kunene region, appraisal report by Regional Co-ordinator”, 1996)

The Directorate of Resource Management, based within the Ministry of Environment and Tourism, introduced in the early 1990s a new government policy promoting the establishment of “conservancies”. A conservancy is a community or a group of communities within a defined geographical area who jointly manage, conserve and utilise the wildlife and other resources within the defined area. (in “Kunene region, appraisal report by Regional Co-ordinator”, 1996)

Omakange community is linked to a proposed Conservancy located between Etare and Onamuse. This conservancy is assisted by the Non-Governmental Organisation known as Integrated Rural Development and Nature Conservation (IRDNC) and the Ministry of Environment and Tourism. This Non Governmental Organisation supports the Game Guards Scheme to conserve the game in the area. The conservancy is approximately 11km x 20km in size. The aim of the project is to establish accommodation for tourists managed by local people. Many wild animals are found in the area. Furthermore, some animals may be translocated from other areas for the Conservancy. (in “Working paper, Preliminary site survey – Northern Livestock Development Project report, 1996)

Currently, IRDNC is also working with the “Omuramba Beesvlakte”, also known as Omuramba South, community. (in “Working paper, Preliminary site survey – Northern Livestock Development Project report, 1996)



Chapter Four

THE ENVIRONMENT IN A LIVESTOCK PRODUCTION SYSTEM PERSPECTIVE



Section 25

Pasture

1. GRAZING AREAS IN KUNENE NORTH

Most of the region is classified as mopane (*Colospermum mopane*) savannah, with the strip of Northern Namib lying to the west. The most important perennial grass type encountered is *Stipagrostis* spp. (Bushman grass). A wide variety of *Aloes*, *Commiphoras* and succulents also occur in the region. (Paskin, 1990)

The mountains form the poorest grazing areas with the very poorest being the granite. The best grazing, which is also classified as poor, appears on the tertiary formations east of Opuwo, from Ombwarundu to Otjokoto and eastwards in the valleys between the mountains. (Page, 1976)

During winter around Otjihende the cattle rely to a large extent on the dried grass of the mountain savannah. Perennial species are now scarce but still occur on the higher and more rugged slopes. In Otjihende area, on the mountain, the main trees are *Commiphora crenato-serrata* and *Commiphora mollis*. There are bushes, herbs and grass. Some perennial grasses are encountered and only few are grazed by livestock (due to the difficulty to access the mountains) (Cornu, 1999)

In the Marienfluss valley during good rainy season a tall grass cover can be encountered. A lot of perennial species can be found, among them *Stipagrostis uniplumis*, *Stipagrostis effiensii* and *Stipagrostis hochstetterara*. Some annual species are also encountered. It is a good emergency grazing area for communities around Otjihende during the very dry season. This area is known as the open grass veld area. (Cornu, 1999)

The area around Omuramba South was previously known as the plains of the cattle (*Beesvlakte*), but today, this cattle area is dominated by small stock. These plains were once known for the climax pasture but, due to heavy overgrazing, are today known as the dust flats (*Stofvlakte*) (in "livestock marketing in the Northern Communal Areas of Namibia, 2000)

2. PERENNIAL AND ANNUAL SPECIES

2.1. PERENNIAL SPECIES

Perennial range plants have three periods each year when they are most vulnerable to grazing pressure (Malan et al, 1974):

- Firstly, at the start of the growing season when the plant is dependent upon reserves of nutrients stored in the roots. Grazing on newly sprouted leaves can prevent the plant from establishing enough photosynthesis surface to manufacture the food materials it requires, so that when stored reserves are exhausted the plant dies.
- Secondly, when the plant is developing and maturing a seed crop,
- And thirdly towards the end of the growing season when the reserves are being stored for following year's growth.

Several perennial species occur in Kunene North, such as *Stipagrostis uniplumis*, *Anthephora pubescence* and *Cenchrus ciliaris*. (in "plant identification course", 2000)

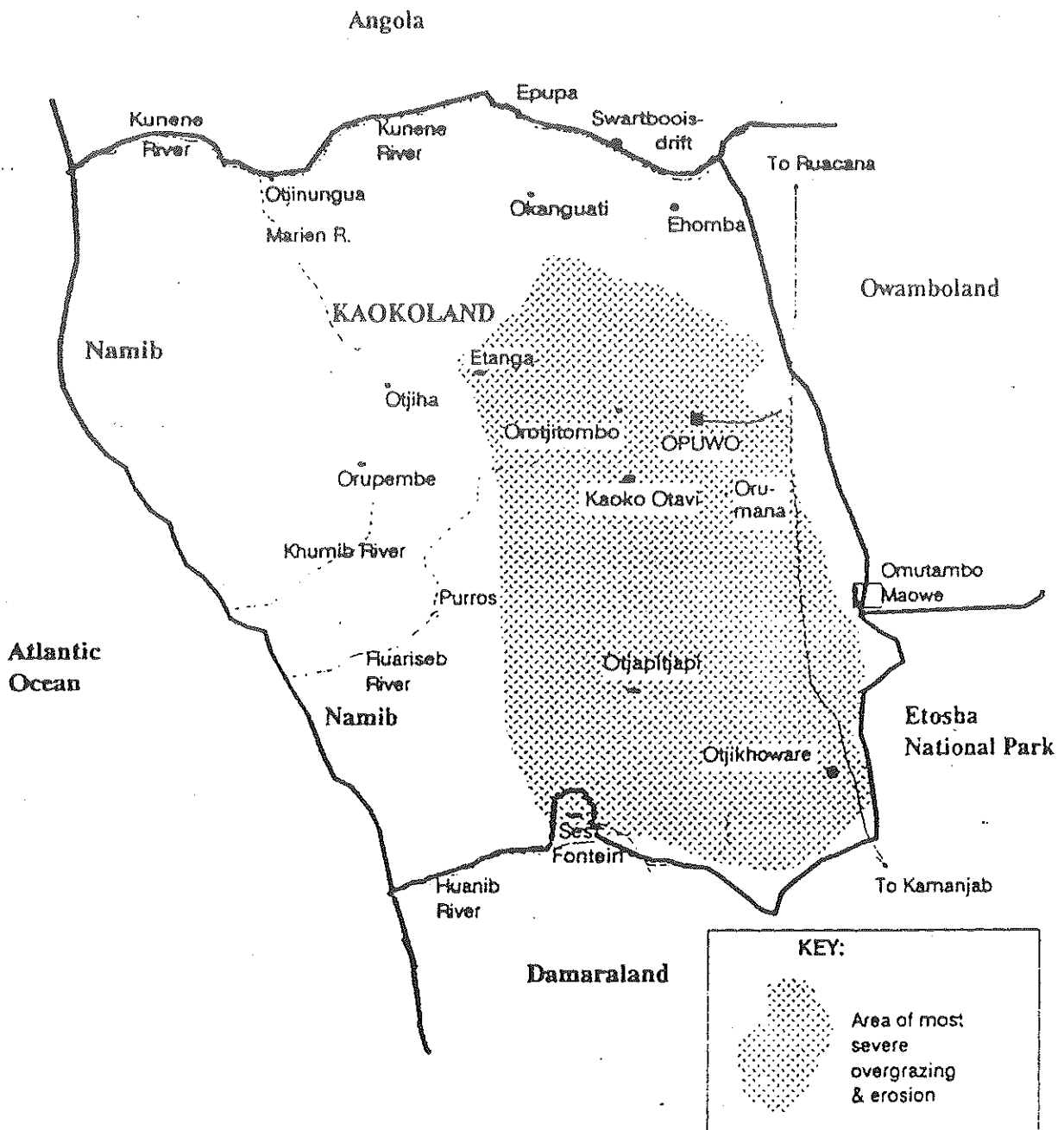
2.2. THE DECLINE IN THE PERENNIAL SPECIES

Light nomadic grazing by either wild or domestic animals have no effect on the plant population because, during the critical growing and seeding period herbivores are sparsely scattered over the whole region. Concentration in the vicinity of watering points occur only in the dry season, when the plants are dormant and consequently most resistant to intensive grazing. (Malan et al, 1974)

However, in areas with high animal density with limited seasonal movement, heavy grazing pressure is extended well into the growing season. This is intensified in years when early rains are light and scattered, a frequent occurrence in semi-arid regions. Excessively large concentration of herbivores during the dry season also result in the animals not only cropping the previous season's surplus growth or biotic interest, but also actively digging up or trampling out the whole plant, meaning the basic capital. (Malan et al, 1974)

The end result is the eradication of perennial plants and their replacement with annual species that have a very short growing season and are not affected by any amount of grazing after the seeds have matured. (Malan et al, 1974)

Etanga herd owners recognise for instance that an area can become degraded. In their estimation, this occurs because of permanent settlement and continuous grazing around such settlements. Commonly cited as the species lost in this process were the species locally known as "omurondji", "orwejo" and "ongumba" (*Stipagrostis uniplumis*), all preferred forage plants that occurred either in low sandy areas ("omurondji" and "orwejo") or on flatter areas readily accessible to livestock ("ongumba"). Herders noted that even when adjacent to settlements, stony or hilly areas tend to preserve threatened species because it is difficult for the livestock to graze these areas too closely or pull the roots of perennials out of the ground (Behnke, 1998)



Area of most ecological damage.

Source: based on author's observations, stock inspector observations; also cf. Hall-Martin, A., Walker, C. & Bothma, J. du P., 1988.

2.3. THE ANNUAL SPECIES

Today most rangeland on the highlands is dominated by annual species such as *Aristida effusa*, *Schmitia kalahariensis* and some *Eragrostis spp.* (Malan et al, 1974)

However, Etanga herders do not view circum-settlement sites and large water points as inevitably degraded. The plant communities of this area has a high annual grass component, but within limits this poses few problems since this areas are used for grazing during the rains at the only time of the year when annual grasses are preferred forage type. Later in the dry season when the annuals around the sites are depleted and in any case have disappeared with the wind, livestock are using this area only for water and walking out to more distant pastures dominated by perennials. (Behnke, 1998)

In the extremely arid pro-Namib the seed of highly specialised desert annuals may lie dormant for many years and awake after a single good shower. This result in the transformation of the valley into waving grasslands within a few weeks. (Malan et al, 1974)

3. THE THEORY OF PLANT SUCCESSION

3.1. FROM CLIMAX TO PIONEER SPECIES

Pioneer vegetation consists of hardy types, adapted to poor environmental conditions. As a rule, plants are usually annuals and drought resistant. The vegetation has got sparse cover, and the production of fodder from the veld is low. (in "Plant identification course", 2000)

The climax vegetation consists of a dense cover of strong perennial grasses that contributes tremendously towards soil fertility (reduction in soil temperature and run-off water). It brings about stability in production of fodder and as a general rule, most grasses in this category are palatable. (in "Plant identification course", 2000)

Around village settlements the ground strata is highly modified by trampling and accumulation of manure in and around livestock enclosures. This initiates a secondary plant succession which include pioneer species such as *Troubles zeyheri* and *Alternanthera pungens*. (Malan et al, 1974)

In non-permanent settlements if the village is abandoned after few months, although the initial modification on the kraal site is considerable, secondary plant succession gradually proceeds and eventually the vegetation returns to its original state. (Malan et al, 1974)

According to Dasman et al, 1973 (quoted in Malan et al, 1974) "most plants produce a surplus of vegetative growth and seed, part of which can be used by animals. However, each plant, in order to survive, must maintain a metabolic reserve, a minimum amount of leafage to permit it to store food for its own survival, or a set of seeds for its own reproduction". In other words, most plants can tolerate some degree of animal use, and their response will vary with the intensity and timing of that use. (Malan et al, 1974)

3.2. PLANTS IN KUNENE NORTH BELONGING TO THE PIONEER STAGE

Table: examples of grasses in the Kunene Region belonging to the pioneer stage

Plant species	Palatability and characteristics
<i>Antheplora schinzii</i>	Soft and palatable
<i>Aristida adensionis</i>	Sure sign of retrogression, little grazing value
<i>Aristida rhiniochloa</i>	Always on disturbed veld, very little grazing value
<i>Brachiaria poaeoides</i>	On disturbed soil, palatable
<i>Chloris virgata</i>	Often occurs after drought
<i>Dactyloctenium aegyptium</i>	Palatable
<i>Enneapogon cenchroides</i>	On disturbed veld, high yield, palatable
<i>Entoplocamia aristulata</i>	Palatable
<i>Eragrostis porosa</i>	Always on disturbed areas, palatable
<i>Pogonarthria fleckii</i>	Little grazing value, sign of overgrazing
<i>Scmidtia kalahariensis</i>	On disturbed areas, palatable used to make hay
<i>Urochloa brachyura</i>	Palatable

(Adapted from "Plant identification course", 2000)

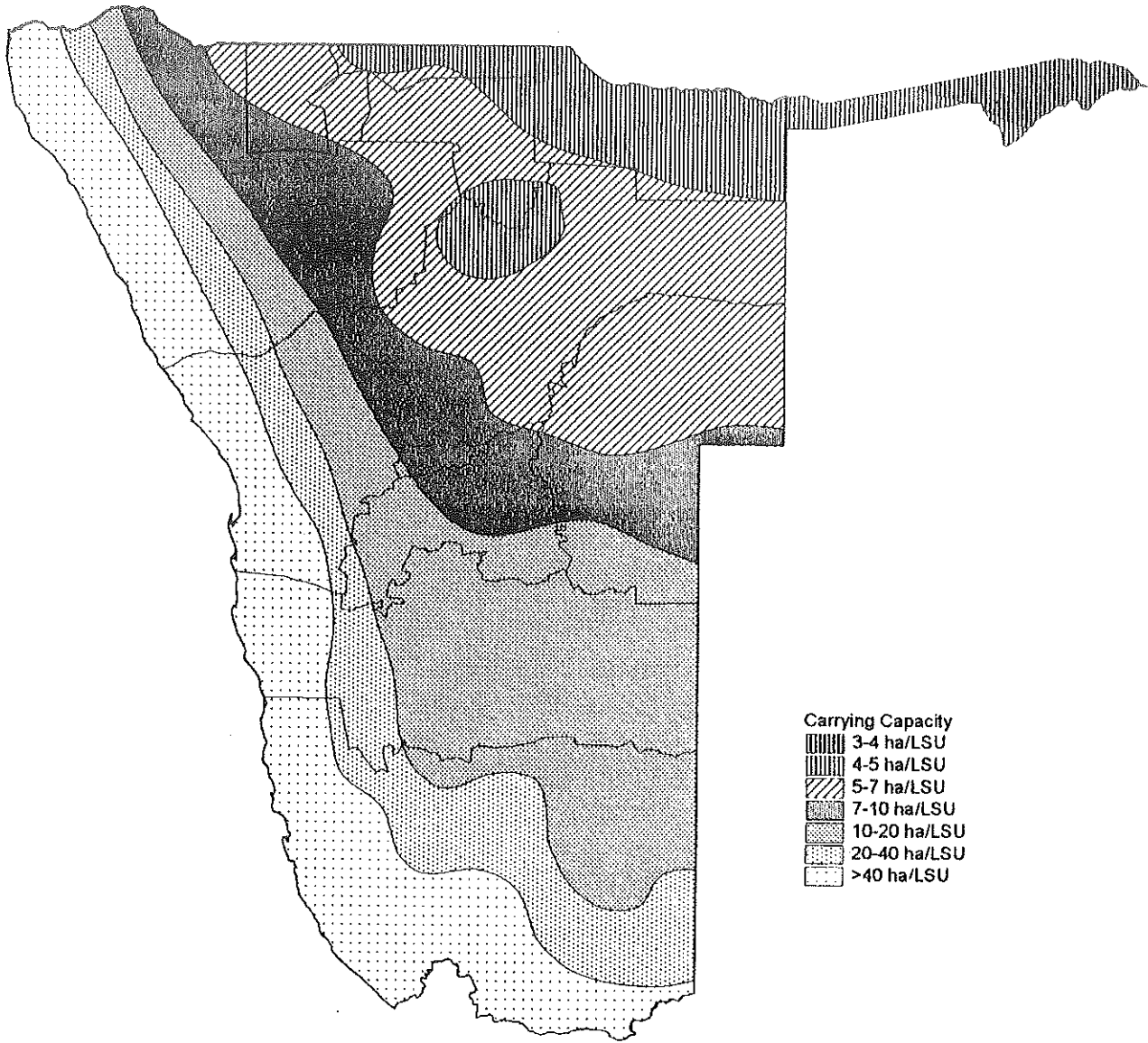
3.3. PLANTS IN KUNENE NORTH BELONGING TO THE CLIMAX STAGE

Table: examples of grasses in the Kunene Region, which can be considered "climax"

Plant species	Palatability and characteristics
<i>Antheplora pubescens</i>	Very palatable, occurs in undisturbed veld
<i>Cenchrus ciliaris</i>	Palatability questionable
<i>Cymbopogon pospisschillii</i>	Palatability questionable
<i>Dichantium papillosum</i>	Palatable
<i>Enneapogon scoparius</i>	Very palatable
<i>Eragrostis echhinochloidea</i>	Fairly palatable
<i>Eragrostis lehmanniana</i>	Palatable
<i>Eragrostis nindensis</i>	Palatable, drought resistant
<i>Eragrostis superba</i>	Fairly palatable
<i>Fingerhuthia africana</i>	Fairly palatable
<i>Heteropogon contortus</i>	Unpalatable
<i>Hyparrhenia hirta</i>	Unpalatable, used for roof thatching
<i>Panicum lanipes</i>	Palatable
<i>Stipagrostis uniplumis</i>	Palatable, widely spread
<i>Urochloa oligotricha</i>	Very palatable

(adapted from "Plant identification course", 2000)

Rainfall -Related Carrying Capacity in Communal Areas



Source of rainfall data: Louis Botha
AEZ Project, MAWRD

4. PASTORAL-ECOLOGICAL ZONES IN ETANGA

In Etanga local herders recognise two broad pastoral-ecological zones: the “Omundjandu” and the “Oukoto”/“Koukoto”. The “Oukoto” is further subdivided into “Ozongoto”, “Okaanga” and “Oviana”. (Behnke, 1998)

4.1. THE “OMUNDJANDU”

It is forested area to the north and north east of Okamanga, along the upper reaches of the Etanga drainage. It refers to the northern and eastern section of the Etanga area at the headwaters of the Etanga river system, which feed into the Hoarusib River and eventually empties in the Atlantic Ocean. It contains half of the permanent residences of Etanga population and in normal years sustains at least half of the livestock. It is the heartland of Etanga and the only part in which arable farming is practised. (Behnke, 1998)

The “Omundjandu” provides relatively abundant permanent water and high volumes of forage. The “Omundjandu” consists of four interdependent geographical features: the Etanga river, the Okamanga mountain, the “Omiramba” plains, and the feeder rivers emptying into the Etanga river. Each of these zones fulfils different agricultural and pastoral functions. (Behnke, 1998)

4.1.1. The Etanga River

It supplies the highest volume of reliable stock water in the area, from wells re-dug each season during the dry season, especially in certain portions of the sandy river bottom. For herders based in the immediate vicinity of the Etanga settlement, the river is their normal source of dry-season water. For herders whose main residence is further afield, the river is an important fallback watering point when other sources fail. However, because it is an important source of permanent stock water, grazing is not abundant around Etanga and, in a good year, many herd owners prefer to obtain the dry-season water for some of their animals from more peripheral sources where grazing pressure is lower and forage is more abundant. (Behnke, 1998).

Scattered around the base of Okamanga Mountain on the flatter ground are permanent villages and arable fields sited along the major streams feeding into the Etanga River. These riverine settlement sites provide seasonal water from hand-dug wells in the streambeds or from dams, and/or permanent water from boreholes that drew upon deeper sources of water underneath the streams. The streams valleys also provide relatively flat areas of alluvial soil suitable for small-scale arable farming, which is practised by most households in the “Omundjandu” (Behnke, 1998).

4.1.2. The Okamanga Mountain

It is mostly a very important emergency dry-season grazing resource used by livestock that are watering in the vicinity of Etanga. (Behnke, 1998)

4.1.3. The “Omiramba”

To east and north east of the Okamanga mountain, roughly between the mountain and the Etanga river, lies a triangular-shaped, sandy, tree and grass covered plain cut across by numerous small dry river beds. This area, known as the Omiramba, contains seasonally occupied cattle camps but no permanent water or village settlements. The Omiramba is the principal dry season grazing area for the herds watering in the Etanga River. (Behnke, 1998)

4.2. THE “OUKOTO”

The “Oukoto” supports small stock and fewer cattle than the Omundjandu. It receives rain later, it receives less rain but it sustains a vegetation that is more nutritious. It has small permanent water sources and less dense but higher quality pastures and browse, and is particularly good whenever rainfall is adequate. It is subdivided into three areas. (Behnke, 1998)

4.2.1. The “Okaanga”

It refers to the area on the western and southern flank of the Okamanga mountain, and extends south and west from the headwaters of the Ozongoto river drainage for the about 40 kilometres along the Ozosaraombo river system. Relative to the size of the other parts of the “Oukoto”, “Okaanga” is small. Major settlement sites in “Okaanga”, as in “Omundjandu”, occur along the larger dry riverbeds where it is possible to dam, dig or drill for water. These relatively heavily populated areas include Okazorowe and Okozombandje (diesel and windmill driven boreholes, respectively), Ondiya (technically a cattle camp area, but containing a locally important dam), and the large permanent springs at Osaata, on the extreme southern edge. (Behnke, 1998)

4.2.2. The “Ozongoto”

It is an area to the south of “Omundjandu” characterised by deeply incised canyons, along the Ozongoto drainage. Little arable agriculture is practised in the “Ozongoto”, especially in the past few years because of poor rainfall in this area. In good rainfall years some gardening can be found in the sandy river bottoms near the “Ozongoto” river confluence, also the location of important permanent wells and the settlement at Omieotuhherera. (Behnke, 1998)

4.2.3. The “Oviana”

The entire western portion of the area consists of broad plains receiving little rain. Most of the area lies outside the Etanga-Hoarusib drainage and empties either into the Kunene river or directly into the Atlantic ocean via the Khumib river. Orutanda, Otjihaa and Orupembe lie on the eastern side of “Oviana”, which extends west at least as far as Rooidrom and Omuatjinguma. (Behnke, 1998)

5. RANGELAND DEGRADATION

The main factor that has obstructed the Herero-speaking group in the management of grazing is communal land tenure. The communal system works well where there is adequate land and firm adherence to nomadism, but where a settled farming style is followed, there must be strict management of the grazing. Under the communal system, when one stockowner removes his stock in an effort to spare the pasture, another usually moves in and denudes the rangeland completely. The end result in the region is that the southern and the eastern parts of the region (where water is available) are rapidly deteriorating. (Paskin, 1990)

Overgrazing is evident in Kaokoland especially near settlement and limited water points. (Smit, 2000)

However, the concept of over-grazing has been defined by environmentalists. Livestock herders in the area may not agree with such definition. For instance, Etanga herders use each category of pasture: fresh annuals, perennial standing hay and perennial re-growth, when it is most valuable relative to other forage sources. Minimal management controls are required in the system of this sort, which direct the cattle to feed in areas where they are already inclined to do so given the relative value of alternative pastures. Annual-dominated pastures around settlement sites and water points may be theoretically 'degraded' – if degradation is defined solely in terms of changes in botanical composition, and if it can be demonstrated that human use is responsible for these changes. Etanga herd owners obtain numerous valuable benefits from these sites: water, garden sites, places to periodically congregate, residence for elderly people, forage in the wet season, etc. Etanga herders do not spontaneously cite changes in species composition and rangeland degradation as problems in the perennial pastures reserved for dry season pasture. (Behnke, 1998)

Major environmental factors influencing plant growth and species distribution (Behnke, 1998):

- Water (precipitation)
- Soil primary depth and physical properties
- Frost
- Fire
- Animal grazing

6. GRASSES AS INDICATOR OF SOIL TYPES

Table: examples of grasses as indicators of soil types

Grass species	Associated soil type
<i>Andropogon gayanus</i>	Appear on all soil types
<i>Anthehora pubescens</i>	Appear on most soil types
<i>Aristida adensionis</i>	all soil types except sandy soil
<i>Aristida meridionalis</i>	Course sand and rocky soils
<i>Cenchrus ciliaris</i>	Appear on most soil types
<i>Chloris virgata</i>	Generally on heavier soil types

Grass species	Associated soil type
<i>Cynodon dactylon</i>	Preference to moist areas
<i>Enneapogon cenchroides</i>	Prefer heavy soils
<i>Enneapogon scoparius</i>	Lime soils
<i>Entoplocamia aristulata</i>	Rocky soils
<i>Eragrostis echinochloidea</i>	Preference to limy soils
<i>Eragrostis nindensis</i>	Bare weathered rocky soils
<i>Fingerhuthia africana</i>	Limy rocky soils
<i>Monolytrum leuderitzianum</i>	Lime, rocky soil
<i>Panicum lanipes</i>	Appear on most soil types
<i>Schmitdia kalahariensis</i>	Sand, loam
<i>Stipagrostis hirtigluma</i>	Appear on most soil types
<i>Stipagrostis unniplumis</i>	Widely spread

(adapted from "Plant identification course", 2000)

Section 26

Movement of livestock and management of the cattle posts

Appropriate range management practices in Kunene North must take account of the variable patterns and recognise the importance of livestock mobility and the dangers of sedentary grazing. (in "Kunene region, appraisal report by regional co-ordinator", 1996)

Adult animals are taken out after milking in the mornings to graze. The very young calves (up to about 3-4 months old) remain behind, usually in a very small kraal adjoining the main kraal. The cows are never milked to the extent that the calves suffer deprivation. Milking is carefully controlled. In the late afternoon, the cattle return, are watered, and brought into the kraal to sleep. (Paskin, 1990) This daily movement of livestock is important but is not the purpose of this section. This section will focus on the yearly management of herds and the strategies employed to survive the dry season.

1. THE RISK MINIMISING STRATEGIES

1.1. MOBILITY OF THE HERDS

The Himba pastoralism depends on the mobility of the herds, which vary between households (wealth, number of herds, number of old or immobile persons etc). The movement patterns of wealthier household are usually more complex than those of households with smaller numbers of animals. After some weeks of heavy rain (usually in January or February) the entire household herd comes together. In an average year they must stay together some three to four months before to start moving again. (Bollig, 1996)

The largely nomadic lifestyle of the Himba makes for an excellent rotational grazing system. Under favourable conditions, the perennial Bushman grass (*Stipagrostis spp.*) is grazed up to one-half to two-thirds of the way down the stalk, and then the animals are taken elsewhere. Once the grazing in the area is finished, the stockowners simply pack up their belongings and move somewhere else. The result of this is that grazing in the "Himba areas" is somewhat better than elsewhere in the region. (Despite the usually lower rainfall in these areas), and the soil erosion is much less obvious. The effect of a lesser abundance of water contributing to a lower population is clearly seen. (Paskin, 1990)

1.2. CATTLE AND SMALL STOCK HERDS ARE MANAGED SEPARATELY

Cattle are more important and “as the cattle moves out the goats move in” (Behnke, 1998)

Cattle and small stock do not run together. The very young small stock are kept at the kraal during the day, often in a hut reserved for them. Small stock don't feed on grass, but browse bushes. However, walking around they destroy pastures. The best pastures are therefore left for cattle. Goats are only allowed to use them once the cattle are moved away. (Paskin, 1990; in “analysis of the farming systems in Ohandungu”, 2000)

1.3. SPLITTING UP OF THE CATTLE HERDS

The livestock owner never kept all the cattle he possesses in one place. Diseases, raids by jealous neighbours and lack of rain had taught him that it was better to establish outposts, even to divide his stock among less well-to-do relatives for use and custody, so that, if some cattle died, the rest survived. This arrangement had been, from older times, the usual way of preservation of the herd. (Malan, 1974)

When the herds are moved to outlying cattle posts in the extended areas, they are often split up in two or three smaller herds that will each go to different places. This is a form of insurance; if a disaster should strike in one place only a part of their herd may be wiped out. (Hvidsten et al, 1997) Farmers with large herds will use a “risk minimising strategy” and will not keep all their livestock at the same place. They will give part of the herd to some relatives. The ones looking after the animals will have right to use the milk. However the animals and its calves still belong to the owner. (Cornu, 1999)

A household may own a substantial amount of herd of livestock, but different people at different places look after this herd. In general a single cattle herd will not easily exceed 70 head, meaning that if somebody owns 200 cattle, he will herd 70 and two different herds of about 65 head will be herded by a young man. It is often found that the composition of smaller herds consists of only calves and oxen or of breeding animals. (in “Livestock marketing in the Northern Communal Areas of Namibia”, 2000)

1.4. CASE OF THE SMALL STOCKS

The small stock herds are much larger and do not necessarily split into smaller herds. Especially in the far north western areas the flocks can be very large. Herds of both goats and sheep are seen grazing up to 20km away from water points. (in “Livestock marketing in the northern communal areas”, 2000)

Small stock can use a broader spectrum of vegetation (whereas sheep are dependent on grazing). It would be justified to assume that small stock need about one sixth of the pasture cattle need, that means that per animal about 2,9 ha will be needed. (Bollig, 1996)

1.5. THE USE OF CATTLE POSTS

The management of cattle posts or emergency grazing areas is complex. It is linked to the species and what it feeds on, but also on the sex, age and status (holy cattle versus other animals). (Behnke, 1998) Transhumance

Marienfluss Valley



F. Cornu

is therefore a comprehensive strategy as the cattle are moved to different areas in response to seasonal changes in water and feed availability. (Bennison et al, 1998)

Cattle posts or emergency grazing areas are places where most animals are sent when grazing resources become poor around the main settlement. However a cattle camp (or post) for oxen, tollies and non-lactating stock will be established long before grazing resources get depleted around the homesteads. Cattle camps are much more mobile than the main household. If a household has enough herders they may decide at an early stage to split off the different grazing requirements and different tolerance to stress. Both camps will be fitted with some lactating cows in order to produce food for the herders. (M.Bollig, 1996) Cattle posts which are managed by young men are much more mobile than the main households. (Cornu, 1999)

The richer farmers have got dependent cattle posts (managed by family members), independent cattle posts (managed by herd boys) and small stock camps. Less rich farmers have got only dependent cattle posts. (Bollig, 1996) In case of large cattle herds, they are often divided into small groups and sent out to different cattle posts because of grazing and for protection against the outbreak of epidemics among cattle. (Page, 1976)

When animals are to move to emergency grazing areas, which usually happens during the dry season, two situations seem to appear (in "analysis of the farming systems in Otuni", 2000):

- One or few family members are following the animals to the emergency grazing areas. The rest of the family (usually the women, old persons and very young children) remains at the main settlement.
- Farmers remain at the main settlement and employ herd boys to look after the animals in the emergency grazing areas.

When the people move with the herds to the cattle posts only the elderly are left at home, often together with a half-grown child or two for help. A few goats and a cow or two stay as well to provide milk. (Hvidsten et al, 1997)

1.6. CONTROL OF STOCK NUMBERS

Generalisations on carrying capacities and overall livestock numbers for the region indicate overstocking but are not very helpful in assessing the situation. This is because the carrying capacity varies enormously across the region and from year to year, according to the rainfall (in "Kunene region, appraisal report by regional co-ordinator", 1996)

The primary requirement of grazing management is considered to be control of stock numbers. However, there is no incentive to control numbers in the communal areas (free water, free grazing and subsidised veterinary and marketing facilities). (in "Kunene region, appraisal report by regional co-ordinator", 1996)

1.7. THE EXISTENCE OF RESTRICTED GRAZING AREAS

In Epupa area there are two restricted grazing areas. In normal years herders are banned from using these good pastures in the rainy season and the early dry season in order to save them for later. (Bollig, 1996)

2. THE ROLE OF THE COMMUNITY

2.1. THE GRAZING COMMITTEES

Many communities in Kunene North have grazing committees responsible for ensuring good grazing management. Traditional leaders continue to play an important role in local rangeland management. Concepts of rotational grazing, differential grazing and browse management and the principle of defining certain rangeland areas for use by specific groups of stock owners at different times of the year appear to be well known. (in "Kunene region, appraisal report by regional co-ordinator", 1996)

For instance, no camp is allowed to change its place too frequently. Only if one place is exploited should a herder move on. Herders who move too frequently are criticised severely. Their herds do not only eat a lot of grass in different places, they also destroy a lot of grazing by trampling. This makes even more sense when considering the fact that most of the grazing in the region consists of annual grasses. These are much more damaged by trampling than the sturdier perennial grasses. The grazing committee supervises the obedience to this regulation. Frequently fines of one head of small stock, in case of repeated violation of grazing laws, even of one ox, are accepted. (Bollig, 1996)

In case of conflict the Headman or Senior Headman of the area will be approached. In Etanga, because of the size and regional importance of the area, the senior headman and his advisors cannot manage all resources, including the Okamaanga Mountain and the Omiramba. Therefore, the senior men in the nearby village settlement associated with these areas control smaller dry season grazing areas. (Behnke, 1998)

2.2. THE ABSENCE OF CENTRAL AUTHORITY

The process of adjusting forage supply and demand is not co-ordinate by any central authority. Each household makes its own decisions based on its assessment of relative costs and benefits of different locations, its ability to recognise grazing rights with a desirable 'host' household or community. Communities control key resources rather than demarcate territories. These are not "closed" or tightly bounded resource management systems, people and stock routinely move outside their home areas in response to localised variations in rainfall, but these movements must be negotiated with other local resource managers. In the Etanga area there are boundaries between different traditional jurisdictions and between communities, but all these boundaries are permeable. (Behnke, 1998)

3. MANAGEMENT STRATEGY IN ETANGA

3.1. OBJECTIVES OF THE STRATEGY

The objective of livestock keepers in Etanga is to sustain output despite variations in rainfall in a landscape that in itself is variable. Livestock owners in Etanga area practice an indigenous form of range management based on the seasonal use of, resting and rotation of grazing areas, as far as possible adjusting stocking pressure to annual rainfall and forage production. (Behnke, 1998)

3.2. SEASONAL MOVEMENT OF THE HERDS

At the beginning of the rainy season most herds and flocks return at night to the kraals in the permanent village settlement and stay ideally from January to March to allow dry season pastures to recover. Herds in this season drink from pools or ponds in depressions and riverbeds. The cycle begins in the wet season with most people and their stock in their 'home' settlements, where both water and pasture are readily available at this time. These settlements are located either near permanent (stage 1) or near large and reliable temporary water points (stage 2). This concentration of people and animals at the height of the rains is brief. (Behnke, 1998)

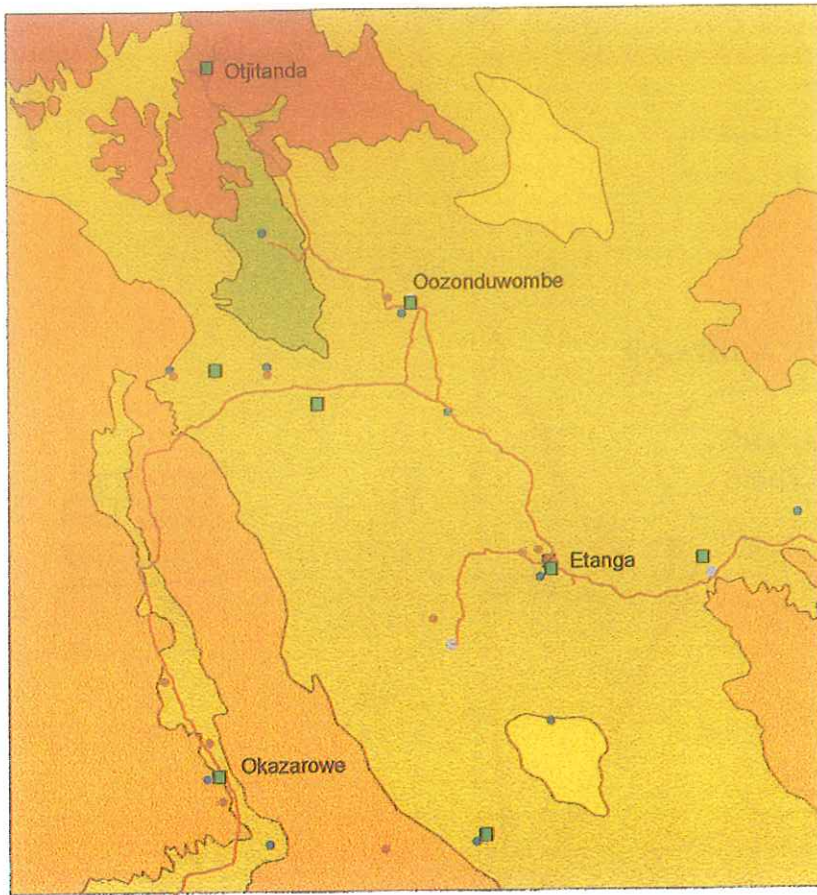
As soon as the rains have recharged temporary water points, most of the herds move off to make use of this water sources. Reliance on temporary water sources gives the herds access to peripheral grazing areas (stage3) which will become inaccessible latter in the dry season, and relieves grazing pressure around permanent water. From April to June herds are watered at temporary but more substantial places of water (dams, small wells located in the beds of medium sized rivers). According to the distance cattle will return nightly to the permanent village or shift to the satellite cattle camp ("ohambo"). (Behnke, 1998)

As the dry season progresses, however, herds are forced to fall back on permanent water points when temporary sources run dry (stage 4). From July to September herds go back to the Etanga River. Animals are watered every second, third, or fourth day, depending on the distance between grazing areas and water. At this time cattle are usually managed from the temporary cattle camps. In this season there are good no pastures left around the heavily used permanent water points, and as the dry season progresses animals must walk increasingly long distances between the permanent water points and the peripheral pasture areas (stage 5 and 6). (Behnke, 1998)

As the dry season progresses, herders may move from their cattle camps further and further out from the Etanga River in the direction of the dry-season pasture areas. This should be a co-ordinated movement so that individual camps do not push ahead of their fellows and have all the remaining pasture for themselves. The cattle camps are routinely located between the pastures and water sources. Stock walks one day in for water and on the subsequent days out for grazing, returning each night to the camp, in this way the animals do not trample the fresh pastures on the their way to the water. Following this pattern, as the dry season progresses herders push their cattle camps and their grazing areas further and further from the Etanga river and into the Omiramba plains, typically finishing the dry season at the foot of the mountain. (Behnke, 1998)

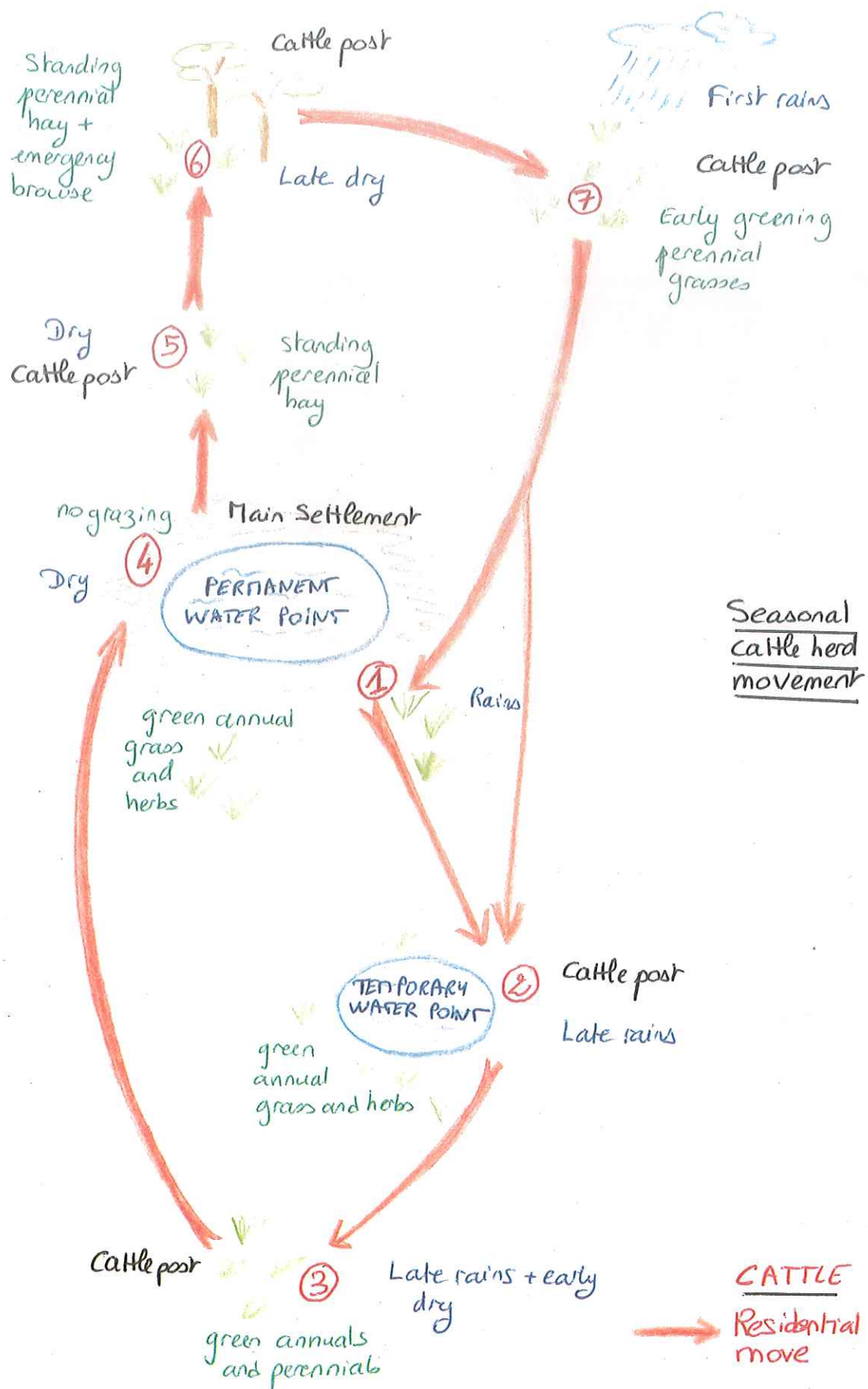
In poor years the cattle push up to Okamanga Mountain itself, in hope that this last emergency grazing reserve is not depleted and that animals will not die in large numbers before the rains come. Alternatively, in the dry

Etanga



- Villages.shp
- Tracks.shp
- Dams.shp
- Crushpen.shp
- Catpost.shp
- Borehole.shp
- Etanga.shp
 - *Acacia ataxacantha*-*Commiphora glaucescens* Wooded Shrubland
 - *Acacia erioloba*-*Acacia fleckii* Scrubbed Woodland
 - *Colophospermum mopane* Shrubland
 - *Commiphora glaucescens*-*Catophractes alexandrii* Wooded Shrubland?





season cattle may not be herded or returned to kraals at night. Herders simply position themselves at the wells in the river and supply water for those animals that present themselves. (Behnke, 1998)

When the early rains comes (between October and December) herds and cattle camps relocate opportunistically, depending on the distribution of early rains. Until this happens, however, pasture continues to deteriorate and water becomes increasingly scarce as the dry season wears on. This is the time of human hardship and livestock mortality. This pattern persists until the first strong rains of the new wet season, when the herds shift to far-flung pasture areas where the rain has been strong enough to promote early grass re-growth and to provide ephemeral sources of water. (Behnke, 1998)

Later in the wet season when rainfall has become more general and the grazing around permanent settlements has recovered, the herds will return to their 'home' areas, and the cycle begins again. When the real rainy season comes, the Okamaanga mountain, the "Omiramba" plain, and other smaller, less notable dry-season grazing areas are vacated and left to recover. (Behnke, 1998)

3.3. MAXIMISING THE USE OF RESOURCES

Table: resource use in Etanga by season

Season in Otjiherero and local description	Approximate duration	Stock watering locations	Grazing locations
"Okurooro" rainy season, good pasture and abundant milk, stage 1 or 2 in the figure.	January-March	Ephemeral sources, pools, pans, standing water	Around permanent settlements
"Okupepera" transitional cold season between rains and the dry season, trees change colour and the grass dries out, stages 2 and 3 in the figure.	April-June	Temporary sources, generally man-made or improved-dams, small hand-dug wells in smaller rivers	Vicinity of temporary water sources, starting near the water and working outwards
"Okuni" hot dry season in which the trees have no leaves and there is little milk, stages 4 and 5 in the figure.	July-September	Permanent sources, boreholes, large hand dug wells in the major rivers, large springs	Start near major water point and work outwards as season progresses
"Oruteni" transitional from the dry season to the rains, the mopane trees get new leaves, stages 6 and 7 in the figure.	October-December	Permanent dry season until significant rains, ephemeral standing water after the rains	As above until the rains break, then shift to grazing areas where early rains are strongest

(Behnke, 1997)

Livestock owners in Etanga areas practice an indigenous form of range management based on the seasonal use, resting and rotational grazing areas, as far as possible adjusting stocking pressure to annual rainfall and forage production. Grazing patterns are finely tuned to local environmental conditions and it is difficult to foresee how the current grazing management can be technically improved. (Behnke, 1998)

Hand-dug wells in an ephemeral river in the Otjitanda area.



F. Cornu

Florent CORNU

In "A propos de l'escape, des lieux, du territoire, chez les pasteurs nomades Himba de Namibie, a l'exemple d'Otjihende"

4. MANAGEMENT STRATEGY IN OHANDUNGU

4.1. A DUAL SYSTEM

In Ohandungu as well the strategy rely on the management of cattle posts. During the wet season, cattle go everywhere and roam freely, without herders. Certain areas however are saved for the dry season and consist of basically 20 cattle posts. (in “analysis of the farming systems in Ohandungu”, 2000)

The whole community decides which areas may be grazed and when. In good rainy seasons the people will only move animals during September, but if rains were poor, animals might be moved as early as February. Lactating cows are usually moved during July by the young people and back to the homestead after the onset of the rain. All other groups of cattle (dry cows, heifers, oxen etc.) may be left seeking grazing by themselves all year round. (in “analysis of the farming systems in Ohandungu”, 2000)

The farmers are using different cattle posts depending on the site where they reside within the village. If a farmer wants to move his/her livestock to a cattle post occupied by another farmer he/she have to ask permission to the other farmer. If some farmers move their animals too early in the season, they are called back to the community by the traditional authorities. Farmers only start moving when all grass in the community is gone. Farmers will move from one cattle post to another only if the grazing is becoming scarce. (in “analysis of the farming system in Ohandungu”, 2000)

4.2. THE CATTLE POSTS USED BY THE OHANDUNGU COMMUNITY

The cattle posts used by Ohandungu community are Orombambi, Ombazu, Otjovihe, Omungunda, Otjongoro, Omiruru, Oromurembue, Okakoverua, Orondumbu, Okozongoro, Oromuzu, Okomivapu, Otjomboyo, Okondororue, Okambarakau, Oromaihi, Ouanatjatjimburu, Onyerundu, Ouongungo, Okozondjiwo ine and Otjikuzu. (in “analysis of the farming system in Ohandungu”, 2000)

4.3. THE CASE OF OKOZONDJJIWO INE AND OTJIKUZU CATTLE POSTS

These two cattle posts are particular in the sense that they are considered by the inhabitants of Ohandungu as main lick source for livestock (Otjikuzu) and lick source for livestock (Okozondjiwo ine). Cattle are moved for three weeks for licking rocks in those specific cattle posts during April, while the grass is still green. The purpose is to prevent botulism. (in “Analysis of the farming system in Ohandungu”, 2000)

5. MANAGEMENT STRATEGY IN OUOZONDUUOMBE

During extreme good years farmers in Ouozonduwombe would stay the whole year at their main settlement. However, this never happens. When water or more commonly grazing is becoming poor then they move and stay at the cattle posts. As soon as the rain is back farmers move back to the main settlement. (in “use of PRA tools in Ouozonduuombe”, 2000)

In extreme poor years the grazing at the cattle posts is no enough and farmers have to move further, up to the Marienfluss valley. Thus transhumance is more complicated as they are moving through cattle posts belonging to other communities. However, this is the only option left and the only way for the cattle to survive the drought. (in “use of PRA tools in Ouozonduuombe”, 2000)

6. MANAGEMENT STRATEGY IN PURROS

The sweet permanent spring at Purros is central to the community, both for watering their livestock and for irrigation of vegetable gardens. Generally, the herding strategy is to bring in stock in the late dry season when all other surface water has dried up. Most of the stock apart from a few calves, milk cows, and some small stock, is deliberately kept away from Purros when there is water and pasture elsewhere so as to conserve stock feed around this permanent water. (Jacobsohn, 1998)

7. MANAGEMENT OF SMALL STOCKS

Usually small stocks are free-roaming and managed separately from cattle. However, some authors report that in July or August, male goats and sheep are split from the household and moved to small stock satellite camp (usually for male small stock). Under certain circumstances, the small stock herds join the cattle camps, usually once the cattle are moved further away. During the driest parts of the year smaller numbers of livestock are constantly shifted from the main household to the various livestock camps and vice versa. The intention behind moving frequently is to ensure a sufficient fodder supply for small goats near the household most of the year. (Bollig, 1996)

Water is unevenly distributed and so, therefore, is the intensity and timing of pasture use. There is resting of grazing resources in this system, but there is no systematic rotation of the resting and use periods through the seasonal calendar. Some pastures are heavily grazed year after year while other pastures are lightly used or used only for short periods of time. The result is a grazed landscape that is not used like a commercial ranch. (Behnke, 1998)

Section 27

Nomadism or not?

1. DEFINITIONS

1.1. PASTORALISM AND AGRO-PASTORALISM

Pastoralists can be defined as those who primarily derive their living from the management of livestock (sheep, goats, cattle and camels) on rangelands. Pastoralists may be sedentary, nomadic or semi-nomadic. (Prior, 1994)

Rangelands are those areas where limitations such as climate (rainfall and temperature) or topography restrict the use of land to extensive grazing of natural pastures, rather than cultivated pastures or fodder crops. (Prior, 1994)

Agro-pastoralists can be described as those who engage in both pastoralism and agriculture. (adapted from Prior, 1994)

1.2. NOMADISM, SEMI-NOMADISM AND SEDENTARISM

Nomadic can be defined as

- Those who are moving with their animals and transportable homes over irregular routes, seeking pasture and water for their animals almost continuously. (Prior, 1994)
- Those who are moving continuously; farmers moving as soon as the pasture is not enough for the cattle (translated from A. Bourgeot, 1995; quoted in Cornu, 1999).

Semi-nomadic can be defined as:

- Those who are moving with their animals over more or less regular routes, settling for part of the year in a permanent home area. (Prior, 1994)
- Those who are moving according to a series of discontinuous movement, farmers staying at each post possibly several months. (translated from A. Bourgeot, 1995; quoted in Cornu, 1999)

- Those who perform an incomplete form of nomadism. Farmers move only to specific places, generally around the area of crop production or around the town or village (translated from F. Piguet, 1998; quoted in Cornu, 1999).
- Those who combine a crop production system that is most of the time unpredictable with a livestock production system (translated from Dictionnaire des people, 1998; quoted in Cornu, 1999).

Sedentary pastoralists can be described as those who are more or less permanently settled with their animals within a defined area. (Prior, 1994)

2. THE SITUATION IN KUNENE NORTH

2.1. THE NOMADISM SYSTEM AT THE BEGINNING OF THE CENTURY

Historically, severe limitations on the availability of water had restricted the numbers of animals and people in the region. Most of the springs and wells could only provide for a very limited population, and so the burden on the land was kept low. The pans, and also many wells, dried up in the winter months, forcing the people to take their flock and herds elsewhere in the dry season. Large tracts of the region, especially the eastern parts, were available for grazing only in the summer. (Paskin, 1990)

Population in Kunene North were basically pastoral and had a cattle complex with a remarkably extensive descriptive terminology. The practice of hoe culture, hunting and gathering could be regarded as secondary economic activities, which were culturally much less significant than cattle rising. (Malan, 1974)

2.2. THE SEDENTARISATION OF THE POPULATIONS

2.2.1. The trend observed in the 1970s

Around most of the permanent waterholes and springs the people have, however, developed a more sedentary pattern of settlement, and in these cases changing climatic and grazing conditions are met by moving stock from one cattle post to another. Such posts are run by young men, often leading to a form of neo-local residence of married sons of a kraal head. (Malan, 1974)

Modern technology changed the situation. Diesel pumps on high-yielding boreholes supplied virtually unlimited year-round water that could support large communities of people and animals, and discouraged the practice of nomadism. Adding to this was the progressive westernisation of the Herero group, leading them to a more sedentary lifestyle. They settled mainly in areas served by boreholes, and so a combination of these two factors (cultural evolution and borehole water) has led to sedentarisation of the populations in Kunene North (adapted from Paskin, 1990)

2.2.2. The Herero group

The Herero tend to remain settled at one place as long as possible, and large settlements are seen in the south of the region in places such as Otjokavare, Okonjota, Orumana and Kaoko-Otavi. The kraal layout is essentially the same as that of a Himba kraal in the case of a Herero pastoralist, although this structure is naturally beginning to disappear in the larger settlements. The livestock is not moved elsewhere until the grazing is exhausted, and even then, the common usage is for the younger members of the kraal to take the animals away until the next rains, while the older people remain behind with perhaps a few cows and some small stock (to provide milk and meat when needed). (Paskin, 1990)

In order to utilise seasonal grazing in areas where water is only available during the summer months, the household is either entirely moved to the new pastures or the main village remains occupied while only the cattle posts are moved. The Herero prefers the latter method because they erect more durable homes, and consequently try to avoid evacuating for any length of time. (“in Namibia: the demographic background”, undated)

2.2.3. The OvaHimba group

In Kunene the prevailing subsistence economy is based primarily on the semi-nomadic pastoralism. (Paskin, 1990)

According to some authors, the OvaHimba people still adhere to a largely nomadic way of life. They tend to live near temporary water sources (pans, dams, the weaker water pits) during the wet season, and then migrate to the permanent water points (springs, the Kunene River) during the dry winter months. Their kraals reflect this lifestyle, as everything is “makeshift”. The huts are small and conical, constructed of mopane poles and daubed with dung. The fence bordering the kraal as well as the livestock kraal in the centre of the main kraal are made of closely arranged poles cut from bushes and small trees. Having left a settlement, the nomadic herders will not always return there, but an apparently deserted kraal with poles placed across the kraal openings and hut entrance, signifies that the previous inhabitants intend to return. Such a kraal is best left well alone. A few more permanent settlements are seen, for example, at Etanga and Okangwati. (Malan et al, 1974; Paskin, 1990; in “Livestock Marketing in the Northern Communal Areas of Namibia” 2000)

However, special mobility is function of water point and pasture. Farmers try to reduce the distance between those two elements. Most of time cattle posts are close to pasture, not too far from a water point or at equal distance from two water points. A water point can be full and attractive one year and empty the following one. Therefore farmers will not always move to the same cattle post or towards the same water points. Spatial mobility does not follow long established cycles but rather consists of opportunistic tracking strategies (Bollig, 1996). Himba pastoralism depends on the mobility of their herds, although the patterns of mobility vary considerably between households (wealth, number of herds, number of old or not moveable persons). (Cornu, 1999)

Other authors report that OvaHimba are not nomadic. The OvaHimba living in Ouozondowombe, Etanga, Omuhonga and other communities definitely have got a main settlement from which they move when grazing is becoming scarce. (in “Use of PRA tools in Ouozondowombe”, 2000; “analysis of the farming systems in Ohandungu”, 2000)

3. CONCLUSION

None of the authors ever described the Herero-speaking groups as agro-pastoralists, despite the fact that most households have got one to several gardens. All authors describe the Herero-speaking groups as pastoralists.

It seems unlikely that nowadays any of the farmers practice real nomadism, as all have got a main settlement where they spend a more or less long period of the year with their family. The only exception might be with the hunter and gatherer group (or Tjimba-tjimba), but further research has to be carried out. (personal data, Talavera)

When farmers are going with their animals to the emergency grazing areas, going away from the main settlement, they can be qualified as semi-nomadic. (in “analysis of the farming systems in Otuari”, 2000; in “analysis of the farming systems in Ohandungu”, 2000)

When farmers are not going with their animals to the emergency grazing areas but remain in the main settlement, they can be qualified as sedentary. In this case they employ herd boys to go with the animals to the emergency grazing areas. (in “analysis of the farming systems in Otuari”, 2000; in “analysis of the farming systems in Ohandungu”, 2000)

Both systems seem to co-exist in Kunene North. (in “analysis of the farming systems in Otuari”, 2000; in “analysis of the farming systems in Ohandungu”, 2000)

Section 28

Water resources, use and development

Water availability has, to a very large extent, determined land use patterns in the region. It is also the resource over which competition is most fierce. (in “Kunene integrated regional land use plan”, 1998)

During a survey carried out in Kunene North in 1999, the use of water points has been assessed (Hashoongo et al, 1999):

- Use for watering stock only: 40%
- Use for human consumption only: 8%
- Use for both Human and livestock consumption: 52%

1. SURFACE WATER

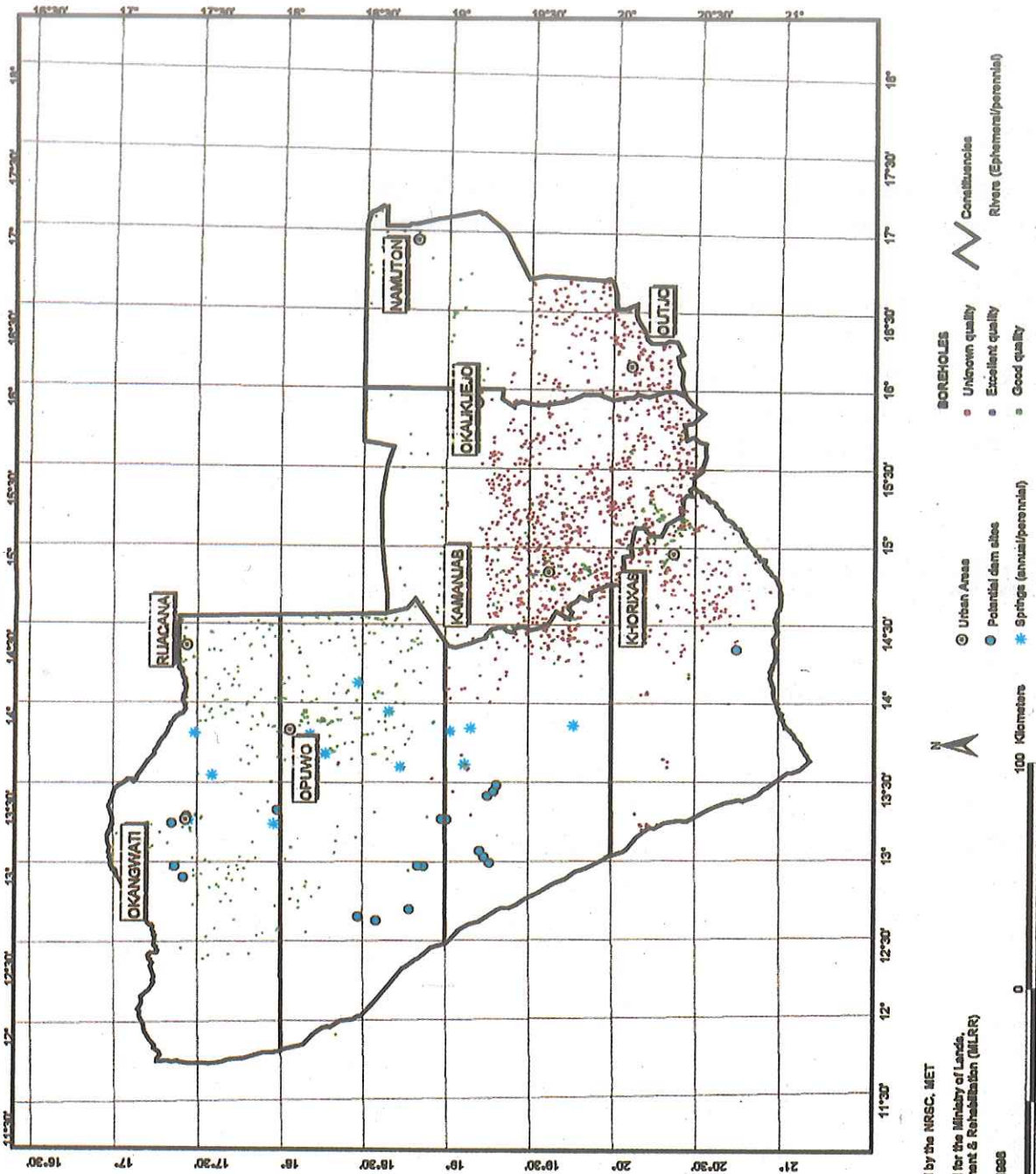
1.1. RIVERS AND POOLS

The region receives very low rainfall and therefore surface water does not assume great significance over most of the season. Seasonal pools at deeper sections of rivers and streams store some water after flash floods. Due to the high evaporation experienced in the region, these pools dry up after a couple of days or weeks. The quantity of water in these pools and the length of time it is available makes this water source insignificant for development such as irrigated gardens. It is however a valuable source of water for stock and wildlife and determines their movement in the region. (in “Kunene integrated regional land use plan”, 1998)

Although surface flow in rivers and streams disappears very quickly, sub-surface flow is known to continue for some time after floods. The amount of water that flows, as surface or sub-surface flow, is function of the size of the catchment, the amount of rainfall received and whether or not there are any impoundment in the form of dams or weirs upstream. (in “Kunene integrated regional land use plan”, 1998)

The Himba people living along the Kunene River draw their water directly from the river. Those living further away use natural springs or dig for water in the larger dry riverbeds. Many ephemeral rivers drain the Regions Mountains, but because of the low rainfall they do not flow regularly. (in “more about water in Namibia, part II of a resource package to develop awareness of water”, 1994)

KUNENE REGION WATER RESOURCES



Produced by the NRSC, MET
 Produced for the Ministry of Lands,
 Resettlement & Rehabilitation (MLRR)
 October 1998
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In "Kunene integrated Regional Land Use Plan, 1998"
 Ministry of Lands, Resettlement and Rehabilitation

1.2. DAMS AND EARTH DAMS

The construction of conventional dams is viewed as a threat to the down-stream environment because of reduced flow. This argument and many others are being advanced against the proposed Epupa H.E.P scheme on the Kunene River. Upstream impoundment on the Kunene River provide water for domestic use and irrigation throughout most of the northern regions. (in "Kunene integrated regional land use plan", 1998)

A possible use for the Kunene river in Namibia is being investigated at present: a dam at Epupa Falls could supply more hydro-electric for Namibia, possibly making it self- sufficient in electricity in future. However, before plans can go ahead, careful studies must be done to understand the possible effects of such a structure on the environment. Problems include:

- Disrupting the flow of the river downstream of the dam, affecting plant life and animal life in the river;
- Destruction of the environment caused by building the dam wall and new town for the many people needed to build the dam;
- Increasing tourism, thereby increasing pressure on the sensitive arid environment
- Introduction of new health problems such as malaria and bilharzias in the shallow areas of the dam;
- Flooding 75 kilometers of river including many Himba traditional grazing lands, settlements and graves. The flood plain vegetation that now supports the Himba herds will not regenerate higher up around the dam edges.

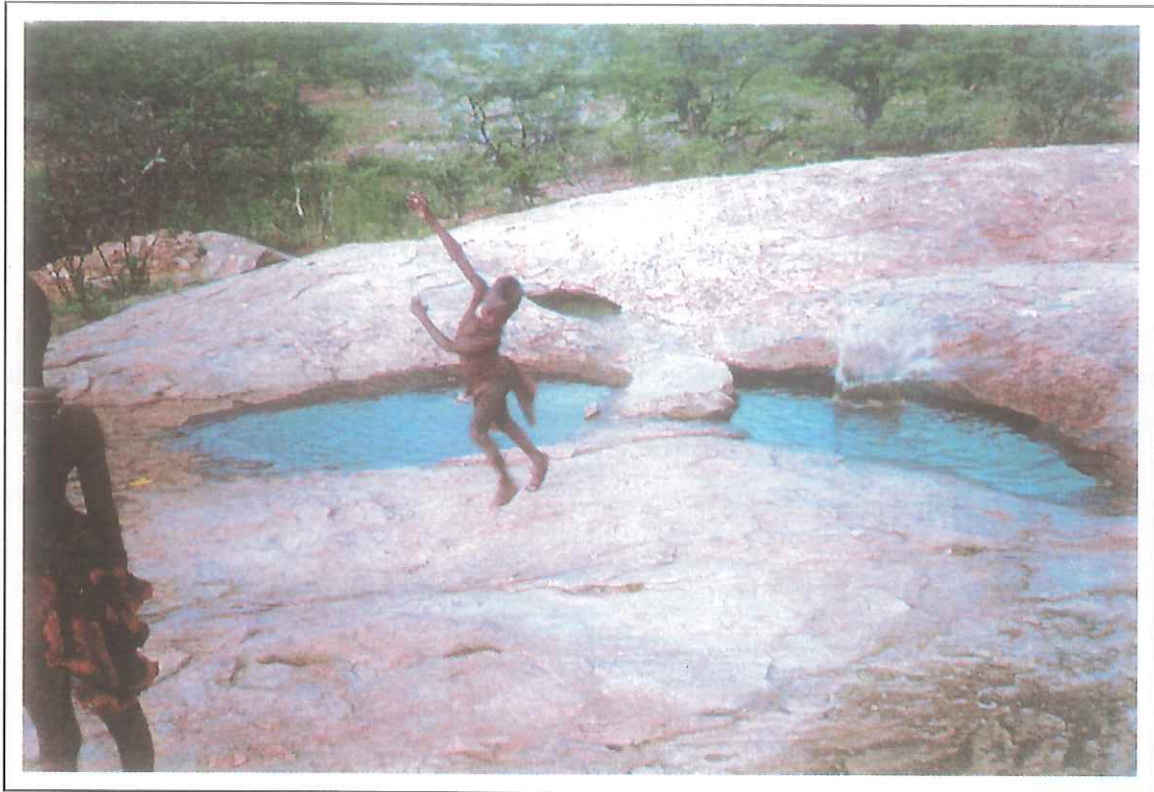
The main advantage would be to provide energy to Namibia, which could contribute to future economic development. But the question is, with careful management can this river serve the immediate and long-term needs of the people living nearby and those in the rest of Namibia? (in "More about water in Namibia-Part II of a resource package to develop awareness of water", 1994)

1.3. SPRINGS

Springs are considered part of the surface water sources. They are found mainly in the central part of the Kunene Region. Discharges from springs varies from year to year, with some springs drying up completely only to start yielding after rains. Springs depend on rainfall. Yields have been observed to go down where boreholes are drilled in the vicinity of springs. (in TRP Associates, 1997, quoted in "Kunene integrated regional land use plan", 1998)

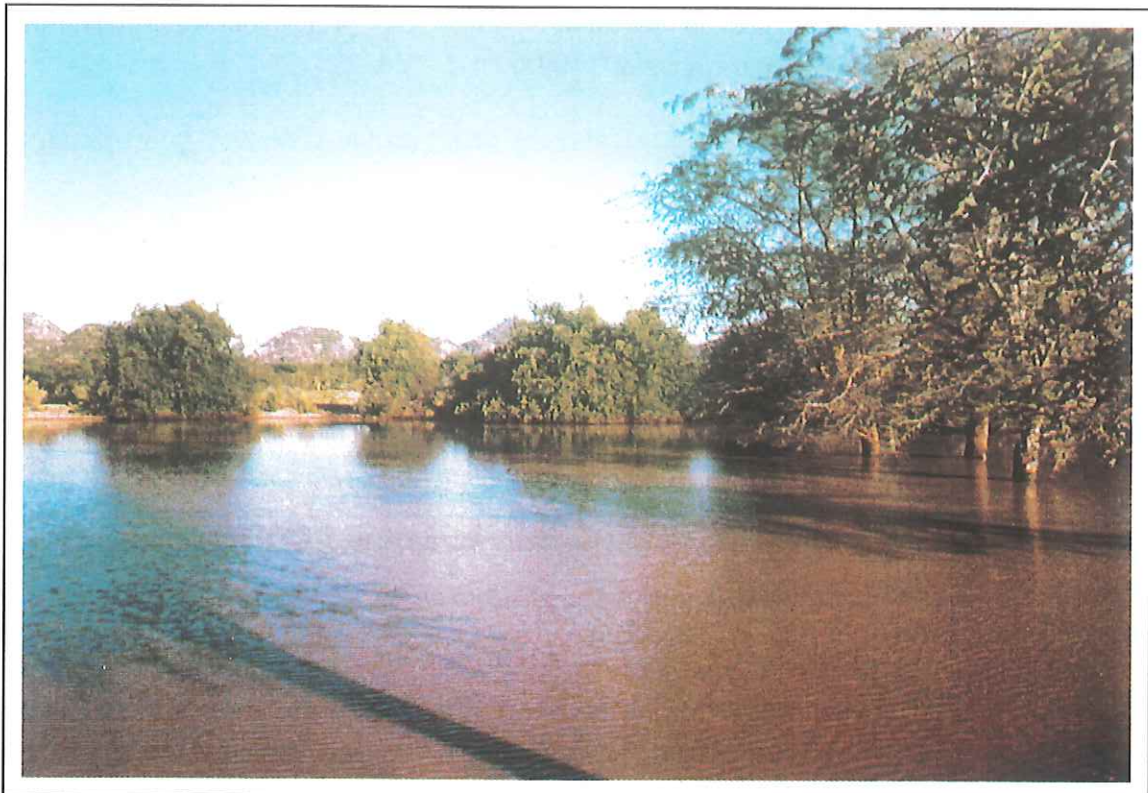
There are a number of springs and foundations scattered over the area, usually in the limestone and dolomite formations. (Beunison, 1998 et al, 1998)

Many fountains or pits are situated in the limestone along the edge of the Joubertberge with strong eyes being found at Otuzemba, Otjitunduwa and Otjitoko. Eastward, in the sandveld proper, permanent water is scarce and although isolated springs do occur, notably at Ombombo yOvambo, Onaiso and Ohakararungu, the greater part of the sub region is waterless for much of the year. In the eastern part of the southern dolomite hills are numerous permanent springs, which yield considerable quantities of water. Kaoko-Tavi has been measured at 46 000 gallons per hour and the Sesfontein springs at 21 000 gallons per hour. Some other springs are also found at Warmquelle, Anabib, Omurandje, Otjapitjapi, Ombombo, Otjikondavirongo, Oruvandjai, Ongango, Okorosave, Otjindjerese, Ombazu, Ehomba and the hot water source at Otjiyandjasemo. These have never been known to dry up. Springs or seeps occur in the Hoarusib and Onganga river beds, but apart from these the water is scarce in the west. (Warmelo, 1951; Malan et al, 1974; Paskin, 1990)



F. Cornu

A pool or temporary water point, full just after the rains.



F. Cornu

An earth-dam at Otjitanda, just after the rains, in April 1999.

Florent CORNU

In "A propos de l'escape, des lieux, du territoire, chez les pasteurs nomades Himba de Namibie, a l'exemple d'Otjihende"



F. Cornu

The Ovireva dam. It is one of the biggest in Kunene North. It usually lasts till the next rainy season season. Numerous farmers bring their animals to the dam at the end of the dry season or in case of a drought.

1.4. QUALITY OF THE SURFACE WATER

The quality of surface water depends largely on the mineral contained by rocks in the catchment area. If the rock are salt bearing, then it is most likely that the water will be saline. (in “Kunene integrated regional land use plan”, 1998)

1.5. MANAGEMENT OF THE SURFACE WATER

Springs are communally owned and managed. Management decisions pertain to the type of usage of the water point (only human consumption, only small stock, only calves, all types of livestock), the time of usage (daytime watering, daytime and night-time watering). Hand dug wells are usually owned by the household that dug the well or paid the labour to do so. The owner of the well may allow others to use it but has to be asked beforehand. (Bollig, 1996)

2. GROUND WATER

Ground water is by far the most utilised resource, yet not much is known about its dynamics. All ground water has to come from rainfall and it is estimated that only 1% of the rainfall received at any place in Namibia goes into the ground as re-charge. Direct re-charge is rare, due to low rainfall. The little re-charge that occurs is indirect, through joints, localised ponding and vertical infiltration through deep percolation during flash floods. (in Interconsult SRK, 1994, quoted in “Kunene integrated regional land use plan”, 1998)

The occurrence of ground water depends on geological formations (in “Kunene integrated regional land use plan”, 1998):

- The karst areas (Kaoko-Otavi) could receive significant re-charge (presence of sodium, sulphates and total dissolved solids in underground water)
- In the Kalahari formations (eastern parts) rest water level are less than 20m.
- In the Damara sequence aquifers are known to be much deeper.

Underground water and natural foundations support some vegetation and provide water for rural Himba people and their animals, as well as for wild animals in the area. (in “More about water in Namibia, part II of a resource package to develop awareness of water”, 1994)

2.1. BOREHOLES

Ground water is probably the most utilised in the Kunene region. In Kunene North, the highest density of water points is 10 to 20 per 100km² and is found around Opuwo. (in Interconsult SRK, 1994, quoted in “Kunene integrated regional land use plan”, 1998)

Eastward, in the sandveld proper, permanent water is scarce. The natural water has, however, been supplemented by a number of bore holes sunk for the inhabitants and their livestock. (Warmelo, 1951; Malan et al, 1974; Paskin, 1990)



F. Cornu

The windmill in Otjitenda.

Florent CORNU

In "A propos de l'escape, des lieux, du territoire, chez les pasteurs nomades Himba de Namibie, a l'exemple d'Otjihende"

The hand-pump at Okaparizua (put in place by Red Cross in 1997)



F. Cornu

Florent CORNU

In "A propos de l'escape, des lieux, du territoire, chez les pasteurs nomades Himba de Namibie, a l'exemple d'Otjihende"

There are 153 boreholes in the Kunene region that are equipped with pumps of one sort or another (handpumps, windpumps or diesel engines). By 1990 about two-thirds of these pumps were out of action. Most of these were apparently installed in the late 1960's. Most of them are situated in a belt running down the eastern side of the region, roughly from the imaginary north-south line about 50 km west of Opuwo, stretching eastwards to the North Central Division. (Paskin, 1990)

Apart from the water taken directly from the Kunene River and a few small embankments and sand storage dams, existing boreholes were developed and maintained by the previous government. Two main bulk water supply schemes operated by the Department of Water Affairs are at Opuwo and Sesfontein, with a consumption of 662 724m³ and 28 656 m³ respectively in 1990. (in "investigating, into the surface water resources of the Kaokoveld", 1991)

2.2. MAINTENANCE OF THE GROUND WATER

Very early the problem of use and misuse of ground water has been stressed out. Drilling is merely a form of mining, as it uses up assets without improving anything. The only real and lasting method of improving the region would therefore seem to be water conservation by means of contours, banks and dams and sooner or later this will probably have to be done, but if accompanied by uncontrolled grazing, this method of betterment would very likely do more damage than to have not done anything at all. (Warmelo, 1951)

Aquifers commonly occur in the limestone structures, which are soft and may collapse when emptied. Underground water may thus turn out to be non-renewable resource in many places. The areas around existing water points tend to be overgrazed, while there may still be good pastures in other areas that are too far away from a spring or a bore hole. (Beunison et al, 1998)

In the absence of detailed ecological studies, it would be safest to locate new water points in remote areas, and limit the size of these installations by requiring communities to contribute to the cost of their construction. This is Northern Regions Livestock Development Programme's current policy in Kunene Region. (Behnke, 1998)

At this time there are a few efforts by the private people to develop water resources with pumps or dams. Communities still rely on the government services to maintain old boreholes and drill new ones. (Bollig, 1996) However, the government is in the process of giving the responsibility of maintaining water points to farmers. (Smit, 2000)

3. SPECIFIC EXAMPLES

3.1. CASE OF OTUANI

One borehole and two dams exist in the community. (in "analysis of the farming systems in Otuanani", 2000)

3.1.1. Capacity and use of the borehole

It is under the responsibility of the water point committee. It produces 3m³ of water per hour in average and fills a reservoir of 40m³. The community has decided that the cattle must first get water, before the school, which led to problems. (in “analysis of the farming systems in Otuari”, 2000)

During the rainy season the school, calves and small sock use the water. During the dry season the cattle also use it. When people are at the main settlement, it is also used for human consumption. Diesel and oil is bought every second month by the school and once every two-month by the community. The co-ordination is under the responsibility of the water point committee. (in “analysis of the farming systems in Otuari”, 2000)

3.1.2. Capacity and use of Okatumba dam

This is the largest dam. It was built by a contractor but paid by the community. It can hold water up to the 8 months (5 months after the rain). It is used by most farmers, for their livestock. Its maximum capacity is 20 000m³. The management of this dam is under the responsibility of the dam committee. (in “analysis of the farming systems in Otuari”, 2000)

3.1.3. Capacity and use of Omuhinarindi dam

It is a small dam used by approximately 8 households residing at this cattle post during the dry season. It was able to hold water for two month but the rain damaged the dam walls and it cannot hold much water anymore. At the end of this rainy season only 150m³ of water were available. (in “analysis of the farming systems in Otuari”, 2000)

As a conclusion there is water problems in the community especially during the dry season when both humans and animals have to survive from the borehole. This means that when the dam is empty the demand on he borehole is very large and as a result the school and the community suffer. Reducing the number of animals to a level that are within the limits of sustainable rangeland management would relieve a lot of the problems. The dam will also last for 7 months instead of current 5 months. (in “analysis of the farming system in Otuari”, 2000)

3.2. CASE OF OUOZONDUWOMBE

There is one dam in Ouozonduwombe built under the NOLIDEP pilot phase. The dam cannot sustain the community for the entire year. The community therefore needs the dam to be enlarged. There are five hand pumps and one windmill in Ouozonduwombe area but all are broken. (in “Use of PRA tools in Ouozonduwombe”, 2000)

3.3. CASE OF OMUHONGA

The Omuhonga community has two hand pumps. (Personal data Kunene North FSR/E Unit, 2000)

3.4. CASE OF ETANGA

During the rainy season, herds begin watering at standing pools in the riverbed (the large ones have individual names). Some of these pools are located along stretches of the river that provide permanent water but most are tributaries of the Etanga river or along stretches of the main river that do not provide water throughout the dry season. Typically these pools are located under rock surfaces at the side of the river channel. (Behnke, 1998)

When surface water in these pools is depleted, herders gradually deepen them, chasing the water as it retreats until they hit solid ground through which they cannot dig. The well must then be abandoned. When this occurs, the herds must shift to deeper well sites in the middle of the river channel, either digging a fresh well or teaming up with users of an existing well. At the end of a two-year drought there are said to be only three well sites in the Etanga River which will reliably produce water: the Orutara well, the Ehandja well and the Ondjomboyombua well. These wells belong to the whole community of the people of Etanga or Omundjandu and are managed under the authority of the Etanga senior headman. (Behnke, 1998)

Each mid-channel well takes at least two people to operate it: one to lift the water and another to control the animals at the through. As the season progresses the wells deepen and 3 to 4 people may be needed to lift the water, in addition to the stock manager at the head of the of the well. A considerable labour force is therefore needed to meet the demands of these routine tasks and the difficulties of well excavation and maintenance. Help is occasionally required to water animals when a herder is sick, chasing after strays or otherwise unavailable. For these reasons herders seemed to be much more interested in establishing working relationships for effective well management than including other users. (Behnke, 1998)

Wells are owned in three different ways according to the type of well (Behnke, 1998):

- Natural pools and the shallow impermanent wells that evolve out of natural pools are un-owned and used on a first-come-first-served basis.
- Sites for more valuable mid-channel wells are owned by individual households, inherited and managed on that basis.
- The more valuable a water source the more tightly it is controlled, and the more important the source is for the community, the greater the tendency for senior political authorities to be involved in its management.

At least with respect to water, this is not a simply 'communal' system of resource ownership. When individual ownership rights are technically feasible and rewarding to maintain, they tend to exist (as in the case of mid-channel well sites). At extremes, less valuable or less easily controlled natural water points (such as pools) tend towards open access, while the most important watering points are regulated by the political authorities in the interest of the community at large. (Behnke, 1998)

Generally the Herero people populate the parts of the countryside where most bore holes are present whereas the Himba live in areas where natural springs are more abundant. (Paskin, 1990)

Himba traditionally make use of the different water sources they can find, each for a different purpose. Springs and wells may be used for people and shallow wells used for livestock. Furthermore the livestock are often separated: oxen, cows in milk and small stock are watered at different water sources. Furthermore, Himba people reduce washing water consumption by protecting their bodies with cosmetic body lotions made from 'ochre' and butter fat. (Paskin, 1990)

Section 29

Plant species and use

Plant species can be studied using several tools, among others:

- **Transect:** It is an observation exchange between the researcher and a local person, walking or driving across an area of socio-ecological variability (Dayot, 1998, quoted in Mbinga et al, 1999) Various plant species have been recorded through the transect. Conclusions are that many species are present in Kunene North and farmers have an excellent knowledge regarding the use of those species. (Talavera, 2000)
- **Fodder walk:** It is a tool used to collect information (to be used in future research and extension programmes) on indigenous plant species and their utility. It should be conducted together with farmers, in various parts of the landscape with representative vegetation units (Mbinga, 2000).

1. DEFINITIONS

Tree: it is an upright woody plant usually with a single main stem, or bole, and over three meters high. (Malan et al, 1974)

Shrub: it is a perennial, woody, multi-stemmed plant, usually less than three meters high. (Malan et al, 1974)

Dwarf shrub: it is a short spreading shrub less than one meter high. (Malan et al, 1974)

Forbs: it is a herbaceous plants other than a grass or sedge. (Malan et al, 1974)

Grassland: it is a community of grasses, which may also include forbs, but in which few woody elements are visually significant. (Malan et al, 1974)

Thicket: it is a closed, often intertwined, woody vegetation. (Malan et al, 1974)

Woodland: it is a single or several-layered community of trees with crowns almost touching to overlapping. (Malan et al, 1974)

Savannah: this term has been used to describe mixed vegetation types in which the grass cover, when undisturbed by biotic factors, is dense and relatively tall. The amount of woody vegetation present is denoted by a prefix, for instance woodland savannah, tree savannah and grassland savannah. (Malan et al, 1974)

Steppe-mixed vegetation: it is a vegetation in which the grass cover is short and sparse. As in savannah, a sliding prefix scale operates. (Malan et al, 1974)

2. PLANT SPECIES PER AREA

2.1. GENERAL TRENDS

On the eastern highveld in the vicinity of Omutambo-Maowe the perennial grass *Stipagrostis uniplumis* and *Schmitdia kalahariensis* have remained, mainly due to the fact that there were no open waters available there and because the pans in the area were heavily infested by Anthrax. In the mountains the grass has become scarce because of poor soil and overgrazing, except in inaccessible areas. In Ombombo and Ongango areas where water has been available for sometime, there is hardly any grass left. However, livestock utilise the mopane. On the river terraces *Faidherbia albida* (Ana tree) grow with pods that provide good nutrition to livestock especially the young and sick ones. (Page, 1976; Bollig, 1996)

Table: natural vegetation in the rainfall area 150-360mm per annum.

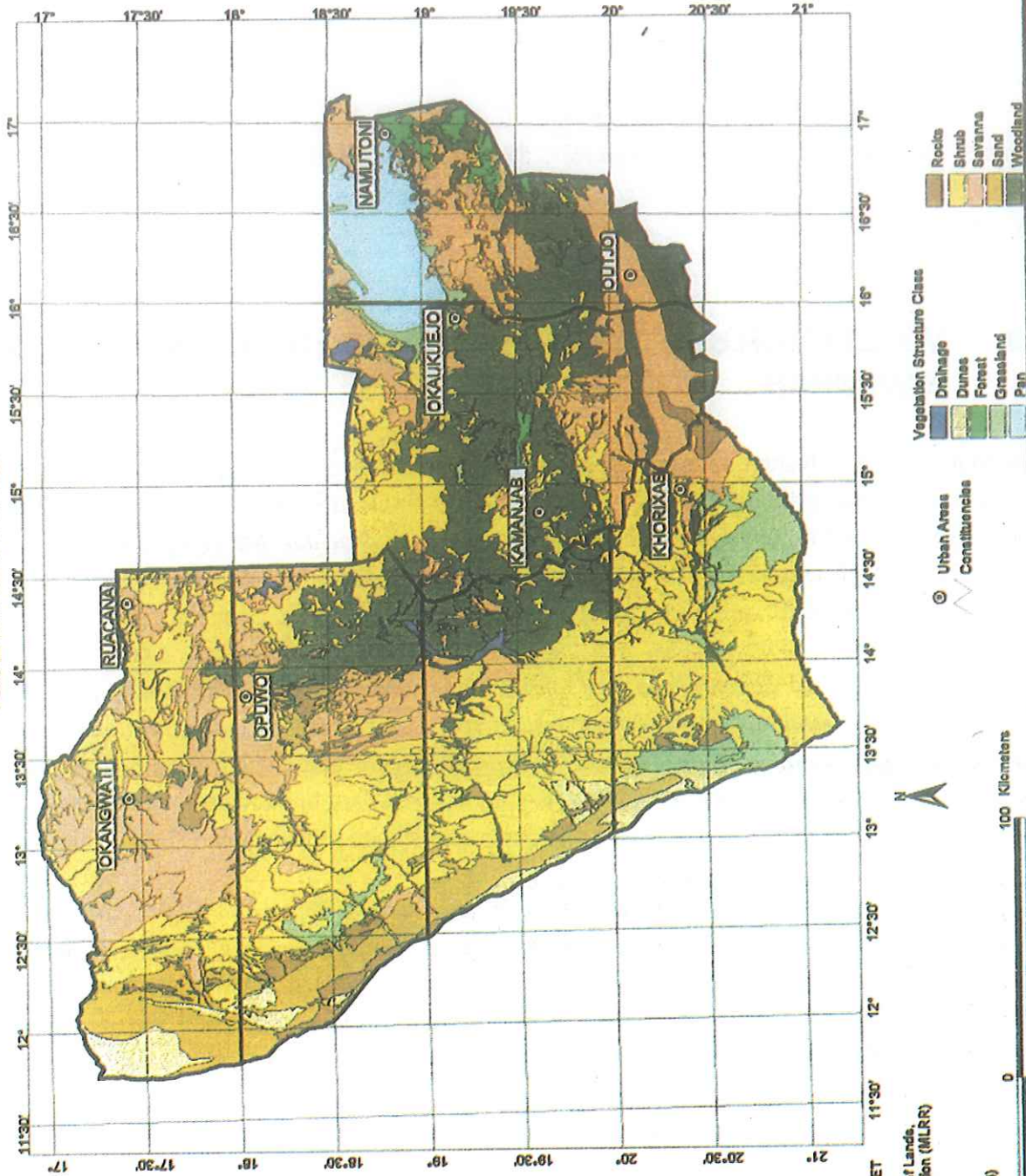
Soil type	Dominant plant species	Form
Black clay	<i>Colospernum mopane</i>	Open shrub veld
More open plain calcrete	<i>Sesemonthamus guerichii</i>	Open shrub veld and dwarf shrub
Deep to fairly deep soil	<i>Colospernum mopane</i> , <i>Lonchocarpus nelsii</i> , <i>Acacia spp.</i>	Open bush veld to tree grass veld
Very shallow ground on weathered calcrete	<i>Peltapodium spp.</i>	Dwarf shrub area
Quartzite hills	<i>Combretum apiculatum</i>	Shrub veld
Red rubble soil	<i>Acacia spp.</i>	Open bush veld to shrub veld
Medium texture alluvial soils with run-off water	<i>Acacia tortollis</i>	Open bush veld
Dark rubble soil	<i>Colospernum mopane</i>	Medium bush veld
Litolitic highland	<i>Commiphora spp.</i>	Shrub veld

(Page, 1976)

2.2. VEGETATION SPECIES IN THE INTERIOR HIGHLANDS- EASTERN SANDVELD

In the vicinity of Omutambo Mawwe and Onaiso a sward of tall perennial grasses with only scattered trees and shrubs covers the deep coarse sand. Periodic veld fires appear to have played a role in the maintenance of this secondary successional stage. *Aristida meridionalis* (which grows up to 150cm high), *Stipagrostis uniplumis* and *Schmitdia pappophoroides* are the dominant grass species. Trees are mainly represented by *Peltophorum africanum* (up to 8m); *Loncocarpus nelsii* and *Acacia reficiens* while *Acacia giraffae* occurs here in a shrub form, seldom exceeding 3m in height. (Malan et al, 1974)

KUNENE REGION VEGETATION TYPES



Produced by the NRSC, MET
 Produced for the Ministry of Lands,
 Resettlement & Rehabilitation (MLRR)
 October 1998
 Data Source: Loxton (1974)
 100
 0 100 Kilometers

In "Kunene integrated Regional Land Use Plan, 1998"
 Ministry of Lands, Resettlement and Rehabilitation

On the finer red sand, low often dense shrub savannah predominates, and well formed trees (*Colospermum mopane*, *Combretum imberbe*) are found only on termitaria. Large tracts of shrub mopane are a feature of this vegetation type, with *Dichrostachys cinerea*, *Acacia mellifera ssp. denizens*, *Combretum apiculatum*, *Terminalia sericea* and *Catophractus alexandri* also being particularly conspicuous. Ground creepers are abundant. (Malan et al, 1974)

Numerous turf pans are formed by the accumulation of fine clay particles at the focus of local centripetal drainage systems. During the rains they become waterlogged and marshy. The vegetation profile on these pans is low and consists mainly of shrub mopane and *Catophractus alexandri*. Ecotones and slightly elevated areas, such as termitaria, support scattered short trees: *Colospermum mopane*, *Combretum imberbe*, *Spirostachys africana* and *Sisyphus micrometer*. Shrubs here include *Combretum hereroense*, *Euclea psidebenus*, *Mundulia sericea* and *Grewia spp.* A characteristic perennial grass on a clay pan soil is *Cenchrus ciliaris*. (Malan et al, undated)

2.3. VEGETATION SPECIES IN THE INTERIOR HIGHLANDS- MOUNTAIN SAVANNAH

Although mountain and hill slope soils are often only a few inches deep, they support many quite large trees, which appear to gain adequate foothold by penetrating joints and solution channels in the underlying rock. Outstanding species in this physiognomic group are *Sterculia africana*, *Sterculia quinqueloba*, *Kirkia acuminata*, all of which regularly exceeds 8m in height, and in the north, massive baobabs (*Adansonia digitata*) reaching 12m with trunks up to 10m in circumference. The dominant genus is, however, *Commiphora*, of which *Commiphora multijuga*, *Commiphora glaucescens*, *Commiphora mollis*, *Commiphora angolensis* and *Commiphora pyracanthoides ssp. glandulosa* are particularly plentiful. Other typically associated trees and bushes are *Sclerocarya birrea*, *Colospermum mopane*, *Terminalia prunoides*, *Elephantorrhiza suffruticosa*, *Acacia reficiens*, *Pachypodium lealii* and *Cyphostemma currori*. Scattered specimens of *Entandrophragma spicata* and *Albizia tanganyicense* are found on some northern slopes, and *Euphorbia eduardoi*, a cactiform succulent tree, also occur sparsely on some ranges. (Malan et al, 1974)

Typical species of the more arid western ranges *Commiphora virgata*, *Commiphora anacardifolia*, *Acacia ataxacantha*, *Acacia montis-ustii*, *Moringa ovalifolia*, *Adenolobus garipensis*, *Euphorbia guerichiana*, *Sesamothamnus benguellensis* and *Cyphostemma uter*. The shrub layer is often poorly developed, but locally common species include *Rhigozum brevispinosum*, *Rhigozum virgatum* (near the Kunene river), *Croton subgratissimus*, *Barleria prionitoides* and *Myrothamnus flabellifolius*. The creeper *Tylosema fassoglensis*, which has a large edible tuber, grows profusely in some dolomite areas. Other climbers frequently encountered here are *Cissus nymphaeifolia*, *Tinospora fragosa* and the large 'python' succulent *Fockea multiflora*. (Malan et al, 1974)

2.4. VEGETATION SPECIES IN THE INTERIOR HIGHLANDS- WOODLAND SAVANNAH IN VALLEYS

Enclosed valleys, where temperature inversion results in frequent winter frosts, are usually dominated by *Acacia* species notably *Acacia tortollis ssp. heteracantha*, *Acacia hebeclada ssp. tristis* and *Acacia mellifera ssp. detinens*. *Acacia karoo* and *Acacia arenaria* are locally common near Ongango and Ombombo in the southern dolomite hills. In frost areas *Colospermum mopane* is either absent or occurs sparsely in shrub form. (Malan et al, 1974)

In more open valleys mopane grows into tall trees, sometimes into association with *Terminalia prunoides*, but more often in virtually pure stands. Under optimum conditions these stands develop into true woodlands in which trees can reach 16m in height. Typically a well-developed stratum of secondary trees is present, predominantly of mopane, but also including occasional specimens of *Terminalia prunoides*, *Spirostachys africana*, *Combretum imberbe* and *Commiphora pyracanthoide sssp. glandulosa*. The permanent ground layer is sparse and consists mainly of scattered shrubs such as *Ximenia americana*, *Catophractus alexandri* and *Rhigozum brevispinosum*. *Laronthus* hemi-parasites are abundant in the canopy of the woodland savannah. (Malan et al, 1974)

On the sandy alluvium, *Acacia erubescens*, *Peltoporum africanum*, *Loncocarpus nelsii*, *Boscia albitrunca* and *Dichrostachys cinerea* may be plentiful and where these deposits are deep, particularly along washes and water courses are *Euclea pseudebenus*, *Euclea divinorum*, *Combretum hereroense*, *Diospyros lycioides* and *Maytenus senegalensis*. (Malan et al, 1974)

Near Otjitanda, on the northwestern highlands, the coarse granitic sand supports characteristic sandveld communities dominated by scattered tall camelthorns (*Acacia giraffae*) up to 15m high. Other sand favouring common here are *Terminalia sericea*, *Albizia anthelmintica* and *Pterocarpus spp.* (cf. *Pterocarpus antunesii*). Near the drainage channels *Boscia albitrunca*, *Acacia fleckii* and *Balanites welwitschii* grow into large trees. The adjoining flats are sometimes well populated with the shrubs *Pehuel-Loesschea leubnitziae* and *Licium oxycarpum*. (Malan et al, 1974)

On many pediments the soil is shallow and strewn with stony detritus derived either from the under lying rock or from neighbouring hill slopes. The vegetation here is dominated by *Colospermum mopane* and *Terminalia prunoides* although typical slope *Commiphora* species (*Commiphora multijuga*, *Commiphora glaucescens*, *Commiphora mollis*, *Commiphora angolensis*) are locally plentiful on some northern pediments. Other commonly associated trees are *Berchemia discolor*, *Elephantorrhiza suffruticosa*, *Acacia reficiens*, *Acacia nilotica*, *Ficus glumosa* and *Combretum apiculatum*. In the southeast *Sesamonthamus guerichii* is often conspicuous. The average canopy height is variable but seldom exceeds five meters. (Malan et al, 1974)

A shrub stratum can be strongly developed. Well-represented species include *Catophractus alexandri*, *Ximenia americana*, *Rhigozum brevispinosum*, *Boscia foetida*, *Mundulea sericea* and *Grewia spp.* Common succulents are *Aloe hereroensis*, *Acacia littoralis*, *Euphorbia subsala* and *Hoodia parvifolia*. Much of the woodland savannah is also severely overgrazed, with the result that perennial grasses are now scarce and mainly encountered far from permanent water. (Malan et al, 1974)



F. Cornu

Pastures at the end of the rainy season, not used after the rain in order to preserve it for the dry period.



F. Cornu

Pastures at the end of the dry season. Animals will make use of such areas, less accessible, only when left with no other options. However, such areas are a good safety and may prevent herds from starving.

Florent CORNU

In "A propos de l'escape, des lieux, du territoire, chez les pasteurs nomades Himba de Namibie, a l'exemple d'Otjihende"

A number of natural springs are situated on the calcrete pediments, usually at the foot of limestone or dolomite ridges. Large wild fig trees, notably *Ficus sycomorus*, but also *Ficus cordata*, often grow near these springs, with *Acacia hebeclada* spp. *tristis*, *Comretum watii*, and *Euclea pseudebenus* occurring as spreading bushes on the surrounding calcrete. Standing pools are generally fringed with sedges such as *Scirpus dioicus* and *Juncellus laevigatus*. (Malan et al, 1974)

2.5. VEGETATION SPECIES IN THE INTERIOR HIGHLANDS- DWARF SHRUBS ON CALCAREOUS SOIL

In the dolomite hills many valleys are also underlain by secondary deposits of sheet calcrete. Here the surface layer of sandy clay soil often contains high concentrations of water soluble salts mainly calcium carbonate. Typical examples are the flat valleys near Opuwo, Oukongo and Ondore on the central highlands and the beesvlakte in the south of the territory. These flats are for the main part covered with dwarf shrubs, although scattered trees, usually mopane or *Acacia* spp, do occur and can form dense belts, especially along drainage lines. Larger shrubs, *Catophractus alexandri* and *Pechuel-Loeschea leubnitziae* may be associated in patches. Common dwarf shrub species include *Leucosphaera bainesii*, *Monechma arenicola*, *Monechma tonsum*, *Petalidium cocineum*, *Petalidium coccineum*, *Petalidium engleranum* and *Petalidium rossmannianum*. Annual grasses and spring aspect plants, notably *Crinum* spp. appear after the first rains. The dwarf shrub valleys are considerable economic importance during the dry season, when these shrubs, particularly *Leucosphaera bainesii* and *Petalidium* species, form a valuable source of forage to both small and large stock. (Malan et al, 1974)

2.6. VEGETATION SPECIES IN THE INTERIOR HIGHLANDS-RIVERINE WOODLAND

The upper Kunene river is lined with numerous large trees including many stands of tall palms (*Hyphaene ventricosa*). Dense thickets frequently blocking access to the river for long stretches, fringe the banks. Abundant bushes here include *Ficus capreifolia*, *Rhus quartiniana*, *Tamarix usneoides*, *Securinega virosa* and *Euclea pseudebenus*. (Malan et al, 1974)

Fringing the major seasonal rivers in the territory, are large trees sometimes exceeding 20 meters in height. *Faidherbia albida* is usually the dominant species, being encountered either as a single thick-boled tree in the river bed, or as tall stand on the adjoining alluvium. Also conspicuous are *Acacia giraffae*, *Ficus sycomorus*, *Hyphaene ventricosa*, *Ziziphus mucronata* and *Peltophorum africanum*. Larger trees occurring locally are *Ficus petersii*, *Crocoxylon transvalensis* and *Acaia kirkii*. (Malan et al, 1974)

The understorey is a formed thicket of dense riverine bushes with scattered short trees and shrubs. This stratum is usually from two to five meters in height. Abundant species are *Diospyros lyciodes*, *Euclea pseudebenus*, *Euclea divinorum*, *Tamarix usneoides*, *Combretum hereroense*, *Salvadora persica* and *Maytenus senegalensis*. *Omorcarpum kirkii* is common on the granitic sand banks of the north western rivers. Climbers notably *Jasminum fulminense*, *Grewia flavescens* and *Combretum mossambicense* are plentiful in the river banks trees and bushes. Where the canopy is open, shrubs such as *Pechuel-Loeschea leubenitziae*, *Mundulea siricea* and *Rhigozum brevispinosum* occur. Near the banks of many rivers, the OvaHimba have cleared plots for cultivating maize and gourds. When not in use, herbs and short stoloniferous grass (*Cynodon*

dactylon) grow in these fields. Coarse grass and sedges grow in or near springs in the river bed. (Malan et al, 1974)

2.7. VEGETATION SPECIES IN THE PRO-NAMIB- SHRUB STEEP ON DESERT RANGES.

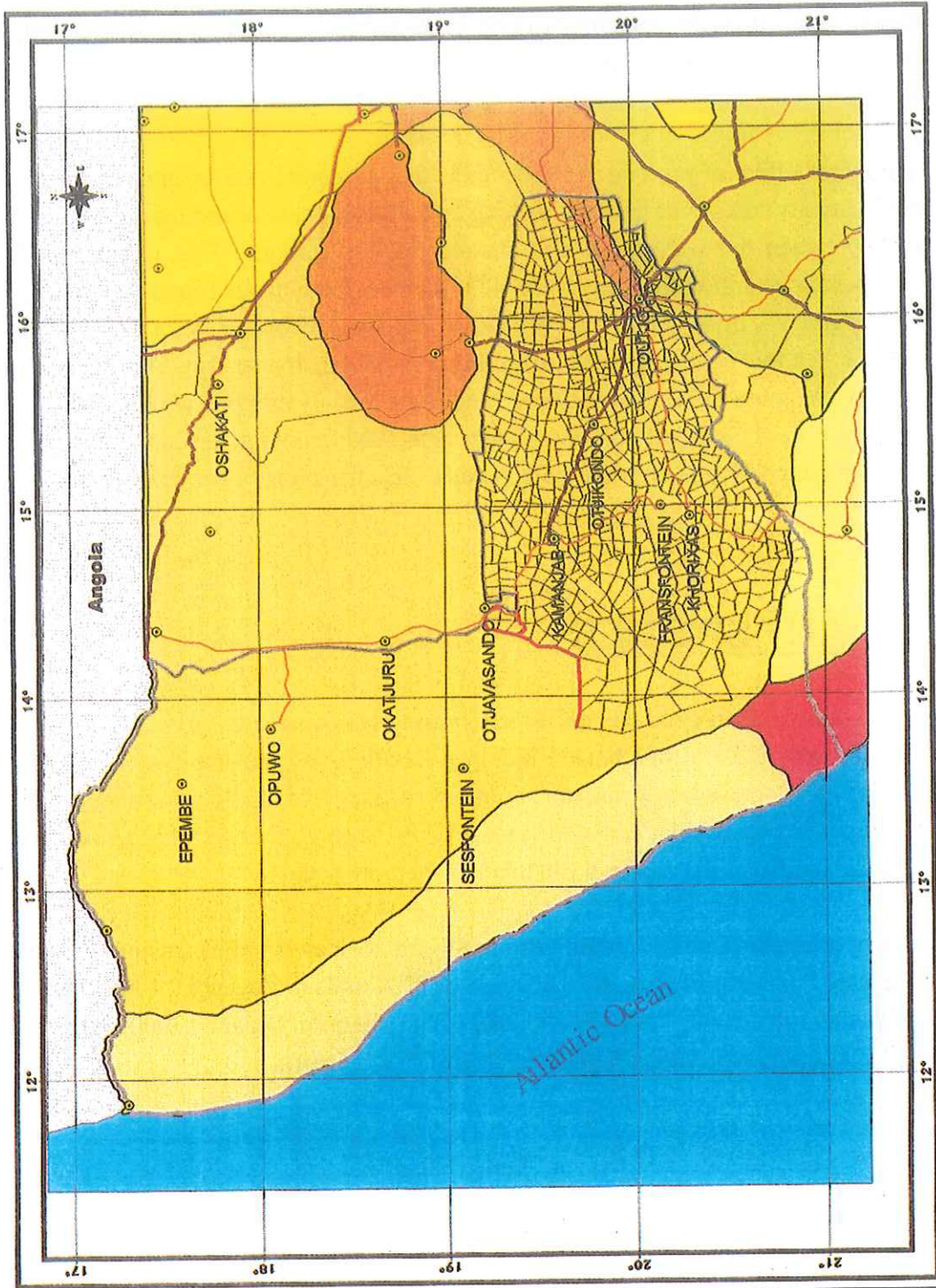
Vegetation is sparse and typically dominated by low, spreading shrub *Commiphora* species such as *Commiphora virgata*, *Commiphora giesii*, *Commiphora wildii* and *Commiphora kraeuseliana*, all of which seldom exceed two meters in height. Scattered short trees also occur, notably *Maerua schinzii*, *Colospermum mopane*, *Boscia albitrunca*, *Ceraria logipedunculata*, *Acacia mellifera ssp. mellifera* and *Acacia robynsiana*. Small specimens of *Moringa ovalifolia* and *Sterculia africana* are occasionally encountered. Dwarf shrubs are plentiful. A flush of sparse grass grows after rain. Because of the very dry climate, much of this grass cures 'on the stalk' and is consequently available throughout the year to herbivores capable of climbing the rocky slopes. (Malan et al, 1974)

2.8. VEGETATION SPECIES IN THE PRO-NAMIB- GRASSLAND ON SUPERFICIAL SAND AND DESERT PAVEMENT

In the sandy plains, the climax community here is composed predominantly of perennial species of the genus *Stipagrostis*, notably *Stipagrostis uniplumis*, *Stipagrostis giesii* and *Stipagrostis hochstetterana*. Annuals such as *Stipagrostis hirtigluma ssp. pearsonii* and *Scmitdia kalahariense* may also form scattered pure stands. Pioneer grasses are frequently recorded along river banks and in disturbed areas. Typically associated forbs include *Cleome leuderitzianum*, *Zygophyllum simplex* and *Geigeria spp.* short trees, mainly mopane and *Acacia spp.* also occur sparsely on some sandy plains. An interesting, and as yet unexplained phenomenon in deep sandy areas, is the existence of numerous circular patches, usually between three and six meters in diameter, which are completely devoid of vegetation. The grass cover on gravel pediments (desert pavement) is not as dense, and consists primarily of annual species. Dwarf shrubs (*Calicorema cappitata*, *Monechma* and *Petalidium spp.*) are common, although the more palatable species have been eliminated in the vicinity of springs and boreholes. Scattered short trees and bushes (*Colospermum mopane*, *Maerua schinzii*, *Catophractus alexandri* and *Commiphora spp.*) also occur, particularly along the numerous rocky gullies. Large shrubs Euphorbias (*Euphorbia gregaria* and *Euphorbia virosa*) are plentiful on many gravel pediments. (Malan et al, 1974)

Westward the region becomes more desolate, as the average rainfall drops to less than 50mm per annum. Here the featureless gravel and sand plains are generally bare although a sparse sward of short ephemeral grasses appears after irregular showers. Some of these grasses require only one rainfall, which can be less than 25mm, to mature and seed. (Malan et al, 1974)

The primitive gymnosperm *Welwitschia mirabilis* occurs on the flats near the Sechomib River and between the Hoarusib and Hoanib rivers. (Malan et al, 1974)



Legend

- Towns (represented by a red diamond symbol)
- Main Roads (represented by a thick red line)
- District Roads (represented by a thin red line)
- Kunene Region (represented by a white box)

Vegetation - Giess 1971

- Central Namib (represented by a red box)
- Forest Savanna & Woodlands (represented by an orange box)
- Mopane (represented by a yellow-orange box)
- Mountain Savanna & Karstveld (represented by a yellow box)
- North Namib (represented by a light yellow box)
- Saline Desert with Dwarf Savanna (represented by a pale yellow box)
- Semi Desert & Savanna Transition (represented by a very pale yellow box)
- Thorn Bush Savanna (represented by a lightest yellow box)

Title: Kunene Vegetation Map
Giess 1971
 By: Gerhard Mouton
 NOLIDEP
 Tsumeb

The banks of the major rivers traversing the pro-Namib are relatively well wooded with large trees, notably: *Acacia albida*, *Acacia giraffae*, *Combretum imberbe*, *Colospermum mopane*, and occasional palms (*Hyphaene ventricosa*). The bush stratum is composed of *Balanites welwitschii*, *Salvadora persica*, *Tamarix usneoides*, *Euclea pseudebenus*, *Epaltes gariiepina* and *Suaeda spp.*, which forms the dense thickets along the Kunene, Hoarusib and Hoanib rivers. Numerous smaller water courses intersect the region. Scattered short trees (*Balanites welwitschii*, *Boscia foetida*, *Parkinsonia africana*) and shrubs (*Phaeoptilum spinosum*, *Pechuel-Loeschea leubnitziae*, *Kissenia capensis*, *Tephrosia oxygona*, *Zygophyllum stapfii* and *Petalidium spp.*) distinguish these grainage channels from the surrounding plains. (Malan et al, 1974)

In the pro-Namib, intensive exploitation is irregular and of limited duration. Once the season surplus growth is cropped the herbivores either disperse or leave the region, thus allowing the affected range to recuperate. In recent years, however, the exploiting livestock population on the highland has led to much more frequent and prolonged utilisation of the pro-Namib. During the last decade a number of successful boreholes have also been sunk in the region. Apart from the opening vast new tracts for exploitation, the reliable supply of sweet water provided by these bores has encouraged some families to stay semi-permanently in their proximity. (Malan et al, 1974)

In sandy valleys the major effect of prolonged residence is that perennial climax grasses are grazed right down to ground level. In many cases even the roots are dug up by goats, or else trampled out by the continuous passage of livestock between the waterholes and distant grazing grounds. This is particularly on the Marienfluss, the Gribbesvlakte and sand plains west of Orupembe. Here it was found that areas are grazed exclusively by wild ungulates, or which are accessible to domestic livestock on a seasonal basis only, generally maintained a healthy cover of grass tufts throughout the dry season. As one approached a permanent water supply, the grass tufts became sparser and more heavily cropped until about 16 kilometres away from the spring or bore the ground was completely bare. Total grazing, sustained over a number of years, results in the dominance of annual grasses and weeds. This has already occurred in many localities. (Malan et al, 1974)

3. USE OF PLANT SPECIES

A thorough analysis was undertaken by Malan and Owen-Smith over five years, from 1967 to 1972. Results are presented in the following table. Ethno botany involves a study of all the significant features in a folk taxonomy of plants, including relevant information about the utilisation of the flora in the culture of people. (Malan et al, 1974) The summarised tables cannot do justice to the huge work undertaken by both authors and we recommend the reader to refer to the article, p 144 to p 165 for more details.

Further work was initiated by the Kunene North Farming System Research and Extension Unit in 1999 and 2000. Results are presented in the following table. (in "use of PRA tools in Enyandi", 1999; "analysis of the farming systems in Ohandungu", 2000; "analysis of the farming systems in Otuni", 2000, "use of PRA tools in Ouozonduuombe", 2000; personal data of the Kunene North FSR-E Unit).

Other information gathered:

- The trunk of the makalani palm (*Hyphaene ventricosa*) is tapped for brewing an alcoholic drink. In order to do this, it is necessary to remove the crown, which result in the death of the tree. It is particularly important along the Kunene River. Mainly Owambo people do this practice. (Malan et al, 1974)
- The palm nuts are a central resource to rely on during drought. The palm stand along the river and are more important as their productivity is fairly independent from rainfall. This is an important surplus food to humans especially during drought. (Bollig, 1996)
- The toxic plant *Pseudogattonia clarata* (south west slangkop) grows in abundance in a few localities. Other toxic plants known in the region are: *Dipcadi glaucum*, *Kalanchoe lanceolata* and *Ricinus communis*. (Paskin, 1990)

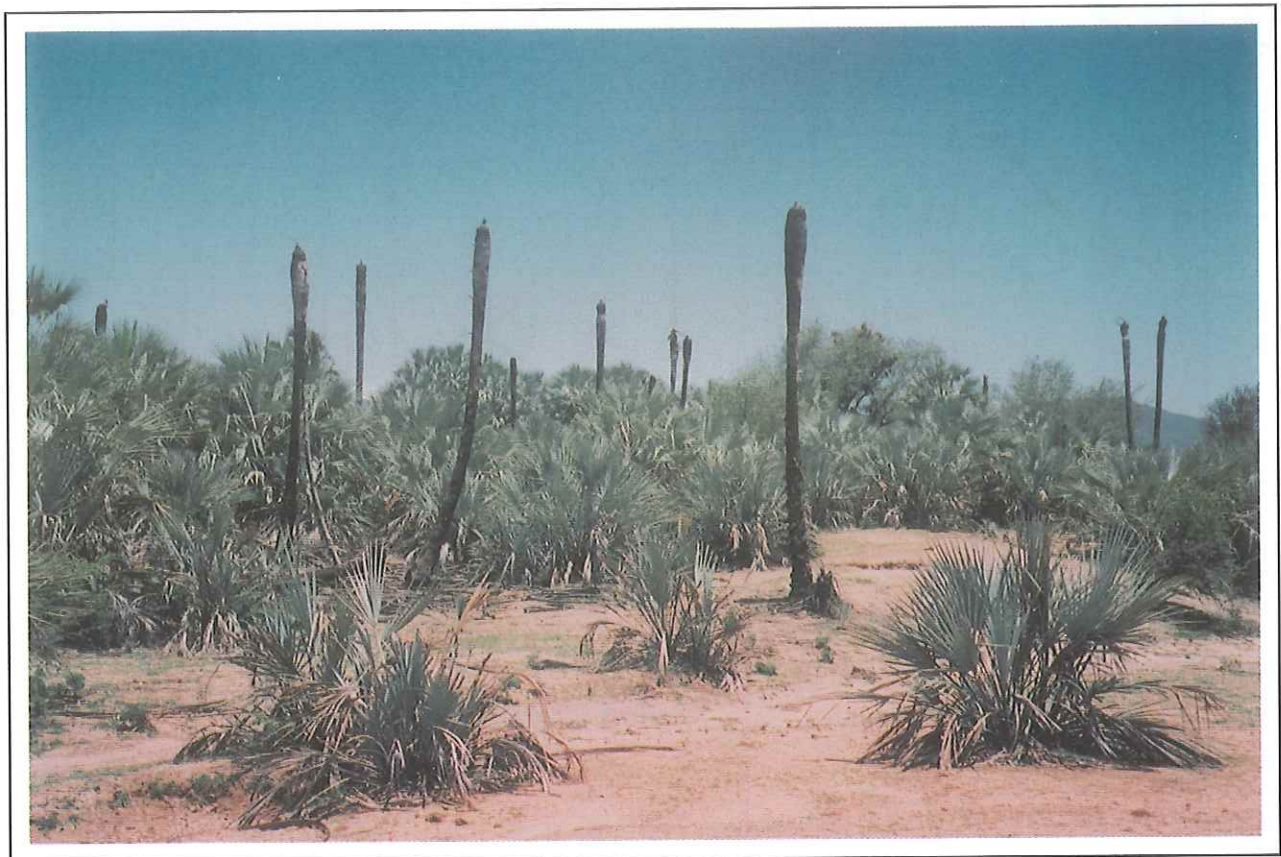


Photo: Philippe TALAVERA

Trunk of makalani palms once tapped. Enyandi area, December 1997.

Utilisation of the indigenous flora I
Adapted from Malan and Owen-Smith - 1974

Family	Species	Otjihe	Food	Beverage rero name	Curdling Medicine	Medical instru- ment	Religious Magic use	Hygiene	Cosmetic Art	Bedding and clothing tainers	Utensil, con- tainers	Toys and games
Acantha cea	<i>Barleria prinitoides</i>	Ondunduma-ne or otjikokota										
	<i>Blepharis obnitata</i>	Onyainya or otjikokotwa										
	<i>Ecboium clarkei</i>	Otjipembati otjinene										
	<i>Monechma arenicola</i>	Otjipembati or otjingongwe										
	<i>Monechma tonsum</i>	Otjikange										
	<i>Petalidium coccineum</i>	Otjingenge										
	<i>Petalidium luteo-album</i>	OtjitiONDURA										
	<i>Petalidium rossmannianum</i>	Otjipembati or otjingongwe										
	<i>Petalidium sp</i>	Otjipeembati				XXX						
	Agava cea	<i>Sansevieria aethiopica</i>	Ongwehe			XXX						
<i>Alternanthera pungens</i>		Okana kakahandja or outwerangamwa										
Amaran thaceae	<i>Amaranthus thunbergii</i>	Omunandi	XXX									
	<i>Calicorema capitata</i>	Ongarati										
	<i>Leucosphaera bainesii</i>	Otjiveijombandje				XXX						
Anacardi aceae	<i>Rhus quartiniana</i>	Ommuryangwari										
	<i>Rhus sp</i>	Oruso						XXX				XX

Family	Species	Otjherero name	Food	Beverage	Curdling	Medicine	Medical instrument	Religious Magic use	Hygiene	Cosmetic Art	Bedding and clothing	Utensil, containers	Toys and games
Anacardiaceae	<i>Sclerocarya birrea</i>	Omungongo	XX	XX	XX							XX	
Apiaceae	<i>Steganotaenia araliacea</i>	Epondo						XX					
Apocynaceae	<i>Adenium boehmianum</i>	Ouruwo											
	<i>Pachypodium lealii</i>	Ohwanga			XX								
Arecaceae	<i>Strophanthus amboensis</i>	Omuhundure						XX					
	<i>Hyphaene ventricosa</i>	Omurunga	XX	XX	XX							XX	XX
Asclepiadaceae	<i>Fockea multiflora</i>	Otjipwiya or otjimbuya											
	<i>Hoodia parviflora</i>	Otjinove											
Asteraceae	<i>Marsdenia macrantha</i>	Oruzenga				XX							
	<i>Antiphona fragrans</i>	Otjindundu											
Asteraceae	<i>Blumea gariepina</i>	Otjindundu or otjindumba									XX		
	<i>Helichrysum tomentosulum</i> ssp	Ongwambundu											
	<i>tomentosulum</i>												
	<i>Kleinia longiflora</i>	Orukwasena				XX							
	<i>Mikania sagittifera</i>	Oruhona								XX			
	<i>Nicolasia felicoides</i>	Okatjikwa								XX			
	<i>Pechuel-Loeschea leubnitziae</i>	Otjindumba or Omundumba				XX				XX			
	<i>Rennera limnophila</i>	Otjekwa								XX			

Family	Species	Otjherero name	Food	Beverage	Curdling	Medicine	Medical instrument	Religious use	Magic	Hygiene	Cosmetic Art	Bedding and clothing	Utensil, con and tainers	Toys and games
Astera ceae	<i>Vernonia obionifolia</i>	Omukarahunda												
Balanita ceae	<i>Balanites welwitschii</i>	Omumbamenye												
Bignonia ceae	<i>Catophractes alexandri</i>	Omukaravize						XX						XX
	<i>Rhigozum brevispinosum</i>	Onuporamapingo												
	<i>Rhigozum virgatum</i>	Omumbute or omunditi												
Bombaca ceae	<i>Adansonia digitata</i>	Omuzu	XX											
	<i>Commiphora africana</i>	Ongareya or Omboo	XX											
Bursera ceae	<i>Commiphora anacardiifolia</i>	Omutuya											XX	
	<i>Commiphora angolensis</i>	Omuhangorwa or Omongorwa											XX	
	<i>Commiphora crenato-serrata</i>	Omuhanga						XX						
	<i>Commiphora discolor</i>	Omurere											XX	
	<i>Commiphora glaucescens</i>	Omutungi	XX										XX	
	<i>Commiphora merkitii</i>	Onangwi												
	<i>Commiphora mollis</i>	Omurenda						XX					XX	
	<i>Commiphora multijugaa</i>	Omuzumba						XX					XX	
	<i>Commiphora pyacanthoides</i>	Omukange	XX				XX							
	<i>Commiphora virgata</i>	Omumbara]											XX	
Caesalpi niaceae	<i>Adenolobus garipensis</i>	Omukandakanda												

Family	Species	Ojijherero name	Food	Beverage	Curdling	Medicine	Medical instrument	Religious use	Magic	Hygiene	Cosmetic	Art	Bedding and clothing	Utensil, containers	Toys and games
Caesalpiaceae	<i>Cassia italica</i>	Orutanga				XX									
	<i>ssp. arachoides</i>														
	<i>Colophospermum mopane</i>	Omutati				XX	XX	XX		XX			XX		
	<i>Peltophorum africanum</i>	Omuparara or omuti wehapa						XX							
Cappara ceae	<i>Tylosema fassoglensis</i>	Omumbanyu, otjipiva and ozombanyu	XX												
	<i>Boscia albitrunca</i>	Omungwindi or Omurembwe or Omutendereti	XX	XX	XX	XX									
	<i>Boscia foetida</i>	Otjinautoni or Omungwindi	XX		XX	XX									
	<i>Gynandropsis gynandra</i>	Ombowa	XX												
Celastraceae	<i>Maerua juncea</i>	Omupangambura							XX						
	<i>Maerua parvifolia</i>	Otjinautoni													
	<i>Maerua schinzii</i>	Etangu or omutengu													
	<i>Crocoxylon transvaalense</i>	Omupya				XX									
Combretaceae	<i>Maytenis senegalensis</i>	Omutungvimbara												XX	
	<i>Combretum apiculatum</i> spp. <i>apiculatum</i>	Omumbute				XX									
	<i>Combretum hereroense</i>	Omutapati											XX		
	<i>Combretum imberbe</i>	Omumborombonga						XX							
	<i>Combretum mossambicense</i>	Omuturugu							XX					XX	
	<i>Combretum wattii</i>	Omutapati													

Family	Species	Otjherero name	Food	Beverage	Curdling	Medicine	Medical instrument	Religious Magic use	Hygiene	Cosmetic Art	Bedding and clothing	Utensil, containers	Toys and games
Combre taceae	<i>Combretum sp</i>	Omutareka										XX	
	<i>Terminalia prunioides</i>	Omuhamia		XX		XX		XX					
Convol vulaceae	<i>Ipomoea adenoides</i>	Omuti wotjipindo				XX							
	<i>Ipomoea bolusiana</i>	Otjinakwi	XX										
	<i>Ipomoea rubens</i>	Otjina tjoruhona											
	<i>Ipomoea verbascoidea</i>	Otjindwapa											
	<i>Coccinea sessifolia</i>	Otjimaka	XX										
Cucurbi taceae	<i>Corallocarpus wehwiitschii</i>	Ohona	XX										
	<i>Trochomeria macrocarpa</i>	Ohona	XX										
	<i>Cuscuta planiflora</i>	Ongongoro				XX							
Cypera ceae	<i>Cyperus fulgens</i>	Oseu	XX										
	<i>Cyperus longus ssp tenuiflorus</i>	Onenge								XX			
	<i>Juncellus laevigatus</i>	Ondombora											
	<i>Scirpus dioicus</i>	Ondeka						XX					
	<i>Diospyros lycioides</i>	Omundumbiri							XX				
Ebena ceae	<i>Diospyros mespiliformis</i>	Omunyandi	XX			XX			XX				
	<i>Euclea divinorum</i>	Omuzema							XX				
	<i>Euclea pseudebenus</i>	Omuzema							XX				
									XX			XX	

Family	Species	Otjherero name	Food	Beverage	Curdling	Medicine instrument	Religious use	Magic	Hygiene	Cosmetic Art	Bedding and clothing	Utensil, containers	Toys and games
Euphorbiaceae	<i>Cephalocroton puschelii</i>	Ondete											
	<i>Croton gratissimus</i>	Omumbango											
	<i>Croton subgratissimus</i>	Omumbangona											
	<i>Euphorbia currori</i>	Omuryangava											
	<i>Euphorbia omupondorwa</i> or <i>omupondorito</i>												
	<i>Euphorbia guerichiana</i>	Ohahi											
	<i>Euphorbia subsala</i>												
	<i>Euphorbia virosa</i>	Eyao											
	<i>Securinega virosa</i>	Omutareka											
	<i>Spirostachys africana</i>	Orupapa								XX			
	<i>Erythrina decora</i>	Omuni									XX		
	<i>Indigofera cryptantha</i>	Orukohatjinyo							XX				
	<i>Lonchocarpus nelsii</i>	Omupanda				XX						XX	
	Fabaceae	<i>Mundulea sericea</i>	Omukeka							XX			
<i>Neorautanenia mitis</i>		Eyona											
<i>Pterocarpus sp</i>		Omuryambahe											
<i>Ormocarpum kirkii</i>		Omuyoramazenge						XX					
<i>Cordia gharaf</i>		Omusepa	XX									XX	
<i>Heliotropium hereroense</i>		Omumbwanda	XX										

Family	Species	Otjiherero name	Food	Beverage	Curdling	Medicine	Medical instrument	Religious use	Magic	Hygiene	Cosmetic Art	Bedding and clothing	Utensil, containers	Toys and games
Heliotropiaceae	<i>Heliotropium nelonii</i>	Onyiva												
	<i>Lapeiroosia</i>	Onduvi	XX											
Iridaceae	<i>Lamiaceae</i>	Leonotis nepetifolia	XX											
	<i>Leucas pechuelii</i>	Erombora			XX									
	<i>Leucas sp.</i>	Orunwe				XX				XX				
Liliaceae	<i>Aloe hereroensis</i>	Otjindombo				XX								
	<i>Asparagus sp</i>	Orukanunambura						XX						
Loranthaceae	<i>Tapinanthus oleifolius</i>	Otjira				XX								
Malvaceae	<i>Abutilon fruticosum</i>	Omutopiri												
Meliaceae	<i>Entandrophragma spicata</i>	Omutaku									XX			
	<i>Ptaeroxylon obliquum</i>													
Menispermaceae	<i>Tinospora fragosa</i>	Erara				XX								
Mimosaceae	<i>Acacia albida</i>	Omwe												
	<i>Acacia ataxantha</i>	Orweyo												
	<i>Acacia erubescens</i>	Omungomwi	XX											
	<i>Acacia fleckii</i>	Omungomso or otjisaurambuku												
	<i>Acacia giraffae</i>	Omumbonde												
	<i>Acacia hebeclada</i>	Otjimbuku				XX								

Family	Species	Orjherero name	Food	Beverage	Curdling	Medicine	Medical instrument	Religious use	Hygiene	Cosmetic Art	Bedding and clothing	Utensil, containers	Toys and games
Mimosa caea	<i>Acacia spp kirkii</i>	Orukumbuya			XX								
	<i>Acacia mellifera spp detinens</i>	Omusaona			XX								
	<i>Acacia mellifera spp mellifera</i>	Omutukahere											
	<i>Acacia nebrownii</i>	Orupunguya			XX								
	<i>Acacia nilotica var Kraussiana</i>	Orusu			XX	XX							
	<i>Acacia reficiens</i>	Omungondo											
	<i>Acacia senegal var rostrata</i>	Omuryangava											
	<i>Acacia sieberiana var woodii</i>	Omunyere											
	<i>Acacia tortilis ssp heteracantha</i>	Omungondo											
	<i>Albizia anthelminitica</i>	Omuryandjima											
	<i>Albizia tanganyicensis</i>	Omupepe							XX				
	<i>Elephantorrhiza suffruticosa</i>	Omundjoze											
	<i>Mimosa pigra</i>	Omutyahoni							XX				
	Montinia ceae	<i>Montinia caryophyllacea</i>	Omutete			XX	XX	XX				XX	
Moraceae	<i>Ficus capreifolia</i>	Omuzuvakuvare											
	<i>Ficus cordata</i>	Omunkumbwa or omumbaha											

Family	Species	Otjherero name	Food	Beverage	Curdling	Medicine	Medical instrument	Religious Magic use	Hygiene	Cosmetic Art	Bedding and clothing	Utensil, containers	Toys and games
Mora ceae	<i>Ficus glumosa</i>	Omumbaha											
	<i>Ficus guericiana</i>	Omukuyumbwa											
	<i>Ficus petersii</i>	Omuhoro											
Moringa ceae	<i>Ficus sycomorua</i>	Omukuyu	XX										
	<i>Moringa ovalifolia</i>	Omukuva	XX										
Myrothamnaceae	<i>Myrothamnus flabellifolius</i>	Okandukaze		XX									
	<i>Boerhavia or Commicarpus sp.</i>	Okaharaova		XX									
Olacaceae	<i>Ximonia americana</i>	Omuninga	XX							XX			
	<i>Ximonia sp.</i>	Omumbatu								XX			
Oleaceae	<i>Jasminum fluminense</i>	Okarondo				XX			XX				
	<i>Opilia campestris</i>	Omundumise or Amutumise	XX	XX	XX								
Periploca ceae	<i>Sesamothonus gusrichii</i>	Ongumbati				XX							
	<i>Curroria decida</i>	Omuhambamba or ehambamba				XX							
Poaceae (gramineae)	<i>Raphionacme sp.</i>	Etundo											
	<i>Cenchrus ciliaris</i>	Orurenda											
Poaceae (gramineae)	<i>Cymbosetaria sagittifolia</i>	Ehomba											
	<i>Cynodon dactylon</i>	Otjiwena											

Family	Species	Otjiherero name	Food	Beverage	Curdling	Medicine	Medical instrument	Religious use	Magic	Hygiene	Cosmetic	Art	Bedding and clothing	Utensils, containers	Toys and games
Poaceae (gramineae)	<i>Enneapogon scoparius</i>	Okahundanduzu													
	<i>Eragrostis nindensis</i>	Ongangahozu													
	<i>Oryzidium barnardii</i>	Ondorozi													
	<i>Phragmites mauritianus</i>	Otjihu or oruu					XX						XX		
	<i>Rhynchelytrum repens</i>	Otjinatjizombe												XX	
	<i>Sorghum verticilliflorum</i>	Orwandjandja													
	<i>Stipagrostis uniplumis</i>	Ongumba													
	<i>Polygonum pulchrum</i>	Otjambi													
	<i>Portulaca oleracea</i>	Ojitandavare					XX								
	<i>Berchemia discolor</i>	Omuve		XX	XX										
Rhamna ceae	<i>Helinus integrifolius</i>	Ongambiyondjou								XX	XX				
	<i>Ziziphus mucronata</i>	Omukaru	XX			XX								XX	
Rubiaceae	<i>Amphiasma benguellense</i>	Omukorokokwa													
	<i>Gardenia spatulifolia</i>	Omyarave	XX											XX	
	<i>Vangueria infaustaa</i>	Omundjenya or Omutjenya	XX				XX							XX	
Rutaceae	<i>Fagara ovatifoliolata</i>	Omuhandwa					XX							XX	
	<i>Thamnosma africanum</i>	Omukorikoko												XX	
Salicaceae	<i>Salix sp.</i>	Omurambandu				XX									

Family	Species	Otjherero name	Food	Beverage	Curdling	Medicine	Medical instrument	Religious use	Magic	Hygiene	Cosmetic	Art	Bedding and clothing	Utensil, containers	Toys and games
Salvado raceae	<i>Salvadora persica</i>	Omumbambu	XX			XX									
Simarou baceae	<i>Kirkia acuminata</i>	Omuhoho													
Solana- Ceeae	<i>Kycium oxycarpum</i>	Ojingwahuhwa				XX									
	<i>Solanum incanum</i>	Omundumbwiriri				XX									
Sterculia ceae	<i>Withania somniafera</i>	Ojindumbu				XX									
	<i>Sterculia africana</i>	Omuhako				XX									
	<i>Grewia bicolor</i>	Omuvapu	XX												
Tillia- ceae	<i>Grewia flava</i>	Omundjembere	XX			XX									
	<i>Grewia flavescens</i>	Omuhe		XX				XX							
	<i>Grewia schinzii</i>	Omuhore	XX												
	<i>Grewia tenax</i>	Omundjere omunene	XX												
Urtica- ceae	<i>Grewia villosa</i>	Omuhamati	XX												
	<i>Pouzolzia hypoleuca</i>	Ondomo				XX		XX							
Vellozia ceae	<i>Xerophyta squarrosa</i>	Orukombo												XX	
	<i>Cissus nymphaeifolia</i>	Omungayanya				XX									
Vitaceae	<i>Cyphostemma currori</i>	Omutindi	XX			XX								XX	
	<i>Cyphostemma ruacanense</i>	Orundombo or otjiina tjovakayendu													XX

Family	Species	Otjherero name	Food	Beverage	Curdling	Medicine	Medical instrument	Religious use	Magic	Hygiene	Cosmetic Art	Bedding and clothing	Utensil, containers	Toys and games
Zygophyllaceae	<i>Tribulus zeyheri</i>	Ozohongwe or ozohongo												
	<i>Zygophyllum simplex</i>	Onona												

Utilisation of the indigenous flora 2
Adapted from Malan and Owen-Smith - 1974

Family	Species	Ojijherero name	Twine, roping agent	Tanning agent	Fire wood, sticks	Smoking utensil	Digging sticks	Weapons	Poison	Build material	Fencing	Trough	Stock feed	
Acanthaceae	<i>Barleria prionitoides</i>	Ondunduma-ne or otjikokota											XX	
	<i>Blepharis obmitrata</i>	Onyainya or otjikokotwa											XX	
	<i>Ecbolium clarkii</i>	Otjipembati otjinene											XX	
	<i>Monechma arenicola</i>	Otjipembati or otjingongwe											XX	
	<i>Monechma tonsum</i>	Otjokange											XX	
	<i>Petalidium coccineum</i>	Otjingenge											XX	
	<i>Petalidium luteo-album</i>	Otjitiitjondura											XX	
	<i>Petalidium rossmannianum</i>	Otjipembati or otjingongwe											XX	
	<i>Petalidium sp.</i>	Otjipeembati											XX	
	Agavaceae	<i>Sansevieria aethiopica</i>	Ongwehe											
	Amaranthaceae	<i>Alternanthera pungens</i>	Okana kakahandja or outwerangamwa											XX
		<i>Amaranthus thunbergii</i>	Omunandi											XX
		<i>Calicorena capitata</i>	Ongarati											XX
<i>Leucosphaera bainesii</i>		Otjivetjombandje											XX	
Anacardiaceae	<i>Rhus</i>	Ommuryangwari												
	<i>Anacardium occidentale</i>	Oruso					XX							

Family	Species	Otjherero name	Twine, ropping	Tanning agent	Fire wood, sticks	Smoking	Digging utensil	Walking sticks	Weapons	Poison	Build material	Fencing	Trough	Stock feed
Anacardiaceae	<i>Sclerocarya birrea</i>	Omungongo			XX									
Apiaceae	<i>Steganoaenia araliacea</i>	Epondo			XX									
Apocynaceae	<i>Adenium boehmianum</i>	Ouruwo								XX				
	<i>Pachypodium lealii</i>	Ohwanga											XX	
	<i>Strophanthus amboensis</i>	Omuhundure			XX									
Areaceae	<i>Hyphaene ventricosa</i>	Omurunga	XX						XX					
Asclepiadaceae	<i>Fockea multiflora</i>	Otjipwiya or otjimbuya								XX				
	<i>Hoodia parviflora</i>	Otjinove								XX				
	<i>Marsdenia macrantha</i>	Oruzenga												XX
Asteraceae	<i>Antiphona fragrans</i>	Otjindundu												XX
	<i>Blumea garipeina</i>	Otjindundu or otjindumba												XX
	<i>Helichrysum tomentosulum</i> ssp. <i>tomentosulum</i>	Ongwambundu									XX			XX
	<i>Kleinia longiflora</i>	Orukwasena												
	<i>Mikania sagittifera</i>	Oruhona												
	<i>Nicotiana glauca</i>	Okatjikwa												
	<i>Pectis pectis</i>	Otjindumba or Omundumba												
	<i>Rennetia immophila</i>	Otjekwa												

Family	Species	Orijherero name	Twine, ropping agent	Tanning agent	Fire wood, sticks	Smoking utensil	Digging sticks	Walking sticks	Weapons	Poison	Build material	Fencing	Trough	Stock feed
Asteraceae	<i>Vernonia obionifolia</i>	Omukarahunda												XX
Balanita ceae	<i>Balanites welwitschii</i>	Omumbamenye			XX							XX		
Bignonia ceae	<i>Catophractes alexandri</i>	Omukaravize			XX									XX
	<i>Rhigozum brevispinosum</i>	Omuporamapingo				XX			XX					XX
	<i>Rhigozum virgatum</i>	Omumbute or omunditi												XX
Bombaca ceae	<i>Adansonia digitata</i>	Omuzu	XX											
	<i>Commiphora africana</i>	Ongareya or Omboo												
	<i>Commiphora anacardiifolia</i>	Omutuya												
	<i>Commiphora angolensis</i>	Omuhangorwa or Omongorwa												
Bursera ceae	<i>Commiphora crenato-serrata</i>	Omuhanga												
	<i>Commiphora discolor</i>	Omurere												
	<i>Commiphora glaucescens</i>	Omunungi			XX									XX
	<i>Commiphora merkiti</i>	Onangwi												XX
	<i>Commiphora mollis</i>	Omurenda												XX
	<i>Commiphora multijugaa</i>	Omuzumba												XX
	<i>Commiphora pyacanthoides</i>	Omukange												
	<i>Commiphora virgata</i>	Omumbara			XX									
Caesalpi niaceae	<i>Adenolobus garipensis</i>	Omukandakanda												XX
														XX

Family	Species	Ojijherero name	Twine, ropping	Tanning agent	Fire wood, sticks	Smoking	Digging utensil	Walking sticks	Weapons	Poison	Build material	Fencing	Trough	Stock feed
Caesalpiaceae	<i>Cassia italica</i>	Orutanga												
	<i>spp arachoides</i>													
	<i>Colophospermum mopane</i>	Omutati	XX		XX						XX		XX	XX
	<i>Peltophorum africanum</i>	Omuparara or omuti wehapa												
	<i>Tylosema fassoglensis</i>	Omumbanyu, otjipiva and ozombanyu												
	<i>Boscia albitrunca</i>	Omungwindi or Omurembwe or Omutendereeti												XX
	<i>Boscia foetida</i>	Otjinautoni or Omungwindi												XX
	<i>Gynandropsis gynandra</i>	Ombowa												
Cappara ceae	<i>Maerua juncea</i>	Omupangambura												
	<i>Maerua parvifolia</i>	Otjinautoni												XX
	<i>Maerua schinzii</i>	Etangu or omutengu												XX
	<i>Crocoxylon transvaalense</i>	Omupya							XX					
Celastra ceae	<i>Maytenus senegalensis</i>	Omutungavimbara												
	<i>Combretum apiculatum</i>	Omumbute							XX					
Combre taceae	<i>spp apiculatum</i>													
	<i>Combretum hereroense</i>	Omutapati												
	<i>Combretum imberbe</i>	Omumborombonga											XX	
	<i>Combretum mossambicense</i>	Omaturugu												
	<i>Combretum wattii</i>	Omutapati												XX

Family	Species	Otjilherero name	Twine, ropping	Tanning agent	Fire wood, sticks	Smoking	Digging utensil	Walking sticks	Weapons	Poison	Build material	Fencing	Trough	Stock feed
Combre taceae	<i>Combretum sp</i>	Omutareka												XX
	<i>Terminalia prunioides</i>	Omuhamu												XX
Convol vulaceae	<i>Ipomoea adenoides</i>	Omuti wotjipindo												
	<i>Ipomoea bolusiana</i>	Otjinakwi												XX
	<i>Ipomoea rubens</i>	Otjiina tjoruhona												
	<i>Ipomoea verbascoidea</i>	Otjindwapa												XX
	<i>Coccoloba sessilifolia</i>	Otjimaka												
	<i>Corallocarpus welwitschii</i>	Ohona												XX
Cucurbi taceae	<i>Trochomeria macrocarpa</i>	Ohona												XX
	<i>Cuscuta planiflora</i>	Ongongoro												
Cuscuta ceae	<i>Cyperus fulgens</i>	Oseu												XX
	<i>Cyperus longus ssp tenuiflorus</i>	Onenge												XX
Cypera ceae	<i>Juncellus laevigatus</i>	Ondombora												XX
	<i>Scirpus dioicus</i>	Ondeka												XX
	<i>Diospyros lycioides</i>	Omundumbiri												
	<i>Diospyros mespiliformis</i>	Omunyandi												
Ebena ceae	<i>Euclea divinorum</i>	Omuzema												
	<i>Euclea pseudebenus</i>	Omuzema												

Family	Species	Otiherero name	Twine, roping	Tanning agent	Fire wood, sticks	Smoking	Digging utensil	Walking sticks	Weapons	Poison	Build material	Fencing	Trough	Stock feed	
Euphorbiaceae	<i>Cephalocroton puschellii</i>	Ondete												XX	
	<i>Croton gratissimus</i>	Omumbango						XX	XX					XX	
	<i>Croton subgratissimus</i>	Omumbangona												XX	
	<i>Euphorbia currori</i>	Omuryangava												XX	
	<i>Euphorbia guericchiana</i>	Omupondororwa or omupondorrito			XX									XX	
	<i>Euphorbia subsala</i>	Ohahi								XX					
	<i>Euphorbia virosa</i>	Eyao								XX					
	<i>Securinega virosa</i>	Omutareka												XX	
	<i>Spirostachys africana</i>	Orupapa													
	<i>Erythrina decora</i>	Omuni													
	<i>Indigofera cryptantha</i>	Orukohajinyo													
	<i>Lonchocarpus nelsii</i>	Omupanda													XX
	<i>Mundulea sericea</i>	Omukeka													
	Fabaceae	<i>Neorautanenia mitis</i>	Eyona												XX
<i>Pterocarpus sp</i>		Omuryambabe												XX	
<i>Ormocarpum kirkii</i>		Omuyoramazenge												XX	
<i>Cordia gharaf</i>		Omusepa								XX				XX	
<i>Heliotropium hereroense</i>		Omumbwanda												XX	

Family	Species	Otjiherero name	Twine, ropping	Tanning agent	Fire wood, sticks	Smoking	Digging utensil	Walking sticks	Weapons	Poison	Build material	Fencing	Trough	Stock feed
Heliotropiaceae	<i>Heliotropium nelsonii</i>	Onyiva												XX
	<i>Lapeiroosia nelsonii</i>	Onduvi												
Iridaceae	<i>Lamiaceae</i>	Leonotis nepetifolia												
	<i>Leucas pechuelii</i>	Erombora												
	<i>Leucas sp. pechuelii</i>	Orunwe												
	<i>Aloe hereroensis</i>	Otjindombo												
Liliaceae	<i>Asparagus sp. hereroensis</i>	Orukanunambura												
	<i>Tapinanthus oleifolius</i>	Otjirauna												
Malvaceae	<i>Abutilon fruticosum</i>	Omutopiri												XX
	<i>Entandrophragma spicata</i>	Omutaku												
Meliaceae	<i>Ptaeroxylon obliquum</i>				XX			XX	XX					XX
	<i>Tinospora fragosa</i>	Erara												
Mimosaceae	<i>Acacia albida</i>	Omwe												XX
	<i>Acacia ataxacantha</i>	Orweyo							XX					
	<i>Acacia erubescens</i>	Omumgongomwi						XX						XX
	<i>Acacia fleckii</i>	Omumgomo or otjisaurambuku												XX
Mimosaceae	<i>Acacia giraffae</i>	Omumbonde			XX									XX
	<i>Acacia hebeclada</i>	Otjimbuku												XX

Family	Species	Otjherero name	Twine, roping	Tanning agent	Fire wood, sticks	Smoking	Digging utensil	Walking sticks	Weapons	Poison	Build material	Fencing	Trough	Stock feed	
Mimosa caea	<i>Acacia spp kirkii</i>	Orukumbuya													
	<i>Acacia mellifera spp detinens</i>	Omsaona							XX			XX			
	<i>Acacia mellifera spp mellifera</i>	Omutukahere												XX	
	<i>Acacia nebrownii</i>	Orupunguya							XX			XX		XX	
	<i>Acacia nilotica var Kraussiana</i>	Orusu	XX											XX	
	<i>Acacia reficiens</i>	Omungondo										XX		XX	
	<i>Acacia senegal var rostrata</i>	Omuryangava										XX		XX	
	<i>Acacia sieberiana var woodii</i>	Omunyere										XX		XX	
	<i>Acacia tortilis ssp heteracantha</i>	Omungondo										XX		XX	
	<i>Albizia anthelmintica</i>	Omutyandjima													XX
	<i>Albizia tanganyiceensis</i>	Omupepe								XX					
	<i>Elephantorrhiza suffruticosa</i>	Omundjoze													
	<i>Mimosa pigra</i>	Omutiyahoni													
	Montinia ceae	<i>Montinia caryophyllacea</i>	Omutete												
Moraceae	<i>Ficus capreifolia</i>	Omuzuvakvare												XX	
	<i>Ficus cordata</i>	Omunumbwa or omumbaha		XX										XX	
	<i>Ficus glumosa</i>	Omunumbaha		XX											

Family	Species	Otjherero name	Twine, ropping	Tanning agent	Fire wood, sticks	Smoking	Digging utensil	Walking sticks	Weapons	Poison	Build material	Fencing	Trough	Stock feed
Moraceae	<i>Ficus guerichtiana</i>	Omukuyumbwa		XX										
	<i>Ficus petersii</i>	Omuhoro	XX											
	<i>Ficus sycamoros</i>	Omukuyu		XX										XX
Moringa ceae	<i>Moringa ovalifolia</i>	Omukuva												
Myrothamnaceae	<i>Myrothamnus flabellifolius</i>	Okandukaze												
	<i>Boerhavia or Commicarpus sp</i>	Okaharaova												
Olaca ceae	<i>Ximena americana</i>	Omuninga												
	<i>Ximena sp.</i>	Omumbatu												XX
	<i>Jasminum fluminense</i>	Okarondo												XX
Opiliaceae	<i>Opilia campestris</i>	Omundumise or Amutumise												XX
	<i>Sesamothamnus gusrichii</i>	Ongumbati												XX
Periploca ceae	<i>Curroria decidua</i>	Omuhambambwa or ehambambwa												
	<i>Raphionacme sp.</i>	Etundo								XX				
	<i>Cenchrus ciliaris</i>	Orurenda												XX
Poaceae (gramin eae)	<i>Cymbosetaria sagittifolia</i>	Ehomba												XX
	<i>Cynodon dactylon</i>	Otiwena												XX
	<i>Enneapogon scoparius</i>	Okahundanduzu												XX

Family	Species	Otjherero name	Twine, ropping	Tanning agent	Fire wood, sticks	Smoking	Digging utensil	Walking sticks	Weapons	Poison	Build material	Fencing	Trough	Stock feed
Poaceae (gramin eae)	<i>Eragrostis nindensis</i>	Ongangahozu												XX
	<i>Oryzidium barnardii</i>	Ondorozu									XX			XX
	<i>Phragmites mauritianus</i>	Otjihu or oruu				XX					XX			XX
	<i>Rhynchelytrum repens</i>	Otjinatjzombe												XX
	<i>Sorghum verticilliflorum</i>	Orwandjandja									XX			XX
	<i>Stipagrostis uniplumis</i>	Ongumba												XX
	<i>Polygonum pulchrum</i>	Otjambi												XX
	<i>Portulaca oleracea</i>	Otjitanjavare												
	<i>Berchemia discolor</i>	Omuve												
	<i>Helinus integrifolius</i>	Ongambiyondjou												
Rubia-ceae	<i>Ziziphus mucronata</i>	Omukaru												
	<i>Amphiasma benguelense</i>	Omkorokokwa												XX
	<i>Gardenia spatulifolia</i>	Omyarave												XX
Rutaceae	<i>Vangueria infaustaa</i>	Omundjenya or Omutjenya												
	<i>Fagara ovatifoliolata</i>	Omuhandwa												
Salica-ceae	<i>Thamnosma africanum</i>	Omkorikoko												
	<i>Salix sp.</i>	Omurambandu												

Family	Species	Ofjijherero name	Twine, ropping	Tanning agent	Fire wood, sticks	Smoking	Digging utensil	Walking sticks	Weapons	Poison	Build material	Fencing	Trough	Stock feed
Salvadora raceae	<i>Salvadora persica</i>	Omumbambu												
Simarou baceae	<i>Kirkia acuminata</i>	Omuhoho	XX											
Solana- Ceeae	<i>Kycium oxycarpum</i>	Ojjingwahuhwa												XX
	<i>Solanum incanum</i>	Omundumbwiriri												
Sterculia ceae	<i>Withania somnifera</i>	Ojindumbu	XX											
	<i>Sterculia africana</i>	Omuhako	XX						XX					XX
	<i>Grewia bicolor</i>	Omuvapu						XX	XX					XX
	<i>Grewia flava</i>	Omundjembere			XX									
Tillia- ceae	<i>Grewia flavescens</i>	Omuhue						XX	XX					XX
	<i>Grewia schinzii</i>	Omuhore						XX	XX					XX
	<i>Grewia tenax</i>	Omundjendjere omunene												XX
	<i>Grewia villosa</i>	Omuhamati												XX
Urtica-ceae	<i>Pouzolzia hypoleuca</i>	Ondomo												XX
	<i>Xerophyta squarrosa</i>	Orukombo												XX
Vellozia ceae	<i>Cissus nymphaeifolia</i>	Omungayanya												
	<i>Cyphostemma currori</i>	Omutindi												
	<i>Cyphostemma ruacanense</i>	Orundombo or ofjiima tjovakayendu												

Family	Species	Otjherero name	Twine, ropping	Tanning agent	Fire wood, sticks	Smoking	Digging utensil	Walking sticks	Weapons	Poison	Build material	Fencing	Trough	Stock feed
Zygophyllaceae	<i>Tribulus zeyheri</i>	Ozohongwe or ozohongo												XXX
	<i>Zygophyllum simplex</i>	Onona												XXX

**Utilisation of the indigenous flora 3
Adapted from the work of the Kunene North FSR-E Unit, 1999/2000**

Scientific name	Otjilherero name	Medicinal use	Fodder value	Other use
<i>Acacia erioloba</i>	Omumbonde		Pods are good fodder for animals.	Firewood and construction purposes (poles, timbers, etc.)
<i>Acacia hebecoides</i>	Otjimbuku	Leaves are used as a remedy to treat diarrhoea.	Browsed by goats. The pods can be used as supplementary feeding.	
<i>Acacia karoo</i>	Orusu	Green immature pods are crushed to produce some juice. The juice is applied in infected eyes of animals.		Used for construction (poles) and firewood.
<i>Acacia mellifera</i>	Omusaona		Browsed by game and stock.	Branches are used as fencing material. The roots are put in calabashes to act as catalyst agent for the milk.
<i>Acacia reficiens</i>	Omungondo			The wood is used for fencing and as firewood
<i>Acacia tortilis</i>	Orusu or Orupunguya	The pods are ground, cooked and applied on wounds or on infected eyes.		
<i>Acacia sp.</i>	Orupunguiya		Goats feed on the pods.	
<i>Adansonia digitata</i>	Omuzu	The bark is pounded and mixed with water. The mixture is administered to cows in case of retained placenta		
<i>Adenium boehmianum</i>	Ouzuwo			Very poisonous.
<i>Albizia anthelmentica</i>	Omuama	The bark is dried and pounded. The powder is mixed with food and used as a deworming (Otuani, Omuhonga). In Ouozonduuombe the bark is boiled in water and the water is drunk (also deworming)		Young stems are chewed and used to clean tooth.
<i>Aloe asperifolia</i>	Otjondombo or otjingandue	The leaf is pressed to produce juice or the fresh stems are squeezed to produce juice. The juice is applied in infected eyes. The fresh stems are squeezed to produce juice or the leaves are pounded and boiled in water. The solution is administered to treat pasteurellosis		
<i>Alternanthera pungens</i>	Okakurahungi		Sheep eat the roots and sometimes the leaves but it is not palatable.	
<i>Antheperora schinzii</i>	Okaurukonde		The most important grass in Ohandungu but low fodder production.	

Scientific name	Ojjiherero name	Medicinal use	Fodder value	Other use
<i>Aristida adscensionis</i>	Ohoke		Important grass (especially because it recovers early).	
<i>Aristida effusa</i>	Ohoke		Cattle only eat the very young plants	It can cause cancer in the eyes of animals during the old stage, as it can stick them.
<i>Aristida rhinochloa</i> <i>Aristida stipitata</i>	Ohoke Omuhoke		Very little grazing value for animals. Edible when fresh and at young stage, just after the first rains.	
<i>Bhizemia bicolor</i> <i>Boscia albitrunca</i>	Omuve Omutendeereti		Browses by cattle and goats. Good quality.	Fruits can be eaten
<i>Boscia foetida</i>	Otjinautoni	Stems are chewed in case of cold. The bark is burnt till ash is formed and ashes are applied on infected eyes (Omuhonga) The bark is boiled or ground and then applied on infected eyes (Ouozoneuombe)	Can be browsed by cattle and goats. Branches are chopped and distributed as fodder.	
<i>Caesalpinia pearsonii</i> <i>Catophractus alexandri</i>	Omuryazondu Omukaravize	Juice is extracted and applied on wounds The roots are boiled and drunk to treat dourine in human	Well appreciated by sheep Good bush for small stock.	
<i>Cenchrus ciliaris</i> <i>Colopospermum mopane</i>	Ongangahozu Omutati	Leaves are boiled in water (Otuani) or pounded and mixed with cold water (Ouozoneuombe) and the solution is drunk to treat human diarrhoea. Dried leaves are burnt and the smoke is inhaled to treat headaches. to treat stomach ache. Bark for large trees is boiled and the water drunk Fresh leaves are chewed and applied on open sores. Fresh leaves are pounded and mixed with cold ash to treat diarrhoea in calves caused by milk.	Good tree for browsing. Not very important for livestock	Mopane worms are used for human consumption. The wood is used as fencing material and for the holy fire. Bark is used to make ropes.
<i>Combretum apiculium</i>	Omumbuti	Leaves are boiled and the water is drunk to treat diarrhoea in human	Grazed by cattle, important supplement during the dry season because it remain green.	Can be use for curving purposes.
<i>Combretum imberbe</i> <i>Combretum sp.</i>	Omumborombonga Ozuvakure	Leaves are boiled in water and the solution is drunk to treat cold.	Browsed by goats.	Excellent firewood and charcoal producer

Scientific name	Otjherero name	Medicinal use	Fodder value	Other use
<i>Commiphora anacordifolia</i>	Omutindi	Leaves are pounded and rubbed onto the small stock to treat mange (Ouzonduumbo) or the whole plant is ground and mixed to water and the solution administered orally to sheep and goats (Ohandungu) against mange.		
<i>Commiphora angolensis</i>	Omutungi	Gum is applied on animal wounds.		Life fencing The main stems are used to build "omahoro", sour milk containers.
<i>Commiphora virgata</i>	Orumbara or Omupya	Leaves and bark are boiled in water and the solution orally administered to remove chest pain.		
<i>Commiphora spp</i>	Oombo or Ongareya		The fiber of the trunk is eatable Good fodder for small stock.	Construction material The fresh roots are chewed to relieve thirst.
<i>Croton gratissinus</i>	Ombango	Roots are dried and ground to powder. The powder is administered to prevent abortion in animals.		
<i>Dichaelia forcipata</i>	Otipembati		Liked by cattle, goats and sheep Goats and sheep eat pods.	The wood is used to make walking sticks and crow bars. Bark is used as a string around calabashes.
<i>Dichrostachys cinerea</i>	Omutjete (Omundjete)			Berries are harvested and eaten.
<i>Diospyros mespiliformis</i>	Omunjandi		Important grass in Ohandungu area	
<i>Enneapogon cenchroides</i>	Etanga		Liked by cattle.	
<i>Enteopocamia aristulata</i>	Ombanga		Very important grass in Ohandungu area.	
<i>Eragrostis annulata</i>	Okarueyo		Good grass. Whole tufts are given to cattle.	
<i>Eragrostis cylindriflora</i>	Ongangahozu		Good grazing value	
<i>Eragrostis nindensis</i>	Ongangahozu			
<i>Euclea pseudebenus</i>	Omuzema	Roots are dried and pounded and the powder is applied on infected eyes (Omuhonga) Roots are burnt to ash. A special stone and millipede are ground with the ashes. The mixture is applied on infected eyes. (Ohandungu)		
<i>Euphorbia sp</i>	Etindi	Roots are boiled. The mixture is applied on the body of dogs to treat lice.		Roots are chewed to clean teeth.
<i>Faidherbia albida</i>	Omue	Roots are ground to powder. The powder is put on the tongue before suckling for calves with liver deficiencies or coughing.	Pods and leaves are a good source of fodder during the dry season.	Can be used for construction purposes.

Scientific name	Ojijhero name	Medicinal use	Fodder value	Other use
<i>Fockea angustifolia</i>	Ehue			The fresh underground bulb can be eaten and relieve thirst.
<i>Geigeria ornativa</i>	Ojikotijongoro	Leaves are burnt on a hot fire and the ashes applied after circumcision. They can also be applied on wounds. It can be ground and use as a remedy for worms.	Not very good bush.	
<i>Grasia avellara</i>	Orutanga or Etakorovatua	Roots are boiled in water and the solution administered in case of stomach ache, diarrhoea and malaria.		
<i>Grewia bicolor</i>	Omuwapu		Good bush for grazing and browsing. Cattle and goats eat the leaves.	People and jackals eat the fruits. The wood is good for making pointing sticks and weapons.
<i>Grewia flava</i>	Omuwapu		Leaves are browsed by game and stocks	Stems are used as sticks.
<i>Grewia retinervis</i>	Omuhe			Fruits can be eaten
<i>Grewia sp.</i>	Omuore or Omisinda	Stems or roots are pounded and mixed with water. It is administered in case of retained placenta.	Valuable animal fodder	Stems can be made into knobkherries.
<i>Harpagophytum procumbens</i>	Otijhangatene	Roots are boiled in water and the solution can treat most human diseases.		
<i>Heteropogon contortus</i>	Okauerangupa		No fodder value	
<i>Hyphaene benguelensis</i>	Omurunga		The fibber of the trunk can be eaten.	Fruits are used for drinking. The heart of the leaves are tapped for alcohol.
<i>Keinia longiflora</i>	Orukuasena	The stem is boiled in water and the solution administered in case of diarrhoea or pasteurella among animals.		
<i>Kirkia acuminata</i>	Omuho		Leaves are very valuable for animals.	
<i>Leucosphaera bainesii</i>	Otjimbepati	Roots are burnt to ash and applied on wounds.		
<i>Lonchocarpus nelsii</i>	Omupanda		Good for small stocks and game when flowering.	Leaves are used as a curdling agent for the milk.
<i>Loranthers sp</i>	Otjiraura	The whole plant is pounded and put in cold water, then administered to animals with retained placenta.		
<i>Maerua juncea subspp crustata</i>	Orueti	The whole plant is pounded and mixed with sour milk, then administered to animals with diarrhoea or pasteurella.		

Scientific name	Ojijherero name	Medicinal use	Fodder value	Other use
<i>Maytenus seriegalensis</i>	Omutungavimbara	The stem is chewed by pregnant women.		
<i>Melinis repens</i>	Okainakombe		Good grass but not very palatable.	
<i>Montinia caryophylla</i>	Etete or Omutete			
<i>Mundulea serecea</i>	Omukeka	Stems are chew to treat human coughing.	Well appreciated by animals.	Used to clean the mouth. Used as decoration during Christmas.
<i>Pechypodium lealii</i>	Ohuanga	The fleshy inside layer of the trunk is squeezed and the juice administered to treat wounds on animals.		
<i>Pectuel-Loeschea leubnitziae</i>	Ojindumba or Omundumba	Leaves, stem and roots are pounded and boiled in water to treat retained placenta in animals (Ohandungu) Leaves are chewed to treat human coughing (Ouozonduombe) Bark is boiled to treat diarrhoea.	Goats and cattle like it (but it causes bitter meat)	
<i>Peltophorum africanum</i>	Ormparara			The stem can be used for carving purposes. Can easily burn even if wet.
<i>Ptaeroxylon obliquum</i>	Omumbungururu			Branches are used in the construction of kraals.
<i>Pterocarpus stvensonii</i>	Omuryambabe	Bark is boiled to treat diarrhoea in human.	Cattle eat the leaves but it is not a palatable bush.	In the past was used as crow bar.
<i>Rhigozum brevispinosum</i>	Omporamapingo			
<i>Salvadora persica</i>	Omumgambu	Roots are pounded and soaked in cold water. The solution is administered to treat diarrhoea in animals.	Very appreciated by goats and sheep.	
<i>Schmidia kalahariensis</i>	Ongorondji or Omurondji		Cattle eat only the young plants (it has	Berries are harvested and eaten. got a sour taste)
<i>Schmidia pappophoroides</i>	Omurondji		Good grass for animals	Fruits are edible. The stems can be curved into spoons and tools.
<i>Sclerocarya caffra</i>	Omuokongo			
<i>Sesomothamnus guerichii</i>	Ongumbati		Flowers are valuable fodder for small stock.	
<i>Setaria verticilla</i>	Ehomba		Good grass when young but not really attractive to cattle.	Sandbag worms on the plant may be eaten at the same time and cause cattle to die.
<i>Solanum padanriforme</i>	Omundumburiri	The latex of the fruits is squeezed in infected eyes of animals (Ohandungu) or human (Ouozonduombe).		

Scientific name	Otiherero name	Medicinal use	Fodder value	Other use
<i>Sorghum sp.</i>	Omumba		Graze by cattle. It may be an important natural supplement during the dry season as it remains green.	
<i>Spirostachys africana</i>	Omupapa	The bark of the roots is dried and pounded to treat wounds on animals.		
<i>Sterculia africana</i>	Omuhako	Bark is pounded and mixed with cold water to treat retained placenta in livestock.		The stem is cut and used as a trough for water cattle
<i>Tamarix usneoids</i>	Omuundje	Leaves, stems and roots are boiled in water to treat retained placenta in animals.		
<i>Terminalia prunoides</i>	Omuhama	Roots are boiled (Ohandungu) or mixed with milk (Ouozoneuombe) to treat human coughing.	Browsed by cattle, very good for sheep and goats.	Seeds are used to prepare tea.
<i>Tribulus terrestris</i>	Ohongwe	Seeds are boiled to treat animal abscesses.	Good bush for goats, sheep but also cattle and donkeys.	
<i>Vangueria infausta</i>	Omundenya	Leaves are pounded, boiled in water and applied locally to remove ticks on calves. (Ohandungu) Leaves are boiled and administered orally in case of diarrhoea (Ouozoneuombe).		
<i>Ximonia americana</i>	Omuninga	Roots are boiled in water and the solution is drunk in case of human diarrhoea.		The fruit can be eaten.
<i>Ziziphus mucronata</i>	Omukaru	Roots are boiled in water and the solution is drunk in case of diarrhoea (Otuani), stomach ache (Ouozoneuombe) or high blood pressure (Otuani).	Dry and green leaves are eaten by goats.	Fruits can be eaten Branches are used as fencing material.
Faeces of Porcupine		They are pounded and mixed with water. The solution is given in case of acute diarrhoea.		
Faeces of Zebra		They are pounded and mixed with water. The mixture is given in case of acute diarrhoea in animals.		
Elephant faeces	Otuzejondjou	Faeces are boiled in water. The solution is drunk. It can treat most diseases (Otuani)		

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Section 30

Droughts and disasters

Throughout this century OvaHimba pastoralists have gone through several major crises: these were caused by environmental conditions (lack of rainfall), epidemic livestock diseases (Rinderpest, CBPP, Anthrax) or political perturbations (Bollig, 1996).

Years of drought in Kaokoland (based on Gibson 1977 and other oral traditions, quoted in Bollig, 1996):

- 1907/08
- 1910/11
- 1914/15/16
- 1931/32
- 1934/35/36
- 1940/41
- 1945/46
- 1951/52/53
- 1958/59/60
- 1961/62
- 1963/64
- 1966/67
- 1968/69
- 1971/72
- 1975/76
- 1980/81/82
- 1992/93.

1970 and 1973 were both years of drought and unfavorable years as far as diseases amongst livestock are concerned. 1970 is mentioned as an exceptionally dry year and 1908 cattle, 540 sheep and 849 goats died as a result of the drought. In contrast, in the 1973/74 season 460 cattle died as a result of the drought. (Page, 1976)

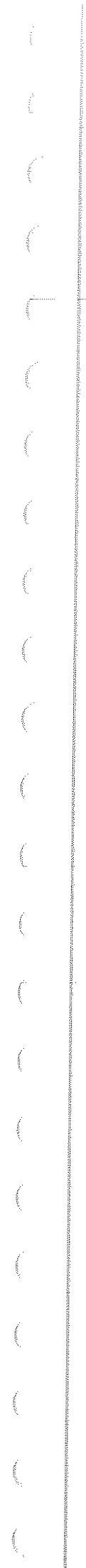
The drought in the early 1980s' caused great social disruption in the region. However, once some money was acquired through the governmental drought-relief and after the rush to Opuwo and other places to seek work, the buying-in of more cattle (mainly from Hereroland) took place to restore the necessary wealth and status. When another drought intervened in 1992, very few cattle were disposed of; only small stock numbers showed any degree of change. Cattle were retained in herds as far as possible. (Paskin, no date)

In a formal survey conducted with herders relating to non-disease problems, 66.6% of the Ovahimba respondents saw drought as a constraint, while 71.0% of the Herero respondents saw drought as a constraint. In the same survey, 5.3% of the Hereros thought of theft as a constraint while none of the OvaHimbos thought of theft as being a constraint. (Paskin, no date)



Chapter Five

LIVESTOCK PRODUCTION SYSTEMS



Section 31

Cattle production system

1. NUMBER OF CATTLE IN KUNENE NORTH

1.1. DIFFICULTY TO OBTAIN ACCURATE INFORMATION

According to the Directorate of Veterinary Services in Opuwo the accuracy of any information on livestock numbers is questioned, as livestock move in and out of areas and farmers are reluctant to reveal how many livestock they have. (in "NOLIDEP site survey in Kunene North", 1996; in "Livestock marketing in the Northern Communal Areas of Namibia", 2000)

The movement of cattle make accurate counting very difficult, as illustrated by the example provided by the former state veterinarian in Opuwo, Dr Zhou. The number of cattle vaccinated at specific point fluctuates drastically, but the total number of cattle vaccinated is relatively stable. Although this total is the only livestock number available it does not enable the determination of off-take rate for Kunene North. It may be argued that the vaccination campaign is supported by farmers with a specific intention and that some farmers do not believe in vaccination and therefore do not bring their animals to the vaccination points. Furthermore, the climatic conditions result in livestock movements into areas where there are no vaccination points (in "NOLIDEP site survey in Kunene North", 1996; in "Livestock marketing in the Northern Communal Areas of Namibia", 2000)

1.2. CATTLE CENSUS IN THE 1940s'

Number of cattle in Kunene North, 1947

	Herero	Himba	Tjimba	Total
Cattle	12000	20000	3000	35,000

(in Van Wermelo, 1951)

1.3. CATTLE CENSUS IN THE 1980s'

Two important drought (1977 and 1981/82) have affected the livestock production with numerous animals dying (Cornu. F, 1999)

The number of cattle in the Kunene North in 1980 was estimated at 110 580. With the onset of drought, it dropped to 60 296 in 1981 and only 15 000 in 1982. After the drought the numbers skyrocketed as the remaining animals began to breed. During the first two or three years after the drought, the buying of animals from other areas (mainly former Hereroland) contributed to this growth. The growth rate in cattle number since 1984 appears to be around 20%. (Paskin, 1990)

1.4. CATTLE CENSUS IN THE 1990s'

Table: cattle population growth between 1989 and 1999

	1989	1993	1999
Cattle	80 137	107 052	172 933

(adapted from Paskin., 1990; Paskin., no dated; Personal data DVS MAWRD Opuwo, 1999)

According to the six-monthly census figures of DVS-Opuwo for the period of January 1995 to June 1995, cattle in Kunene North were 126,472 while in Sesfontein they were 9,935. During the last six months of the same year the number increase to 136,617 in Opuwo and while in Sesfontein it increase to 10,350. (in "NOLIDEP site survey in Kunene North", 1996; in "Livestock marketing in the Northern Communal Areas of Namibia", 2000)

Table Cattle population in Kunene North in 1996 & 1997

Region	1996	1997
Kunene North	154926	165704

(Bennison et al, 1998)

In 1997 the cattle population in northern communal areas was estimated to be 900,000. The herd sizes varies from 18 to 170, with largest herd sizes found in Kunene North (Bennison et al, 1998)

According to the Directorate of Veterinary Services sources in 1998, the cattle population in Opuwo was 173,473 while for Sesfontein it was 2,218. (in "Developing financial services in two regions of the northern Namibia", 1999)

1.5. CATTLE CENSUS IN 1999

The methodology used to obtain these values is as follow (in "Livestock marketing in the Northern Communal Areas of Namibia", 2000):

- Define the exact area (geographical or headman constituency)
- Determine the average household, regarding ownership of livestock

- Focus firstly on the below average households (small herds)
- The median household herd size was determined after which numbers for herd size, own consumption, donations for traditional issues, sale/barter, mortality/ losses and number of households were given
- Focus on the above average households (large herds)
- Then median household herd size was determined after which numbers for herd size, own consumption, donations for traditional issues, sale /barter, mortality/ losses and number of households were given
- This procedure was repeated for each household category for cattle, goats and sheep.

Table: estimated cattle population in Kunene region, 1999

	Opuwo	Okangwati	Omuramba South	Otjondeka	Etanga	Totals
DVS, estimate 1998	49,775	26,939	6,252	14,299	18,055	178,313
Range (1995-1998)	40,064 – 51,654	16,725 – 26,939	5,185 – 6,252	14,299 – 15,811	9,100 – 18,055	
Estimate	43,350	939	20,000	33,300	32,200	204,000
Owning households	340	65,400	130	300	100	1,120
Mortality (off take)%		140				
Large herds	6.6 (9.6)	8.3 (16.1)	6.2 (18.1)	7.8 (12.5)	7.8 (10.4)	
Utilisation rate		5.9 (9.4)				25,330/40,000 =63.3%
Annual sales/barter						13,380
Excess mortality						8,976 head @N\$500= N\$4,400,000

(in "Livestock marketing in the Northern Communal Areas of Namibia", 2000)

It is possible that about 20,000 cattle owned by Namibians are grazing in Angola and that about 5,000 cattle owned by Angolans are grazing and being vaccinated in Namibia (in "Livestock marketing in the Northern Communal Areas of Namibia", 2000)

1.6. CENCUS IN SOME VILLAGES

Table: cattle numbers at some of the villages in Opuwo area during the Vaccination campaign of 1995.

Omakange	Orupembe	Omuhonga	oronditi
803	561	2084	683

(in "Nolidep site survey in Kunene North", 1996; in "Livestock marketing in the Northern Communal Areas of Namibia", 2000)

2. STRUCTURE OF THE HERDS

2.1. SURVEY OF PASKIN, 1990

The ratio of the entire males to females amongst the livestock of Herero and Himba herders resembles to the one seen on commercial farms (Paskin, 1990))

The average cattle herd size in Kunene North is estimated to be between 30 and 50. Another worker at the Directorate of Veterinary Services has estimate the herd size at around 60 cattle per family of five people. It has been noted that OvaHimbas are often satisfied with herds numbering 10 or less due to their simpler life style, whereas the Hereros tended to opt for the larger herds. (Paskin, 1990)

Two respondents from the interview felt that the average number of cattle per stockowner would actually increase with time until the available forage could no longer support them. Two respondents also knew of herds numbering 300 to 400 cattle, but felt that these were exceptional, and usually belonged to important headmen. (Paskin, 1990)

In 1984 about 30% of every cattle herd consisted of breeding stock, the rest were non- breeding animals. Analysis of four herds done in March 1990 confirm this trend (Paskin., 1990)

Table: analysis of four herds

Place	Otjerunda	Cunene stein	Orupembe	Etanga
Owner	Herero	Himba	Himba	Himba
Adult cows	32	18	15	9
Entire bulls	2	1	2	1
Calves 0-1yr	15	18	13	9
Calves 1-2yr	16	18	8	9
Mature oxen	18	3	2	0
Total	83	59	40	29
% Cows	39%	31%	38%	31%
Bulls: Cows	1:16	1:18	1:7.5	1:9

(Paskin, 1990)

Number of youngest calves expressed as a percentage of the number of cows: Otjerunda 47% Cunene stein 100%; Etanga 100%. As can be seen, the numbers of entire bulls are not excessive (Paskin, 1990)

The herds at Cunene stein and Etanga had, from the ages and numbers of their calves, achieved a very high calving percentage over the past two years. The ages of the calves indicate that the cows calf fairly regularly around November to January. They all seem to be uniform in size and age. At Otjerunda and Orupembe, where the grazing had been poorer, the cattle had maintained a lower calving rate (Paskin, 1990)

2.2. SURVEY OF BOLLIG, 1996

Table: structures of cattle herds (M. Bollig, 1996)

	Lactating cows	Dry cows	Heifers	Tollies	Oxen	Bulls	Calves
Type A	18.8	7.4	18.1	12	20.3	1.2	18.9
Type B	21.9	13.4	19.9	12	9.2	1.8	21.9
Type C	8.9	6.3	19.3	16.7	41.6	1.9	8.9
<i>Average</i>	<i>18.4</i>	<i>8.7</i>	<i>18.7</i>	<i>12.6</i>	<i>19.9</i>	<i>1.4</i>	<i>18.5</i>

(Bollig, 1996)

2.3. SURVEY OF BENNISON ET AL, 1998

Table: cattle herd structure %in the North Central Areas

Class	Kaokoland OvaHimba	Kaokoland Herero
% Cows 3 years and older	39	46
% Bulls	1	1
% Calves younger than one year	13	20
% Immature	14	12
% Oxen	33	21
Number of herds in samples	15	39
Total cattle in sample	2544	5179
Average herd size	170	134
Minimum	19	18
Maximum	405	661
Estimated calving %	34.4	36.8

(J. J. Bennison et al, 1998)

2.4. FERTILITY, MORTALITY AND PRODUCTIVITY OF LIVESTOCK HERDS.

On fertility rates and mortality rates of herds, statistical material is not yet available. Hence, assumptions are still formulated in qualitative terms. The Sanga breed herded by the OvaHimba pastoralist is well adapted to the arid conditions of north-western Namibia. The age at first calving is rather four than three years. Inter-calving intervals are quite long (probably more than 24 months on average). During dry years cows do not get pregnant easily and annual calving rates differ quite a lot according to fodder availability during the time cows are due to get pregnant (March, April). It is not rare that cows do not calf for three or four years in a row. Hence, the completed fertility rate for cows will probably be quite low. (Bollig, 1996)

Mortality rates in cattle herds are quite high. The single most important cause of death in cattle is emaciation due to fodder scarcity (Bollig, 1996)

Regarding mortality, a realistic rate of 3% should not be exceeded. However, the loss incurred in Kunene North of 8976 head of cattle exceeds this rate, which results in a calculated loss of N\$ 4.4 million per annum at N\$ 500/ head. Training regarding early diagnosis and treatment of the basic veterinary ailments for the area is thus of utmost importance (in “Livestock marketing in the Northern Communal Areas of Namibia”, 2000)

3. OFF-TAKE RATES

The utilisation rate of cattle or off take rate is the sum of sales, barter, own consumption and traditional uses such as weddings and funerals. It is estimated at 63.3% in Kunene North. The mortality is defined as losses resulting from all causes, including diseases, predators, etc. (in “Livestock marketing in the Northern Communal Areas of Namibia”, 2000)

The off take rate for cattle herds generally falls close to commercial norms for the small herd owners, falling below 15%, only in Etanga, where access to trade is hampered by badly developed roads. The case for the large herd owners is different. The off-take rate is below 11% in all the areas with the exception of Omuramba South. It would seem as if wealthier households prefer to accumulate cattle. (in “Livestock marketing in the Northern Communal Areas of Namibia”, 2000)

Oxen often reach an age of 15 years, especially if they are sacred, while cows reach ages of 12 years. In general, about 25% of the herd consists of cows, of which up to 50% are milked. The herder is allowed to milk the cows for his/ her own purpose. Cattle are often seen 30 km away from their nearest water point (in “Livestock marketing in the Northern Communal Areas of Namibia”, 2000)

3.1. OFF-TAKE RATES IN THE OPUWO AREA

3.1.1. Herd composition and off-take rates for poor households

Such herds are characterised by (in “Livestock marketing in the Northern Communal Areas of Namibia”, 2000):

- A rather high off-take rate
- An extremely high mortality rate.

Table : herd composition for poor households in the Opuwo area

	Cattle	Goats	Sheep
Number owned	45	90	25
Own consumption/year	2	10	2
Traditional uses/year	2	6	0
Sale/barter/year	4	10	0
Mortality/year	4	10	8
Mortality (%)	8.9	11.1	32
Off take (%)	17.8	28.9	8

(in "Livestock marketing in the Northern Communal Areas of Namibia", 2000)

3.1.2. Herd composition and off-take rate for wealthier households

The ideal off take rate for a household owning 300 cattle should be of 20%. This is not the case in the Opuwo area. Such households are characterised by a low off-take rate and a rather high mortality rate. (in "Livestock marketing in the Northern Communal Areas of Namibia", 2000)

Table: herd composition for wealthier households in the Opuwo area

	Cattle	Goats	Sheep
Number owned	300	230	90
Own consumption/year	6	20	6
Traditional uses/year	3	4	4
Sale/barter/year	20	25	3
Mortality/year	20	30	15
Mortality (%)	6.6	13	16.7
Off take (%)	9.7	19.6	14.4

(in "Livestock marketing in the Northern Communal Areas of Namibia", 2000)

3.2. OFF-TAKE RATES IN THE OKANGWATI AREA

3.2.1. Herd composition and off-take rate for poor households

These poorer households own significantly more livestock than the poorer households in the Opuwo area. However more livestock are used for own consumption. The off-take is quite high, as well as the mortality rate. (in "Livestock marketing in the Northern Communal Areas of Namibia", 2000)

Table: herd composition for poor households in Okangwati Area

	Cattle	Goats	Sheep
Number owned	180	250	30
Own consumption/year	5	25	0
Traditional uses/year	10	5	2
Sale/barter/year	14	15	0
Mortality/year	15	50	7
Mortality (%)	8.3	20	23
Off take (%)	16.1	18	6.7

(in "Livestock marketing in the Northern Communal Areas of Namibia", 2000)

3.2.2. Herd composition and off-take for wealthier households

Such a wealthy household will slaughter twice as many cattle and the same number of goats for own consumption than poorer households. Since these households are regarded as wealthy, they have to hand out a considerable number of livestock for traditional occasions, and they will often support households who are not able to present an ox or cow when tradition requires. Such a wealthy household will sponsor 50 cattle, 10 goats and sheep for traditional occasions per annum and only sell/barter 20 cattle and 40 goats per year. The off take rates for both cattle and goats are low, while the mortality rate for cattle is reasonable, seen in the light of the large area where the 850 head of cattle are herded. Regarding the sheep herd, the extremely high mortality of 33.3% should be noted (in "Livestock marketing in the Northern Communal Areas of Namibia", 2000)

Table: herd composition for wealthier households in Okangwati area

Cattle	Goats	Sheep	
Number owned	850	600	150
Own consumption/year	10	30	0
Traditional uses/year	50	10	10
Sale/barter/year	20	40	0
Mortality/year	50	80	50
Mortality (%)	5.9	13.3	33.3
Off take (%)	9.4	13.3	6.7

(in "Livestock marketing in the Northern Communal Areas of Namibia", 2000)

3.3. OFF-TAKE RATES IN THE OMURAMBA SOUTH AREA

3.3.1. Herd composition and off-take rate of poor households

It is interesting to note these poor households do not slaughter cattle for own consumption. However, the off take rate for cattle is relatively high. The only concern regarding the cattle herd is the high mortality rate (in "Livestock marketing in the Northern Communal Areas of Namibia", 2000)

Herd composition for poor households in Omuramba South

	Cattle	Goats	Sheep
Number owned	50	110	20
Own consumption/year	0	15	0
Traditional uses/year	3	6	3
Sale/barter/year	5	10	0
Mortality/year	5	15	5
Mortality (%)	10	13.6	25
Off take (%)	16	28.2	15

(in "Livestock marketing in the Northern Communal Areas of Namibia", 2000)

3.3.2. Herd composition and off-take rate of wealthier households

Table: herd composition of wealthier household in Omuramba South

	Cattle	Goats	Sheep
Number owned	320	430	250
Own consumption/year	0	30	0
Traditional uses/year	8	10	4
Sale/barter/year	50	60	0
Mortality/year	20	40	15
Mortality (%)	6.3	9.3	6
Off take (%)	18.1	23.3	1.6

(in "Livestock marketing in the Northern Communal Areas of Namibia", 2000)

Comparing the relative herd size between the poorer and wealthier households, it is clear that the difference in herd size between poor and wealthier households in Omuramba South is larger than in Opuwo and Okangwati (in "Livestock marketing in the Northern Communal Areas of Namibia", 2000)

This is the only area in Kunene North without mountains and big rivers. It is the flat area adjacent to the C35 road, south of Opuwo. This is the area adjacent to Omutambo Maowe quarantine camps, which makes it very easy for farmers to quarantine their livestock themselves to get higher prices (in “Livestock marketing in the Northern Communal Areas of Namibia”, 2000)

3.4. OFF-TAKE RATES IN THE OTJONDEKA AREA

3.4.1. Herd composition and off-take rates of poor households

Table: herd composition for poor household in Otjondeka

	Cattle	Goats	Sheep
Number owned	35	45	15
Own consumption/year	0	2	2
Traditional uses/year	3	3	1
Sale/barter/year	3	6	0
Mortality/year	5	8	2
Mortality (%)	14.3	17.8	13.3
Off take (%)	17.1	24.4	20

(in “Livestock marketing in the Northern Communal Areas of Namibia”, 2000)

The ownership of livestock in the Otjondeka area is skewed as in the Omuramba South. The typical poor household with 35 head of cattle does not slaughter for own consumption, but contribute 3 head of cattle for traditional occasions and sells/ barter 3 head of cattle. The off-take rate of 17.1 % is relatively high, while the mortality rate is unacceptably high. These poor households only slaughter 1 small stock every three months for own consumption. These are the lowest for the whole Kunene North and thus make this typical household the poorest in the region. (in “Livestock marketing in the Northern Communal Areas of Namibia”, 2000)

In addition to the 3 cattle sold/ bartered, 6 goats are sold/bartered annually. The off-take rate for small stock is relatively high compared to the other typical poor households (in “Livestock marketing in the Northern Communal Areas of Namibia”, 2000)

3.4.2. Herd composition and off-take rate of wealthier households

The herd size of this typical household is similar to that of the wealthy households of Omuramba South. However, in Otjondeka these households slaughter 5 cattle and 4 sheep for own consumption, whereas none were slaughtered for this purpose in Omuramba South. The off-take rate for cattle and sheep is lower than for Omuramba South, comparing the same categories, although Otjondeka has better access to the big market of the North Central division (in “Livestock marketing in the Northern Communal Areas of Namibia”, 2000)

Table: herd composition for wealthier households in Otjondeka

	Cattle	Goats	Sheep
Number owned	320	420	120
Own consumption/year	5	22	4
Traditional uses/year	10	15	3
Sale/barter/year	25	70	4
Mortality/year	25	60	40
Mortality (%)	7.8	14.3	33.3
Off take (%)	12,5	25.5	9.2

(in "Livestock marketing in the Northern Communal Areas of Namibia", 2000)

3.5. OFF-TAKE RATE IN THE ETANGA AREA

3.5.1. Herd composition and off-take rate of the poor households

Table: herd composition for poor households in Etanga

	Cattle	Goats	Sheep
Number owned	160	350	150
Own consumption/year	5	20	5
Traditional uses/year	7	15	3
Sale/barter/year	10	40	10
Mortality/year	12	60	16
Mortality (%)	7.5	17.1	10.7
Off take (%)	13.8	21.4	12

(in "Livestock marketing in the Northern Communal Areas of Namibia3, 2000)

This typical household with a relatively small livestock herd has a much larger herd compared to the poor households of other areas. Furthermore, inequality in terms of herd size is the lowest in Kunene North. However, it appears as if the households in this area are the least privileged. The off take rate for the cattle is the lowest of all small herd size households groups. Only 6% of the herd is available for sale/ barter. This and the relatively low mortality rate results in a herd size growth exceed the grazing capacity in the area (in "Livestock marketing in the Northern Communal Areas of Namibia", 2000)

3.5.2. Herd composition and off-take rate for the wealthier households

Table: herd composition for wealthier households in Etanga

	Cattle	Goats	Sheep
Number owned	700	900	360
Own consumption/year	18	140	16
Traditional uses/year	20	80	30
Sale/barter/year	35	70	26
Mortality/year	55	100	50
Mortality (%)	7.9	11.1	13.9
Offtake (%)	10.4	32.2	20

(in "Livestock marketing in the Northern Communal Areas of Namibia", 2000)

The typical household representing the large livestock owners owns as many cattle as the Okangwati group. This group has a low off-take rate for cattle, which is comparable to the Okangwati and Opuwo large herd owners, but it has the highest off-take rate for small stock. Of the 700 cattle and 900 goats, only 35 and 70, respectively are sold/bartered. This low ratio indicates that the trade is restricted, *inter alia* because of poor accessibility by road with a normal truck to transport the livestock to the market. This results in a situation where production is aimed for own consumption (in "Livestock marketing in the Northern Communal Areas of Namibia", 2000)

4. VALUE OF CATTLE

The livestock production system in Kunene North is not oriented towards marketing. It is a source of wealth fare (the more animals a person possesses the wealthier he is) and of savings (in case of urgent need for cash, livestock will be sold). The main expected outputs of this system are (in "analysis of the farming systems in Ohandungu", 2000):

- mainly social: recognition of wealth fare, utilization during cultural ceremonies (funerals, weddings etc.)
- financial: source of savings
- source of meat, milk and associated products (*omaere*: sour milk, butterfat etc.)

4.1. THE SOCIAL VALUE

In the Kunene region many farmers firstly produce for price, recognition and popularity. A farmer with 200 and more cattle is perceived as rich and as a good manager. He is respected within the community. The aim of most farmers is to have as many animals as possible. The strategy is to decrease as much as possible the off-take (selling, slaughtering and gifts). Animals will be taken from the herd only as emergency measures when the household is in need of cash or for special ceremonies (weddings and funerals). Preference is given to small stock when it comes to selling. The common belief is that "the more animals you have, the better are your chances of surviving a drought". (Kakongo, 2000)

An indicator of the importance of cattle to the people of the region is the scale of social disruption caused by the drought in the early 1980's. The governmental drought-relief supported farmers. Some rushed to Opuwo and other places to seek work. Once some money was acquired, the buying-in of more cattle (mainly from Hereroland) to restore the necessary wealth and status was important. When another drought intervened in 1992, very few cattle were disposed of; only small stock numbers showed any degree of change. Cattle were retained in herds as far as possible. From a formal survey conducted 100% of both the Ovahimba (n=15) and the Herero (n=38) questioned, stated that they wanted to acquire more cattle (Paskin, no date)

4.1.1. Recognition of wealth-fare

Cattle serve a social purpose in that they serve as a recognition of wealth fare (in "analysis of the farming systems in Otuni", 2000)

The traditional modes of production and the family's financing systems are based on the livestock activity. The families aim to accumulate wealth in kind (livestock, especially cattle and goats) for social prestige and security. In Kunene North, there are more than 80,000 head of cattle. The traditional management of livestock and the desire for accumulation have consequences on the environmental aspects (overgrazing, water availability and soil erosion). Support could be provided to move towards the evolution of the traditional management and to favor the selling of animals when they could not provide added value to the household. In the northern Kunene region wealth cannot be expressed in terms of cash or income but is expressed in terms of assets (animals) (in "developing financial services in two regions of the northern Namibia", 1999)

In the political organisations the recognition of status is the wealth of a person, assessed on the basis of the number of cattle he owns.

In a small survey carried out (the first appraisal survey carried out in the region), sixteen out of seventeen respondents opted for a greater number of cattle in preference to a more 'western' way of life (Paskin, 1990)

4.1.2. Payment of fines

In the legal sphere, nearly all punishments are expressed as cattle fines. Cattle are used to pay fines when a guilty party has to make restitution after committing a crime. Interestingly, it was learned that the death penalty does not exist among the himba. When a man is murdered, the murderer must, according to one source, pay a fine of 35 cattle to the dead man's family, and when a person killed is a woman, the price is 45 cattle (Paskin, no date) or, according to another source, 25 head of cattle for the murder of a woman and 15 head of cattle for the murder of a man. (in "The nomadic pastoralists", no date) 6 head of cattle must be paid for adultery (in "The nomadic pastoralists", no date)

4.1.3. Use during ceremonies

The social significance of cattle is that they are a status symbol in the community. They are indispensable for a variety of social ceremonies like payment of bride-price during marriage, for slaughtering at weddings, for name giving occasions and others. Without cattle the relevant ceremonies would be virtually impossible to perform. (Malan, 1974; in “analysis of the farming systems in Otuani”, 2000; in ‘The nomadic pastoralists’, no date)

Cattle are generally slaughtered at one of two occasions: a wedding or a funeral. Huge oxen are slaughtered at major festivities and rituals (funerals, commemoration rites and marriages) (Bollig, 1996)

4.1.4. The sacred cattle

Oxen in the herd are regularly sought out by the owner to be his ‘sacred oxen’ whose horns will one day adorn his grave (Paskin, R. D, 1990)

The ‘sacred oxen’ are reserved for funerary rites. During his lifetime a stock owner will choose his favorite oxen to become his sacred animals that, should they survive him, will be slaughtered at his funeral and their horns arranged upon his grave. Traditionally, the body of the headman was bound in the foetal position in the hide of a young steer for burial; in this day and age, the coffin is becoming more popular. At funerals the immediate family of the dead person may not consume the meat of the slaughtered animals, although it may be eaten by other relatives and friends. Although it is true that cattle are not generally slaughtered by the Kaokolanders, except for ceremonial purposes, those dying of natural or other causes are often eaten by their owners (Paskin, 1990)

4.2. THE ECONOMIC VALUE

Cattle and small stock are essential as articles of trade for subsistence requirements such as grain and sugar as well as tobacco, liquor, weapons, knives and a variety of beads and bracelets made from copper, iron, shells and porcelain. This adds economic value to cattle and small stock as a means of trade. (Malan, 1974)

4.2.1. Selling value

Cattle are sold whenever there is a need for cash (in “analysis of the farming systems in Otuani”, 2000)

4.2.1.1 *Prices obtained in Opuwo*

The price paid for cattle in Opuwo ranges from N\$ 385.00 to N\$ 800.00. The average price that cattle fetch in Opuwo is N\$ 590.00 (in “use of PRA tools in Enyandi”, 1999)

Table : the average monthly prices for cattle in Opuwo from August 1998 to January 1999

Month	Live sale (N\$)	Slaughtered (N\$)
Aug 98	385.00	696.67
Sept 98		406.67
Oct 98		355.00
Nov 98	583.33	572.86
Dec 98	835.71	
Jan 99	816.67	

(in "livestock marketing in the Northern Communal Areas of Namibia", 2000)

Table : prices at which offal from slaughtered cattle is sold in Opuwo

	Price range (N\$)
Head	35-40
Lungs	20
Liver	18-30
Lungs, liver and spleen	45

(in "livestock marketing in the Northern Communal Areas of Namibia", 2000)

4.2.1.2. Prices obtained in Okangwati

Table : prices paid for cattle in Okangwati

	All cattle	150 kg	200 kg	400 kg
Price range (N\$)	260 - 900	300 - 400	350 - 400	600 - 850
Average price (N\$)	540	350	373	716

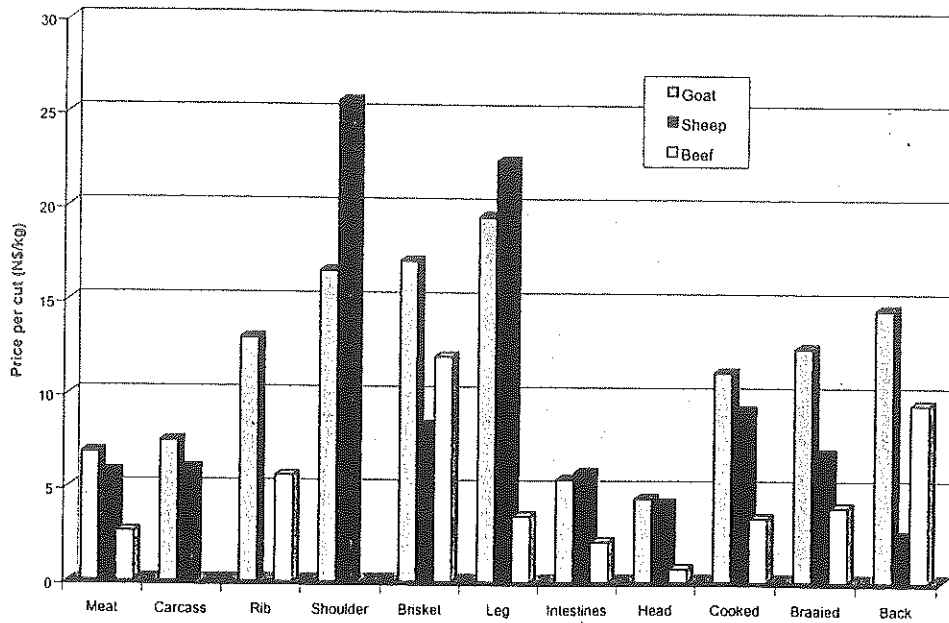
(in "livestock marketing in the Northern Communal Areas of Namibia", 2000)

Table : average price paid per cattle at Okangwati, July 1998-March 1999

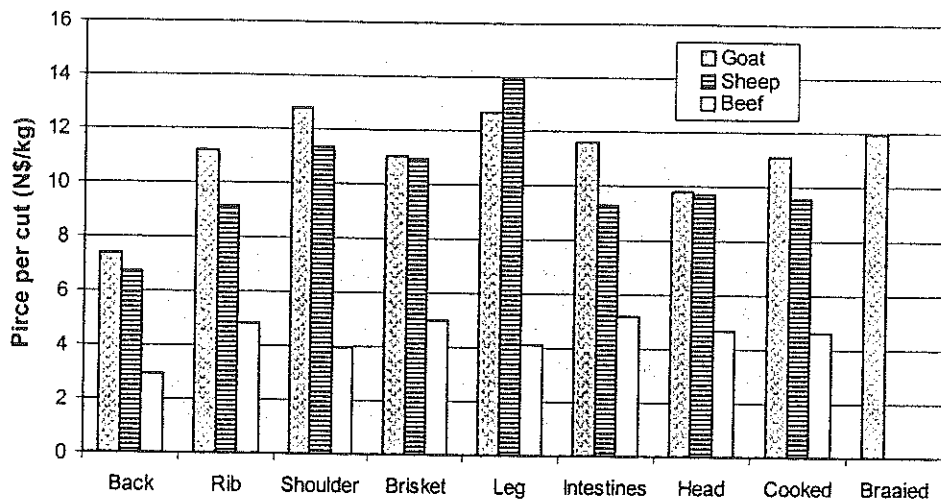
Month	Live sale (N\$)	Slaughtered (N\$)
July 98	485.00	
Aug 98	565.38	
Sept 98	434.44	
Oct 98	429.72	315.00
Nov 98	425.00	150.00
Dec 98	470.00	115.00
Jan 99	538.00	
Feb 99	850.00	
Mar 99	1062.50	

(in "livestock marketing in the Northern Communal Areas of Namibia", 2000)

The sharp price increase from December to March could reflect the unwillingness of livestock owners to sell animals during the rainy season. (in "livestock marketing in the Northern Communal Areas of Namibia", 2000)



Average price per cut per specie for meat sold in Opuwo (Sept 1998 - May 1999)



Prices per cut for different livestock in Okangwati

Cattle hides are sold to people making leather goods with a small piece, sufficient for 2 pairs of shoes, fetching N\$ 10.00. The price of the skin is between N\$ 15.00 and N\$ 20.00. (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

4.2.2. Exchange value

Cattle are a food source and are used as exchange items in order to obtain maize, cheap alcohol, cloth and other goods (Bollig, 1996)

Goats, and to a lesser extent cattle, are exchanged for goods all over Kunene North. The traders, most of them Owambo from origin, drive into the area with a wagon load of maize bags and cheap alcohol, occasionally blankets, clothes, tobacco or tools. All products are bartered according to fixed rates. One male goat of about 40 kg to 60 kg is bartered against a bag of maize meal or a box of cheap alcohol (beer mainly). A steer is obtained against 4 to 6 boxes of cheap alcohol and an oxen against 8 to 12 boxes. (Bollig, 1996)

4.2.2.1. Exchange value in Opuwo

Table : a few examples of the value of goods exchange for cattle in Opuwo

	Items exchanged	Retail value (N\$)
One head of cattle	3 boxes Zorba liquor plus 2 bags of maize meal 6 boxes of Okandjembo (traditional brandy)	N\$ 580
300 kg (B category)	Liquor; 1 bag maize meal and 1 bag of sugar	N\$ 480

(in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

4.2.2.2. Exchange value in Okangwati

Table : the value of goods exchanged for cattle in Okanguati

Animal (estimated weight)	Items exchanged	Retail value (N\$)
1 cattle	1 blanket, 2 bags of maize meal, 2 cases of Castelo	
1 cattle	2 bags of maize meal and 2 cases of Castelo	
2 cattle	8 crates of Lion Lager	
1 bull (580 kg)	3 crates Castelo and 2 bags of maize meal	N\$ 184-240
1 calf (150 kg)	2 bags of maize meal or 4 cases of Black Label beer	N\$ 360
1 cattle (215 kg)	3 bags of maize meal	N\$ 332
1 cattle (350 kg)	2 bags of maize meal and 2 cases of beer (N\$ 92)	

(in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

4.3. THE NUTRITIONAL VALUE

Cattle have an economic value as primary food source: meat and milk form the basis of the people's diet. Oxen are usually only slaughtered for ceremonial use. Cattle, together with small stock, are the most important factors as their products are used for home consumption and for long and short term cash (Malan, 1974; "analysis of the farming systems in Ohandungu", 2000)

See section 4.2 for more detail.

5. CATTLE PRODUCTS

Cattle products comprise (Paskin, 1990; Bennison et al, 1998; in "analysis of the farming systems in Otuni", 2000):

- Meat (rarely, when animals die, or are slaughtered for religious reason).
- Milk (which is converted into sour milk and butter for feeding purposes. Butter is also used as a cosmetic when mixed with "Otjize" by Ovahimba women).
- Calves
- Draft power (The Herero sometimes use oxen for ploughing)
- Dung for building,
- Hides for instance. for clothing

Cattle are important as they act as a reservoir of wealth and prestige together with providing food, manure and draft power (Bennison et al, 1998)

5.1. MEAT

Meat is one of the most desired diet but is one of the least consumed (Crandall, 1992)

During a survey carried out in Kunene North, it was concluded that the number of livestock that were slaughtered over a 22 month period differs widely from household to household. While the poorest households did not slaughter any cattle at all, the two very rich households slaughtered 8 and 9 heads of cattle respectively. These two households belong to the two dominant political figures of the area; they feel obliged to conduct more rituals for the welfare of their household than the average household does. (Bollig, 1996)

A record of 27 cattle slaughtered in one household over 22 months is due to exceptional expenditures of a funeral when about 15 oxen had to be slaughtered to take their skulls for the decoration of the grave. It is not due to consumption for meat. (Bollig, 1996)

In Okangwati the blood from slaughtered animals is sometimes given to the dogs. Occasionally traders will cook the blood and eat it themselves or sell it (in "livestock marketing in the Northern Communal Areas of Namibia", 2000)

5.2. MILK

5.2.1. Milk production

Each wife (wives) of a homestead has (have) certain cows allocated to her for milking (Talavera, 2000). The milk or “omaere” is used by everybody within the household when a standard animal has been milked. When a holy animal has been milked the product is only for consumption by the men. (Kakongo, 1999)

The production of milk is determined by the herder’s decision as to how much milk he leaves to the calf and how much he is prepared to spare for human consumption. The following figures therefore do not represent the total milk yield but rather the yield that goes to human consumption. Cattle are sometimes only milked once a day in order to leave more milk to newborn calves. (Bollig, 1996)

Table : milk yields of cattle between January 1995 and January 1996

Date	Yield (l)	Date	Yield (l)
01/01/1995	0.88	04/08/1995	0.83
02/01/1995	1.18	01/09/1995	0.95
03/02/1995	1.22	02/09/1995	0.71
04/02/1995	1.05	03/09/1995	0.77
01/03/1995	1.60	04/09/1995	0.77
01/04/1995	1.79	01/10/1995	0.71
02/04/1995	2.08	02/10/1995	0.67
03/04/1995	1.79	03/10/1995	0.70
04/04/1995	1.96	04/10/1995	0.49
01/05/1995	1.73	01/11/1995	0.55
02/05/1995	1.73	02/11/1995	0.56
03/05/1995	1.52	03/11/1995	0.42
03/06/1995	1.14	04/11/1995	0.48
04/06/1995	1.11	01/12/1995	0.45
01/07/1995	1.22	02/12/1995	0.55
02/07/1995	1.15	03/12/1995	0.39
03/07/1995	1.29	04/12/1995	0.29
04/07/1995	1.20	01/01/1996	0.29
01/08/1995	0.99	02/01/1996	0.30
02/08/1995	0.96	03/01/1996	0.31
03/08/1995	0.82		

(Bollig, 1996)

The cow normally reaches her peak milk production approximately 3 to 8 weeks after parturition. After that a gradual decline in yield takes place. The first milk obtained after parturition is colostrum. This milk is richer in protein than normal milk (Vermeulen, 1999)

Most cattle calf from November to January. However, milk production only peaks some weeks after the first heavy rains when more grasses become available (usually January to April). The lactation peak of cattle is rather short and with the onset of dry conditions in May the lactation decreases. However cattle are milked sometimes for more than twelve months, even if they produce minimal amounts of milk in the end. This seems to give evidence of the fact that the Sanga cattle of the Kaokoland were rather bred for long lasting lactation than for large quantities of milk (this definitely also has a positive impact on the survival rate of calves) (Bollig, 1996)

5.2.2. Butter and butterfat

One of the products prepared from the milk is the butter or “Omaze”. It is prepared in calabashes by shaking it backwards and forwards for at least 3 hours. The cream produced is cooked for butter production. This preparation is made by the women. The butter is kept in traditional skins, bags, bottles and tins (for instance used powder milk and tea tins) (Kakongo, 1999).

Milk from the ‘holy cattle’ is only consumed as soured milk while milk from other cattle is buttered. The butter is boiled to produce clear butterfat. This product is stored in large quantities in leather sacks or in metal containers and serves as a storage of proteins and fat for the meager months of the year. A lot of it is used for cosmetic purposes as well (Bollig, 1996). Both the Himba and the Herero use the cow butter for body lotion after bathing, while the Himba also mix it with the Himba red powder (Kakongo, 1999).

5.2.3. Sour milk

It is locally known as “omaere” and it is a major component of the diet. The sour milk is protein-rich and highly nutritious. (Paskin, 1990)

5.3. CALVES

Female puberty: it is defined as a stage at which oestrus and ovulation occur for the first time (Vermeulen, 1999)

Male puberty: it is defined as the stage at which fully developed sperms is formed in the testes for the first time. Puberty is a function of mass, size and age (Vermeulen, 1999)

Sexual maturity: it is defined as the stage at which a heifer can become pregnant. As an average when a heifer reaches 60% of her body mature mass she will be ready for mating (Vermeulen, 1999)

The total oestrus cycle of a cattle lasts 18 to 23 days. The heat period lasts approximately 12 hours. Ovulation takes place 10 to 15 hours after the end of heat (Vermeulen, 1999)

The main breed used in Kunene is the Sanga and Nguni. Animals are free roaming. It is therefore difficult to control mating. As a result the animals are mating throughout the year. Usually in Kunene it is not always that one can expect a calve per cow per year. Sometimes a cow can skip one or two years without giving birth (Mbinga, 1999)

Despite the fact that there is no set bulling season, the ages of calves seen in Kaokoland seems to suggest that most cows calve naturally in November – January. The dams thus wean their previous calves naturally. Stubborn calves that refuse to be weaned are often seen walking around with sharpened twigs inserted through their nasal septa to discourage suckling. (Paskin, 1990)

With female animals the Ovahimba will wait for quite some time in order to be sure that the animal is beyond its reproductive phase before slaughtering it. (Bollig, 1996)

5.4. ANIMAL DRAFT POWER

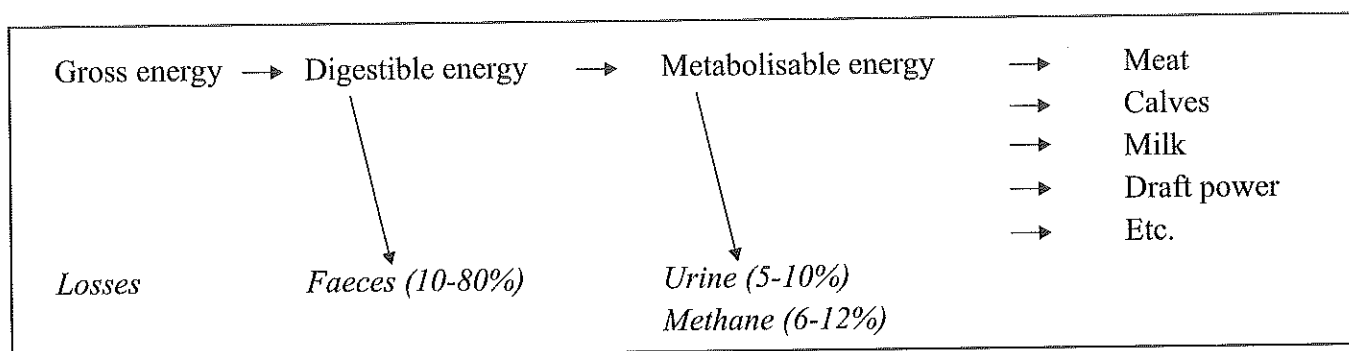


Figure : Diagrammatic representation of the energy pathway of cattle and subsequent products produced (adapted from Lawrence 1999, quoted in Talavera, 1999).

Few information is available regarding animal traction in Kunene North. Few oxen are used to plough fields or to transport people with carts.(Talavera, 1999)

5.5. DUNG

Cattle dung is mixed with mud to cover the walls and floors of houses nicely. Cattle manure is also used for crop production (Kakongo, 1999).

5.6. HIDES

Skins and leatherwork are a very important aspect of the people’s technology. Skins are used to make clothing, shoes, head-dresses, sleeping mats, sandals, belts, carrying bags, tobacco pouches, knife sheaths and various types of straps and thongs (Malan et al, 1974; in “the nomadic pastoralist, no date; Kakongo, 1999; in “livestock marketing in the Northern Communal Areas of Namibia”, 2000). The skins from cattle are also used to make mattresses (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000) and baby carrier (Kakongo, 1999)

The horns from slaughtered cattle are used to make snuff (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000).

The hair from the tail of cattle is used for cleaning as well as for decorating the stamping spear (Kakongo, 1999).

6. CATTLE HUSBANDRY

6.1. FEEDING

Large stocks are normally managed separately from small stock. The reason is that cattle are grazers and prefer grass to bush, on the other hand small stocks are browsers and prefer bush to grass. Therefore small stocks are taken to areas with more bushes to prevent them from trampling grazing areas suitable for cattle (in “Analysis of the farming systems in Otuni”, 2000)

6.1.1. Grazing versus browsing

Cattle are disinclined to walk long distances, to walk on stones or to walk up-hill, all else being equal. Left to themselves, cattle first graze low-lying sandy areas close to water, and only work their way uphill when more accessible sources of forage are depleted (Behnke, 1998)

Cattle are little interested in browsing when green grass is available. When the grass is dry, they do feed on both green and dry leaves and the seeds of certain trees and shrubs. Consistently cited as important emergency cattle feed were the green leaves of “omuvapu”(*Grewia bicolor*) and “omumbuti”(*Rhigozum virgatum*) (Behnke, 1998)

6.1.2. The diet according to the season

In the wet season (“okurooro” or “okupepera”) all kinds of forage are readily available, and all are generally acceptable. However, the cattle seem to prefer “omupito”, a generic term referring to all grass species when they have just sprouted and are difficult to identify. The term applies more especially to annual grasses, described as plants that do not have roots that stays in the ground and are propagated from seeds ‘just like when you plant a maize’. Also eaten in this season is the spreading herb “Ohongue”, which later produces sharp burrs when it is mature. “Omupito” is commonly found around settlements and/ or on sandy soils. (Behnke, 1998)

The usefulness of “omupito” as a forage ends with the closing of the rain and the drying of the annual grasses, which are weak and ‘fall down and disappear’ in the wind. Thus, in the dry season “omupito” is transformed into “ongundju”, loose hay of mixed species composition tossed about in the wind, which is of little use to cattle. Two important forage species of sandy areas, “omurondji” and “orwejo”, are both annuals and prone to breakage and loss in this way. (Behnke, 1998)

Standing hay from perennial grasses is the foundation of cattle diets in the dry season (or “okuni” and “oruteni”, the short season prior to rains). “Ongumba” (*Stipagrostis uniplumis*) is the most important single species, universally lauded as a grass that when dry ‘is never blown away by the wind’ (Behnke, 1998)

Also important are at least two other perennials, characteristics of upland areas: “ongangahozu” (*Eragrostis nindensis*) and “otjimbere”, “ongumba” and “ondoni”. Areas containing these perennials are especially targeted for wet season resting followed by use later in the dry season (Behnke, 1998)

During the longer dry seasons of Kaokoland, where perennial grasses are now scarce, the cattle are known to at least eight species of trees and shrubs and this source of forage undoubtedly constitutes a much greater percentage of their diets (Malan. et al, 1974)

As the dry season progresses cattle gradually shift from drinking every day to every other day, eventually going three days between watering. If they did not do this they would soon starve to death because their pastures are distant from water and they would spend all their time walking to the water point rather than eating. However, these necessary changes in watering regime also induce several advantageous metabolic changes in the animals. Research has show that indigenous African cattle breeds like the Sanga have the capacity when they are water and/ or feed deprived to reduce their energy expenditure quickly to a fasting metabolic rate that is two-third of the rate of animals on a full maintenance ration. They can also reduce the energy cost of walking as body mass declines in the dry season, and conserve energy by allowing larger fluctuations in the body temperature at lower body weights (Payne, 1965; Finch and King, 1979; King, 1983; Western and Finch, 1986, all quoted in Behnke, 1998)

In other words, as these animals are deprived of water they do not only have the time to eat more but they also use more efficiently what they do eat. The dry season herding system might, in sum, spell disaster for commercial rancher, but is well suited to the physiological characteristics of the indigenous cattle breeds that have co-evolved with the system (Behnke, 1998)

Late in “oruteni” just after the rains have broken following the long dry season, is a particularly critical season. At this point cattle tend to be in the poorest condition of any time in the yearly cycle. This is the only period in which cattle herders ‘chase the rain’, opportunistically relocating their herds in areas where early rainfall has been strong. Even at this time, herders are seeking particular kinds of pastures consisting of perennial grasses that rejuvenate quickly with ‘only few drops of rain’ because they are sprouting from established root systems. These early greening perennials, *Stipagrostis uniplumis* and *Eragrostis nindensis* are repeatedly cited though other perennial species are also mentioned. They provide the first flush of fresh grass well before the annual grasses have had an opportunity to sprout from seeds (Behnke, 1998)

The nutritious seedpods of the ana tree (*Acacia Albida*) are much prized by the Himba livestock, as well as wild herbivores including impala and elephant (Malan. et al, 1974)

The cattle eat the above ground parts of the grass (alms, inflorescence and leaves) (in “Analysis of the farming systems in Ohandungu”, 2000)

6.1.3. Supplementary feeding

Most of the cattle do not receive any supplementary feeding. However some of the wealthier farmers (who can afford it) give licks (salt) to their animals any time of the year. The criteria to decide when to give such lick is linked to the availability of cash in the household and the possibility to buy some. (Mbinga, 1999; in “Analysis of the farming systems in Otuani”, 2000)

Few farmers are using supplementary feeding during the dry season. They then tend to give them to the more vulnerable animals (Mbinga, 1999)

Some of Herero are providing their cattle with phosphate supplementation in the winter months as a result of reported cases of botulism in the eastern Kaokoland allegedly caused by phosphate deficiency (Paskin., 1990)

6.2. HOUSING

6.2.1. The free-roaming cattle

Cattle without calves are routinely left unattended and do not return to their kraal at night in the late dry season. In this season cattle are not herded because there are no standing crops for them to damage, because night grazing is advantageous when forage is scarce and cattle are disinclined to eat during the hot days, because free-ranging cattle can be monitored periodically when they return to drink at the few permanent water sources, and because the labour required to provide water interferes with more routine herding duties. During this season cattle are deciding by themselves how to manage their own environment (Behnke, 1998)

6.2.2. The kraaled cattle

Most attention is given to cattle, especially lactating cows, under the responsibility of the men. The suitable grazing areas are distributed to the cattle. Lactating cows and their calves are kraaled at night in the main settlement. This is to protect them from predators. Furthermore, this allow women in the morning to milk animals. (in “analysis of the farming systems in Ohandungu”, 2000)

Even when the men are moving with the herds to the cattle post some few lactating animals will be left behind for the family members remaining at the main settlement (usually women with young children and elderly people). Therefore the main kraal is used all year round. (in “analysis of the farming systems in Ohandungu”, 2000)

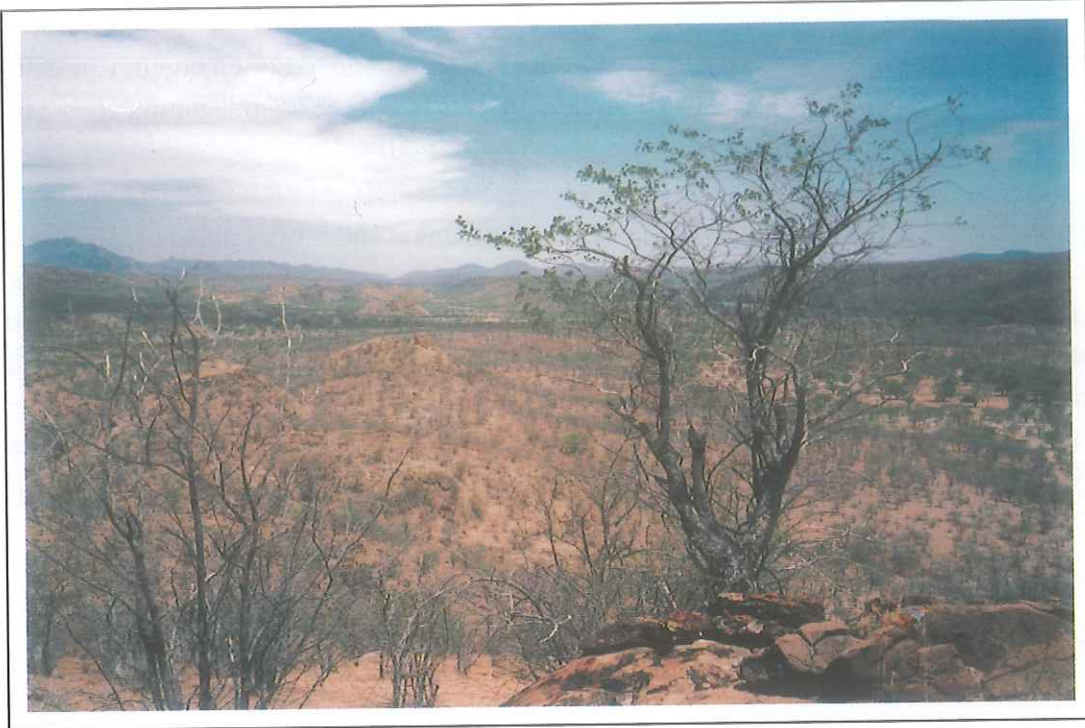


Photo: Philippe TALAVERA

The area close to the Kunene River at the end of the dry season.

The area close to the Kunene River at the end of the rainy season.

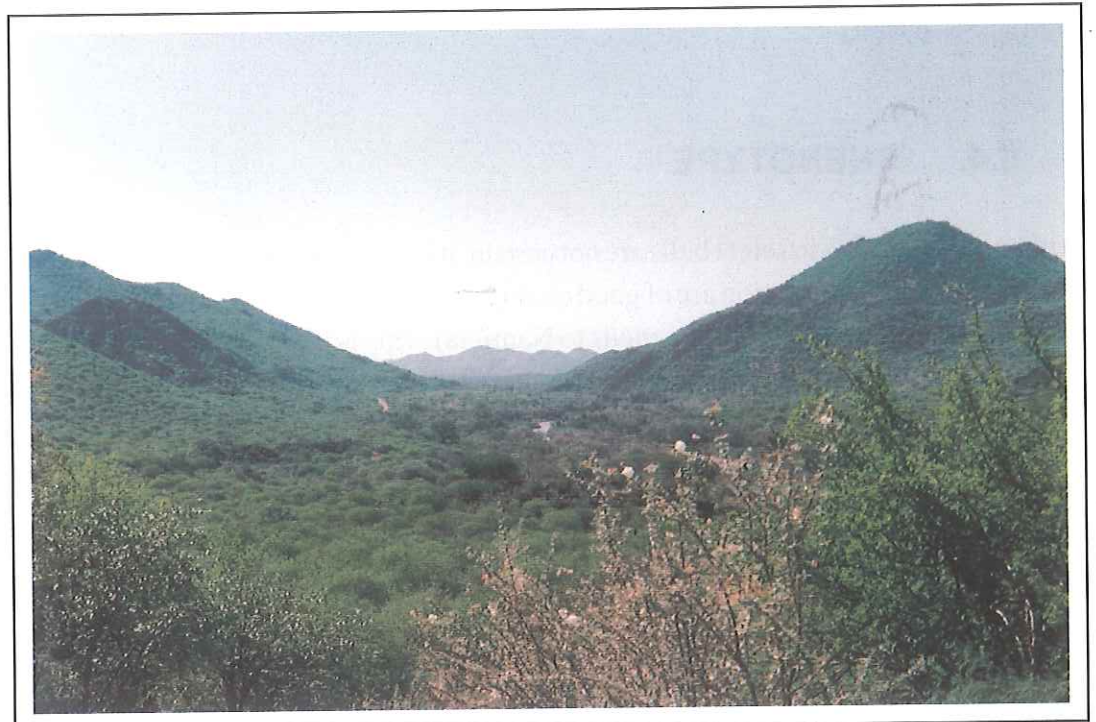


Photo: Philippe TALAVERA

6.2.3. Cattle at the cattle post

When grazing is becoming scarce (or to a less extend water) the animals are moved to emergency grazing areas or posts. In this cattle posts, a temporary kraal will be erected. It is mainly to keep lactating cows and their calves at night. (in "Analysis of the farming systems in Ohandungu, 2000)

Dry season grazing begins around water points closed to the main settlement and moves outward, generally using sandy areas first. It therefore makes little difference if the cattle camps gradually move outwards and the cattle kraaled at night (a practice known as "okuvonga") or if the cattle are left to care for themselves (termed "osamununa"). Herders will only move their camps forward when the grass in front of them is depleted, just as the cattle will not bother to move further out from water until the pasture closer to water are finished. In either case, as herders point out, this system minimises the trampling of useable pasture since cattle walk back to the water point over areas they have already grazed. In this system rocky high areas tend to be used last (Behnke, 1998)

6.3. CASTRATION AND DEHORNING

Most young bulls are castrated between the age of about five to ten months. The animal is cast and secured with ropes; the scrotum over each testis is incised with a knife, and the testis withdrawn. A piece of (usually home-made) string is used to legate the testicular artery and the testis is cut out. Nowadays, more and more people in Kaokoland are practising closed castration using bloodless emasculators. (Paskin, 1990)

With both small stock and cattle, there is never an excess of entire males, but there are always many castrates. This seems to be part of symbols of the owner's status (Paskin, 1990)

No dehorning is practised in Kaokoland. The size of the horns of an animal are definitively important in the tradition. Herders are proud of animals with large, well-shaped horns. (Paskin., 1990; personal data Kunene North FSR-E Unit)

6.4. PHENOTYPE

Although the criteria to select bulls are not certain, it seems that particular colour combinations may be sought after. Most bulls in the region are of good quality and have good conformation, depth and muscling. The breed of cattle used is the 'sanga' (indigenous to Namibia). This is a hardy type of breed with a small frame and any number of variations of skin colour and patterns. The sanga gives a high yield in terms of kg of meat/ha, maintains good performance indices and has very few (if any) calving problems. (Paskin, 1990)

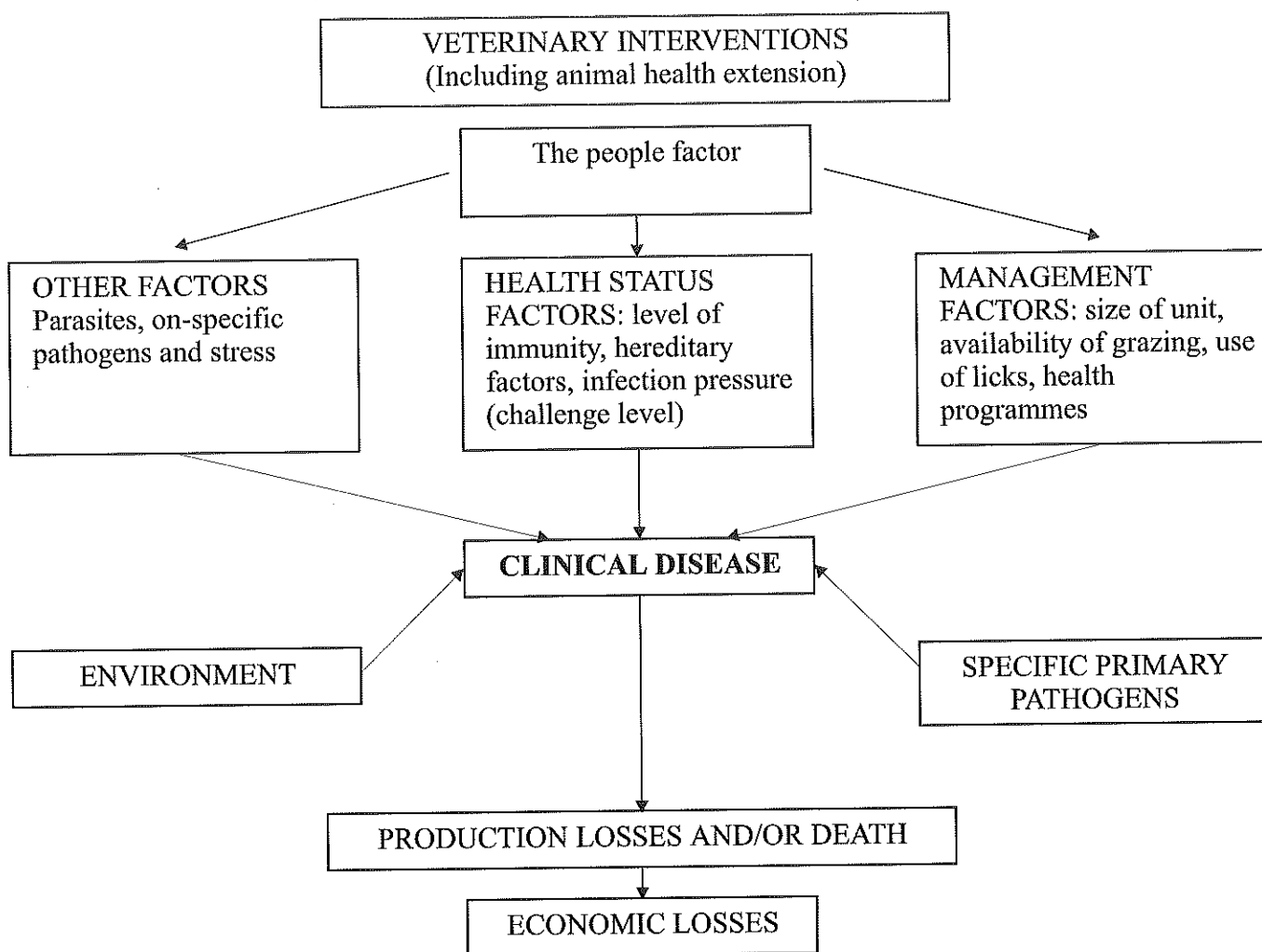
Some colours and some characteristics of the cattle are not acceptable according to the traditional believes (for instance the yellowish/cream colour). In many households mothers and fathers play a role when it comes to select the colours that must not appear within the herd. As well livestock without horns cannot be kept (such animals should be killed immediately, otherwise they will bring bad luck, diseases, death, etc) (Kakongo, 1999)

The importance of the colour that must not appear in a herd is linked to taboos associated with the various patrilineal or “oruzo”. Refer to section 10 for more details.

7. CATTLE DISEASE IN KUNENE NORTH

The following diseases do occur in Kunene region: foot-and-mouth disease, lung sickness, anthrax, botulism, Contagious Bovine Pleuropneumonia (CBPP), lumpy skin disease, high calf mortality caused by Diarrhoea, Contagious abortion (Bovine Brucellosis), Quarter evil, Sweating sickness, bovine para-botulism, abscess, retained placenta, Dourine and Eye infection (van Warmelo, 1951; Malan et al, 1974; Paskin, 1990; in “Nolidep site survey in Kunene North”, 1996; Muhuka, 2000; Personal data Kunene North FSR/E Unit; in “Analysis of the farming systems in Otuaani”, 2000; Smit, 2000)

7.1. THE DISEASE WEB



7.2. MAIN DISEASES IN KUNENE NORTH

7.2.1. Contagious Bovine Pleuropneumonia

It is an infectious disease of the lungs caused by *Mycoplasma mycoides* subsp *mycoides* in cattle, occasionally water buffalo and yak. Affected animals have a fever, breathe rapidly and have a general depressed appearance. A cough develops and breathing becomes increasingly laborious as the lungs become more affected. (in "animal health, volume 2", 1994)

Approximately half of the animals die within a few days to a few weeks of the appearance of clinical signs. About half of those that recover have portions of persistently infected lungs that are walled off by a fibrous capsule (sequestrae). These animals are clinically normal but remain carriers of infection. Under stress, the capsule surrounding the infected sequestrae in the lung may break, causing animals to become active infectious clinical cases. Hence such animals are largely responsible for the continuation of the disease in herds. (in "animal health, volume 2", 1994)

Animals are infected by the inhalation of infected droplets expelled by clinical cases. As the organism survives only a few hours outside the host, direct contact is essential for infection to occur. (in "animal health, volume 2", 1994)

This disease does not occur in the southern part of the country (Smit, 2000)

Contagious Bovine Pleuropneumonia is a disease, which was always known to be endemic in Kaokoland, but after a long hiatus was confirmed once again in 1975. Intensive extension work and campaigns by personnel of the Directorate of Veterinary Services have drastically reduced the incidence of this disease. In recent years, only isolated (mainly unconfirmed) cases have occurred; these were in cattle 'imported' from the North Central Division. (Paskin, 1990)

The fact that lung sickness has declined in importance over the last few years has been reflected in a recent survey. Five out of seven local residents questioned on this aspect considered it to have been a great problem in the past, whereas only one of seven saw it as a great threat at present (Paskin., 1990)

7.2.2. Foot-and-mouth disease

It is a very important and extremely infectious viral disease of cloven hoofed animals and occasionally man. The incubation period is usually three to eight days and the first sign is a high fever (up to 42°C) and a sudden drop in milk in lactating cows, depression and anorexia. A day or so later small vesicles develop in the feet (interdigital spaces, around coronary bands and on the bulbs of the heel and in the mouth (tongue, gums, lips and dental pad). Initially the vesicles are small (1 to 2 cm in diameter) but they rapidly enlarge with a raised, blanched surface. They may coalesce. Vesicles may also develop on the teats. About a day later the vesicles rupture, releasing straw coloured fluid and leaving raw painful ulcers. The lesions cause lameness, excess salivation and reluctance to eat. They heal within ten days, unless secondary bacterial infection took place, causing complications and deformities. (in "animal health, volume 2", 1994)

Although an extremely infectious disease, less than 5% of affected animals die. For about a week after the vesicles ruptured, infected animals excrete virus in saliva, milk, semen, faeces, urine and exhaled air. The virus can survive outside the infected host for several months if not subjected to heat or change of pH. The virus can be transferred from location to location on vehicles, clothing, etc. (in “animal health, volume 2”, 1994)

This disease does not occur in the southern part of the country. However, it has been reported in the Northern Communal Areas, including in Kunene North. (Smit, 2000)

7.2.3. Botulism

It is the poisoning of animals and men by toxins produced by a bacterium, *Clostridium botulinum*. The toxins are nerve toxins and clinical signs can range from peracute to subacute. In the peracute form, animals collapse and die within a few hours of ingestion of the toxin. Subacute disease is more typical. Signs may take up to two weeks to develop and consist of slow-developing paralysis with eventual recumbency and death after a week or more, paralysis of the tongue which protrudes from the mouth in a particular feature. (in “animal health, volume 2”, 1994)

Clostridium botulinum grows in animal tissues and decaying vegetation. Poisoning of livestock usually follows ingestion of feed or water that is contaminated by such material. Phosphorous-deficient cattle are particularly at risk as their depraved appetite (pica) makes them eat or chew cadaver material on the pasture which may be contaminated with the toxins. There is no treatment and the mortality rate is very high. (in “animal health, volume 2”, 1994)

Botulism and CBPP are the most mortal diseases in adult cattle in Kunene North. (Bollig, 1996)

Botulism is a well-known stock disease in the area. Three out of seven inhabitants questioned saw the disease as an important veterinary problem. As with quarter evil, many stock owners are beginning to buy their own supplies of vaccine against this disease (Paskin, 1990)

7.2.4. Brucellosis

It is a bacterial infection of domestic animals and men by *Brucella abortus*, *Brucella melitensis*, *Brucella ovis* and *Brucella suis*. Brucella organisms primarily infect the organs of reproduction and the main clinical signs are abortion, inflammation of the testicles (orchitis) and of the mammary glands (mastitis). The incubation is about six to eight weeks. (in “animal health, volume 2”, 1994)

Cattle of all age and either sex can be infected with *B. abortus*, but it is usually symptomless, except in pregnant females in which the bacteria invade the uterus and cause abortion from the seventh month onwards. The placenta has a thickened leathery appearance with necrosis of the cotyledons. Subcutaneous swellings containing infected fluid (hygroma) are quite frequent. Orchitis in bulls may be encountered. (in “animal health, volume 2”, 1994)

Aborting cattle discharge large numbers of *B. abortus* bacteria in the placenta, foetus and vaginal discharges. Outside the host, the organisms can survive for up to several weeks and other cattle become infected by ingestion and sniffing of contaminated material. The organism can also be excreted in milk. (in "animal health, volume 2", 1994)

Brucellosis is not a great problem in the Kunene North. A national survey of bovine sera completed in 1987 indicated that the national incidence of brucellosis was about 0.5%. Only the Kavango and the Caprivi had figures higher than this; the 0.5% figure seems to hold true for Kaokoland and is certainly confirmed in neighbouring southern Kunene. Stock owners have reported no abortion problems, and the calving percentage seems to be maintained at a higher level. Other symptoms of Brucellosis such as hygromas, are unknown in Kaokoland (Paskin, 1990)

7.2.5. Anthrax

It is a bacterial disease of animals and men caused by *Bacillus anthracis*. After an incubation period of one to two weeks, the infection may be (in "animal health, volume 2", 1994):

- Peracute: very short illness of fever and difficulty in breathing, rapidly followed by collapse, convulsion and death. After death, discharges of thick, dark blood from the external orifices (mouth, nostrils, anus and vulva) are common features.
- Acute: cases last for two to three days before the animal dies. Animals are depressed, listless and have a high fever (up to 42°C). Visible mucous membranes (eyes, gums, etc.) are congested and haemorrhagic. An oedematous swelling of the throat may cause difficulty in breathing.
- Subacute cases survive for about a week and some even recover.

From infected animals, large numbers of *B. anthracis* are discharged in blood, faeces and other excretions to the environment where they sporulate (form spores) on exposure to air. Spores can survive many years in the environment and are the source of infection to susceptible animals. (in "animal health, volume 2", 1994)

An outbreak of Anthrax once occurred in the Omutambo Maowe area. However, it could not be confirmed. The disease is certainly unknown in Kaokoland in recent times (Paskin., 1990)

7.2.6. Rabies

It is a viral infection. The first sign is a change of behaviour which may be very subtle and go unnoticed. It lasts for a few hours only in cattle. It is followed but a phase of atypical excitement. Animals become restless, aggressive and roar continuously. Animals then become progressively paralysed from the rear, are unable to eat or drink and salivate profusely. Paralysis may be the dominant clinical feature in case of "dumb rabies". Death quickly follow.(in "animal health, volume 2", 1994)

The virus is excreted in the saliva of infected animals two days before the clinical signs appear and throughout the course of the disease. The usual route of transmission is through the bite of a rabid animal. (in "animal health, volume 2", 1994)

In Kaokoland, rabies occurs in cattle from time to time, also in small stock and dogs (Paskin, 1990)

7.2.7. Anaplasmosis

It is a rickettsial infection of red blood cells of wild and domestic ruminants with *Anaplasma* species, also called gall-sickness. (in “animal health, volume 2”, 1994)

In endemic areas, indigenous cattle are commonly infected early in calfhood and remain infected throughout their life. These animals are healthy although the *Anaplasma* infection may flare up under stress and cause a mild form of the disease. The infection of red blood cells causes anaemia, visible mucous membranes become very pale, at a later stage yellowish in colour (jaundice), animals are depressed, loss appetite, present incoordination and laboured breathing and females abort. (in “animal health, volume 2”, 1994)

The infection can only follow the inoculation of blood from an infected animal. The main vectors are ticks. (in “animal health, volume 2”, 1994)

Anaplasmosis stability studies carried out in Namibia showed that 96% of Kaokoland cattle had antibodies against *A. marginale*. As a clinical entity, however, anaplasmosis is virtually unknown in the area. Conversations with stock owners brought to light that anaplasmosis had only ever been seen, apparently very rarely, in the southernmost parts of Kaokoland near Sesfontein (Paskin, 1990)

7.2.8. Sweating sickness

It is a tick toxicose confined to calves. Ticks secrete toxins in their saliva which are inoculated into livestock when they feed. (in “animal health, volume 2, 1994)

Calves develop clinical signs about a week after ticks attack. The first sign is a sudden fever which persists for about a week. The eyes and gums become red. It is accompanied by excessive salivation, tears and discharges from the nose. Animals are very depressed and have an extensive moist eczema of the skin of the head, neck and body. The skin is very sensitive, hair is lost either extensively or in patches and animals seek shade. The disease lasts several days but recovery may be complicated by secondary bacterial infection of the skin, blowfly strike or screw-worm myiasis. (in “animal health, volume 2”, 1994)

In Kaokoland, sweating sickness occurs (rarely) in calves, after a heavy rain and resurgence in tick population (Paskin, 1990)

7.2.9. Bovine ephemeral fever

It is also known as three-day sickness or stiff sickness. It is a rhabdovirus infection of cattle and domestic buffaloes transmitted by insects. Most cases are mild and rarely last more than three to five days. Affected animals have a slight fever, lameness and stiffness but recover quickly. A few cases are more severe with high fever, loss of appetite, discharges from the eyes and nose, stiffness, lameness and muscle tremors. On rare occasions animals become paralysed and die within a few days. Pregnant cows may abort. (in “animal health, volume 2”, 1994)

Various species of midges and mosquitoes transmit the infection. (in “animal health, volume 2”, 1994)

In Kaokoland, the three-day stiff sickness is a very rare disease, but is known to occur after rain (Paskin, 1990)

7.2.10. Black quarter

It is a clostridial disease of cattle, usually under three years old and in good condition, caused by certain species of *Clostridium*. The symptoms are hot, painful and swelling of muscles of the hindquarters, sometimes the forequarters. It causes lameness, depression, high fever and death within one to two days. Sometimes, animals are just found dead. If a post-mortem is performed, affected muscles are very dark and spongy with small gas bubbles. They have a strong rancid smell. (in “animal health, volume 2”, 1994)

The disease is usually associated with certain areas. The *Clostridium* are particularly common in soil contaminated with organic matter and/or faeces. Such disease is normally seen in areas used by a lot of livestock. (in “animal health, volume 2”, 1994)

Black Quarter occur in Kaokoland, especially in the southern part, where large numbers of cattle sometimes dies. It was possibly confused with anthrax in the earlier years. Owners are beginning to buy their own vaccine, and the reports received from owners of stock, death seems to be increasing. Three out of seven inhabitants see the disease as a severe threat at present (Paskin, 1990)

7.2.11. Internal and external parasites

A wide range of internal worms and external parasites (lice, ticks, etc.) is encountered in Kunene North, causing losses in production. However, no formal survey to assess the importance of such losses has been undertaken. Furthermore, during a recent training programme, it appeared that farmers do not differentiate between diseases caused by internal parasite from diseases caused by external parasites as far as symptoms and treatment are concerned. (in “Analysis of the farming systems in Otuni”, 2000)

Tick populations in Kunene are low, probably due to the low rainfall and harsh climatic conditions, and to the fact that the Sanga cattle are resistant to ticks. (Paskin, 1990)

The internal parasites like *coccidiosis* are rare but have been diagnosed. (Paskin, 1990)

7.3. ATTITUDE OF STOCK OWNERS TOWARDS SOME DISEASES

In the early 1990s' stock owners have been asked what diseases were threatening their herds.

Table: herder's perceptions of stock disease problems

Percentage of respondents seeing a particular disease as a constraint		
DISEASE	Ovahimba	Herero
Botulism (cattle)	100.0%	84.2%
Black quarter (cattle)	46.6%	31.6%
Toxic plants (all species)	0.0%	28.9%

(Paskin, no date)

8. VACCINATION AND TREATMENT

Table: attitudinal survey of stock owners

Opinion tested	Ovahimba (n = 15)	Herero (n = 38)
Number supporting vaccination campaigns	100.0%	100.0%
Those finding veterinary medicines readily available	0,0%	5,2%
Respondents willing to buy own veterinary medicines/vaccines	93,3%	97.4%

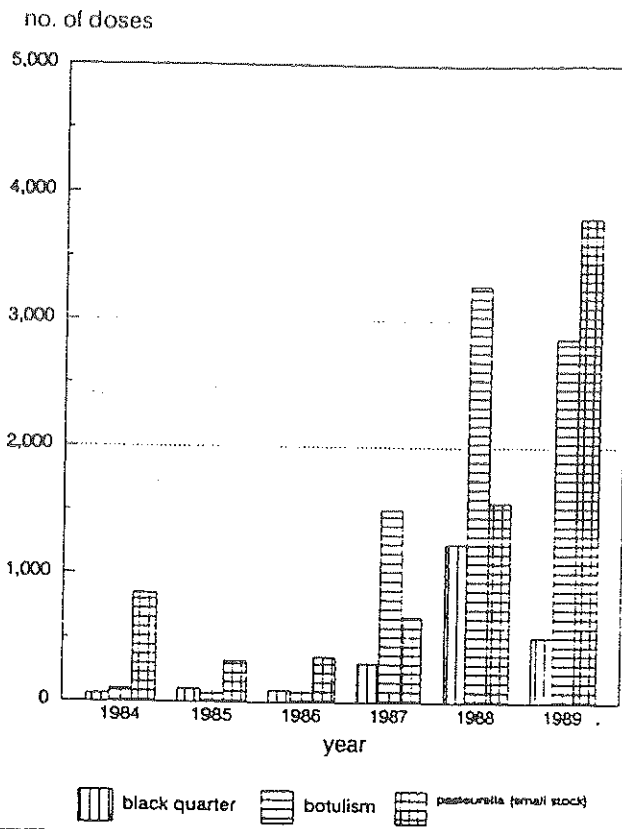
(Paskin, no date)

8.1. VACCINATION OF ANIMALS

8.1.1. Vaccination campaigns organised by the Directorate of Veterinary Services

In Kunene North, as in other northern communal areas, vaccination campaigns are carried out yearly, at the expense of the government. Stock census figures are calculated at this time. In Kunene as well, clinical data (treatment or disease outbreak investigations) are entered on the Disease Report Forms and processed in Windhoek (Paskin, no date). Cattle are vaccinated against foot-and-mouth disease and Contagious Bovine Pleuropneumonia (CBPP) every year by the government under the responsibility of the Directorate of Veterinary Services. (Bollig, 1996; Zhou, 1999; in "Analysis of the farming systems in Ohandungu", 2000)

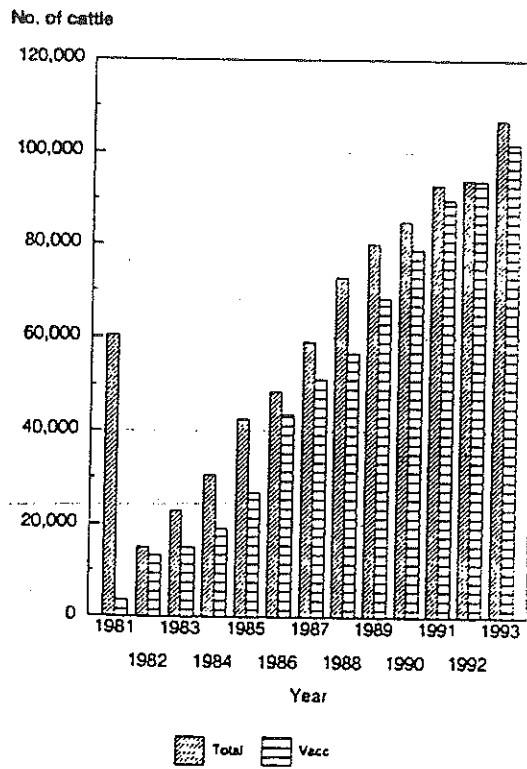
In the light of the concept that 'animals are wealth', preserving the health of livestock is very important to the farmers in Kaokoland pastoralists. Most of the stock owners in the region participate in the vaccination campaign and often move over long distances to official crush pens to wait vaccination days. Fifteen out of seventeen pastoralists questioned in a recent survey brought their livestock to official vaccination campaigns. Fourteen of these did so in order to keep their cattle healthy, and only one wanted vaccination in order to be able to present healthy livestock for marketing purposes (Paskin, no date; Paskin, 1990)



Use of privately-purchased vaccines in Kaokoland. Only vaccinations carried out by DVS staff at owners' request are shown here.

CATTLE VACCINATIONS - KAOKOLAND

Cattle vaccinated for Lung sickness compared to the total number of cattle



Stock-owner response to official CBPP vaccination campaigns

PASKIN R.D. (no date)

In "Ovahimba people of Kaokoland: husbandry perceptions and practices"

If the number of cattle vaccinated against lung sickness are compared to the total cattle numbers, the proportion being vaccinated has increased in recent years to between 95% and 100% (Paskin., no date)

During the vaccination campaign carried out in 2000, the following places have been visited:

- Team 1: Otjitanda, Okondjombo, Ekoto-West, Ovinjange, Ovireva, Okovingava, Oruseu, Otjitambi, Otjivize, Otjahorovara, Kaoko-Otavi, Epunguwe, Ekoto, Okahua, Ombombo, Purros, Okotjitenda, Kanamub, Otjikondavirongo, Otjomitjira, Arisona, Onaiso, Okozonguehe and Otuzemba.
- Team 2: Orupembe, Etanga, Ozohaviria, Otutati, Otjijarua, Ondore, Eyao, Ohakai, Otjijandjasemo, Otjiu-West, Oturindi, Oruvandjei, Ererao, Otjapitjapi, Otjomaoru, Okarumbu, Omaruru, Sesfontein, Khovarib, Warmquelle, Werda, Okambasera, Otjokavare, Okanguma, Otjitoko, Okomakuara and Okapuindja.
- Team 3: Otjinungwa, Onjuva, Ongongo, Otjakati, Otjikongo, Omuramba-North, Ohandungu, Otjiheke, Omungunda, Otjikukutu, Ekoto-South, Omatapati, Oruvandjei-South, Otjozongombe, Otjomatempa, Omisema, Onguta, Okovasiona, Omuhama, Ombombo-Yovaambo, Okambombona and Omakange.
- Team 4: Okazoroue, Otuzuma, Oruhona, Otjihandja, Ehomba, Enjandi, Oronditi, Otjimuhaka, Okatjimbaku, Ombepera, Ondera, Okorosave, Otvani, Okorosave-South, de Wet, Omuramba-South, Omunuandjei, Okavare, Otuvero, Oromauwa, Okatutu-N°1, Okatutu-N°2, Okozombuka, Ozungunda, Otjihungu, Ovivero and Omireko.
- Team 5: Okondjombo, Osaata, Okondaurie, Otjiurunga, Ongondjanambari, Omuhonga, Omuangete, Okauapehuri, Etoto, Ombuarundu, Ongango, Ombaikiha, Otjizeka, Okaperongo, Okaturua, Otjiu-East, Ererao, Otjerunda, Oroondjiwe, Otjetjekua, Okonyota, Ekango, Otjondeka, Aluuana and Otjovikanga.

8.1.2. Vaccination at the expense of the stock owner

In the 1970s', vaccination campaigns were carried in Kaokoland. (Page, 1976)

Table: immunisation of animals against endemic diseases

Livestock type	Disease	Total treated		
		1970/71	1973/74	1974/75
CATTLE	Botulism	1948	2500	5258
	Anthrax	1950	2500	9700
	Black quarter	88	2500	3536
	Lung sickness			34056
	Pulpy kidney	755		

(Page, 1996)

Early in the 1990s' it was reported that stock owners, in recent years, have started to buy their own vaccines and are beginning to vaccinate their animals voluntarily against botulism and black quarter. No definite programme seems to be followed. (Paskin, date; Paskin, 1990)

This has been confirmed by a survey in 1999. Cattle are vaccinated against botulism and black quarter, This is done at any specific time of the year, but rather when it is observed that the animals are sick. The sick cattle are also vaccinated on an individual basis throughout the year and not all the cattle are vaccinated simultaneously (in "Analysis of the farming systems in Ohandungu", 2000)

Botulism, anthrax, black quarter, pasteurellosis and enterotoxaemia vaccines are available. The Directorate of Veterinary Services is in charge of promoting the use of the vaccines but is not in charge of vaccination campaign. They are at the cost of the owners. A proposed vaccination programme has been drafted by the Directorate and is presented to stock owners during training programmes. (Zhou, 2000)

Table: vaccination programme (Kunene North)

Month	Disease
March	Anthrax and Black quarter
May	Brucellosis, Lumpy Skin, Botulism
June	Lumpy skin, Botulism
August	Elephant Skin Disease, Pasteurella
September	Rift Valley Fever
October	Paratifuse (calves)
November	Foot and Mouth
December	Enzootic Abortion (cow)

(Personal data DVS MAWRD Opuwo, 1995) quoted in "Nolidep site survey in Kunene North", 1996)

8.2. TREATMENT OF ANIMALS

8.2.1. Veterinary drugs

Veterinary drugs are available on a more or less regular basis at the Directorate of Veterinary Services Regional Office in Opuwo, the Veterinary Rural Extension Centres in Sesfontein and Etanga and private shops in Opuwo. (personal data NOLIDEP).

It appears however that very few veterinary drugs are used in Kunene North. (in "Analysis of the farming systems in Ohandungu", 2000)

8.2.2. Traditional remedies

The people of the region are aware of the stock diseases as this is shown in the number of herbal remedies that they have developed for veterinary purposes (Paskin., 1990)

Twenty species have been recorded for their use as traditional remedies. It appeared that only few animals' diseases are treated with plants (Diarrhoea, Wounds, Retained placenta and sometimes eyes). Most plants are used for curing human diseases. The reason why plants are preferred for human treatment rather than animal treatment is not known (in "Analysis of the farming systems in Otuni", 2000)

For more details refer to section 29

8.3. VETERINARY EXTENSION

From 1981, the task of veterinary extension began to be tackled in earnest by personnel of the Directorate of Veterinary Services working in Kaokoland. The work was at first carried out mainly by the stock inspector based in Opuwo, and later supplemented by various courses offered by the state veterinarian (working from Outjo). The directorate had a head stock inspector and one other stock inspector based in Opuwo to oversee some 26 stock inspection assistants who each work in a designated area within Kaokoland. The whole system was supervised by a state veterinarian, based in Outjo (Paskin, 1990)

The stock inspector began by approaching the headman, councillors and individuals who had a positive outlook and were prepared to 'give veterinary services a chance'. The first problem was to convince the local population to present their cattle at official CBPP vaccination campaigns. The second one was to convince stock owners to buy their own vaccines and remedies against verminosis, black quarter, etc. (Paskin, 1990)

By enlisting the co-operation of a selected few and allowing other stock owners to witness the success of veterinary methods, dramatic results were achieved. Besides other methods were also employed like radio broadcast to inform the community of the campaign, courses on veterinary medicine were presented to stock inspection assistants, courses on animal management and stock diseases were presented to the council of headman and local high school pupils and also other sophisticated methods, such as the use of pamphlets and posters. (Paskin, 1990)

The head stock inspector and state veterinarian negotiated with local shop owners regarding the stocking of veterinary remedies and instruments for sale to stock owners (up to about 1986, such supplies had to be bought at Kamanjab or Outjo). Shopkeepers in Opuwo now say that they can barely keep up with the demand for vaccines, stock remedies, multi-dose syringes and emasculators. (Paskin, 1990)

Nowadays, a state veterinarian is based directly in Opuwo. He is seconded by a Chief Animal Health Inspector, Animal Health Inspectors and Stock Inspector Assistants. (personal data, Directorate of Veterinary Services).



Section 32

Small stock production system

1. NUMBER OF SMALL STOCK IN KUNENE NORTH

1.1. DIFFICULTY TO OBTAIN ACCURATE INFORMATION

According to the Directorate of Veterinary Services in Opuwo the accuracy of any information on livestock numbers is questioned, as livestock move in and out of areas and farmers are reluctant to reveal how many livestock they have. (in "NOLIDEP site survey in Kunene North", 1996; in "Livestock marketing in the Northern Communal Areas of Namibia", 2000)

Small stock herds usually are between 100 and 400 animals. If the herds become larger, animals are let to relatives or herded at livestock camps. Large percentages consist of young and female animals (Bollig, 1996)

1.2. CENSUS IN THE 1970s'

Table: number of sheep and goats in the region during the 70's

	1970/71	1973/74	1974/75
Sheep	6,000	37,126	36,400
Goats	142,000	91,000	92,011

(Page, 1976)

The population statistics of small stock have shown similar tendencies to the cattle: pre-drought highs and post droughts low, followed by rapid growth (Page, 1976)

1.3. CENSUS IN THE 1980s'

Goats and sheep are herded extensively with flocks often being quite large, numbering from less than a hundred to over a thousand. Goats are traditionally more popular than sheep in the Kunene North. (Paskin, 1990)

Table: number of sheep and goats from 1980-1982, and 1989

	1980	1981	1982	1989
Goats	123,228	89,000	34,236	138,941
Sheep	40,250	25,000	7,855	34,137

(Paskin, 1990)

1.4. CENSUS IN 1999

Table: estimated small stock numbers in Kunene North, 1999

	Sheep	Goats
Opuwo	7000	30,900
Okangwati	3900	36,500
Omuramba South	4650	45,400
Otjondeka	7950	38,250
Etanga	11,700	76,500
Total	43,500	266,550
Veterinary Services estimate 1998	73,557	439,812

(in "Livestock Marketing in the Northern Communal Areas of Namibia Nolidep, 2000)

The value obtained in this survey is different from the estimate of the Directorate of Veterinary Services. The total sheep in the sub region were estimated at 71,340, while the goats were estimated at 433,212 (Personal data DVS Opuwo, 1999)

Table: December 1999, Goats and Sheep numbers in Opuwo and Sesfontein Areas

Sheep breed	Karakul	Dorper	Other Sheep	Totals
Sesfontein	250	477	5732	6459
Opuwo	-	-	64,881	64,881

Goats breed	Boers Goats	Other Goats	Totals
Sesfontein	3101	29111	32212
Opuwo	2027	404101	406128

(Personal data DVS MAWRD Opuwo, 1999)

2. HERD COMPOSITION AND OFF-TAKE RATE

The off-take rate for goats is generally good for all households in Kunene north, except for the small and large herd owners in the Okangwati area. This low off-take rate should be investigated and some trade should be encouraged to utilise the goatherds in this area. Mortality rates for sheep are extremely high in all the areas, and off take rates are relatively low probably because sheep are kept for reasons other than trade and own consumption. (in "Livestock Marketing in the Northern Communal Areas of Namibia", 2000)

Table: herd composition and off-take rates of small stock in different areas

Location	Wealth status	Average number goats	Off-take goats	Average number sheep	Off-take sheep
Opuwo area	Poor	90	28,9%	25	8%
	Wealthy	230	19,6%	90	14,4%
Okangwati area	Poor	250	16,1%	30	6,7%
	Wealthy	600	13,3%	150	6,7%
Omuramba South area	Poor	110	28,2%	20	15%
	Wealthy	430	23,3%	250	1,6%
Otjongdeka area	Poor	45	24,4%	15	20%
	Wealthy	420	25,5%	120	9,2%
Etanga area	Poor	350	21,4%	150	12%
	Wealthy	900	32,2%	360	20%

(adapted from "livestock marketing in the Northern Communal Areas of Namibia", 2000)

Table: mortality rates of small stock in different areas

Location	Wealth status	Mortality goats	Mortality sheep
Opuwo area	Poor	11,1%	32%
	Wealthy	13%	16,7%
Okangwati area	Poor	20%	23%
	Wealthy	13,3%	33,3%
Omuramba South area	Poor	13,6%	25%
	Wealthy	9,3%	6%
Otjongdeka area	Poor	17,8%	13,3%
	Wealthy	14,3%	33,3%
Etanga area	Poor	17,1%	10,7%
	Wealthy	11,1%	13,9%

(adapted from "livestock marketing in the Northern Communal Areas of Namibia", 2000)

3. VALUE OF SMALL STOCKS

3.1. THE SOCIAL VALUE

Small stock serve a social purpose in that they serve as a recognition of wealth fare. They are also slaughtered during traditional ceremonies. (in "analysis of the farming systems in Otuni", 2000) In Kunene region many farmers produce for pride, recognition and popularity. The recognition of wealth starts from 50 small stock units. (Kakongo, 1999)

Sheep are kept not for economic reasons but for prestige reasons (C. Vermeulen, 1999)

In a formal survey conducted 100% of both the OvaHimba (n=15) and the Herero (n=38) questioned, stated that they wanted to acquire more small stock (Paskin, no date)

3.2. THE ECONOMIC VALUE

Small stock, together with cattle, are the most important factors as their products are used for home consumption and for long and short term cash (in "analysis of the farming systems in Ohandungu", 2000). Small stock are sold whenever there is a need for cash (in "analysis of the farming systems in Otuanani", 2000). They are fairly readily sold when there is cash need. In a formal survey, seven out of eight knowledgeable respondents questioned indicated that small stock are sold in easy preference to cattle. Two out of these indicated that the poorest specimens in the flock were the first to be offered. (Paskin, 1990)

3.2.1. Selling value

Small stock are a means of saving for when there is an urgent need for money. A goat can be sold to pay for school fees, hospital fees, purchase of maize meal etc. (Kakongo, 1999)

3.2.1.1. Prices obtained in Opuwo

Table : prices paid for small stock in Opuwo

Estimated weight of animal (kg)		Price range (N\$)	Average price (N\$)
Goats	30	45-65	56
	45	110-125	118
	50	145-165	160
	55	160-200	179
	60	180-200	195
Sheep	45		120
	50		150
	60		180

(in "livestock marketing in Northern Communal Areas of Namibia", 2000)

Table : average monthly prices for small stock in Opuwo: August 1998-January 1999

Month	Live sale (N\$)		Slaughtered (N\$)	
	Goats	Sheep	Goats	Sheep
Aug 98	128.67		138.67	117.50
Sep 98	156.48	140.00	164.05	108.80
Oct 98	172.86		160.40	140.00
Nov 98	162.79		185.76	
Dec 98	183.09	160.42	120.00	120.00
Jan 99	143.57	145.00	136.67	

(in "livestock marketing in Northern Communal Areas of Namibia", 2000)

Table : purchase and selling prices for the live sales of 4 goats (2nd August 1998)

	Purchase price (N\$)	Selling price (N\$)	Gross margin (N\$)
Goat 1	120	180	60
Goat 2	65	80	15
Goat 3	65	90	25
Goat 4	120	165	45

(in "livestock marketing in Northern Communal Areas of Namibia", 2000)

Table : Prices at which offal from slaughtered small stock is sold in Opuwo

Animal	Offal	Price range (N\$)
Goats	Head	6-12
	Liver	9
	Lungs	7
	Liver and lungs	16
	Head and hooves	10-12
Sheep	Liver	7

(in "livestock marketing in Northern Communal Areas of Namibia", 2000)

Table : Average prices per kilogram for different cuts of meat* in Opuwo

Sept-Dec 1998

	Meat	Carcass	Rib	Shoulder	Leg	Intestines	Head	Cooked	Braaied
Average price (N\$/kg)	8.99	7.23	10.66	11.38	14.22	8.74	4.56	13.41	13.94
Standard deviation	1.17	0.47	2.33	1.11	2.63	0.59	1.17	2.01	2.43
Coefficient of variation	0.13	0.06	0.21	0.09	0.18	0.06	0.25	0.15	0.17

Jan-March 1999

	Meat	Carcass	Rib	Shoulder	Leg	Intestines	Head	Back	Brisket	Cooked	Braaied
Average price (N\$/kg)	6.48	7.18	9.32	18.29	19.21	5.32	4.20	10.91	15.83	10.08	11.53
Standard deviation	2.01	2.52	4.36	4.36	4.98	1.30	1.19	5.54	8.81	3.38	2.43
Coefficient of variation	0.31	0.35	0.46	0.23	0.25	0.24	0.28	0.50	0.55	0.33	0.48

*The majority of animals slaughtered were goats

April-June 1999

	Meat	Carcass	Rib	Shoulder	Leg	Intestines	Head	Cooked	Braaied
Average price (N\$/kg)	13.46	-	-	-	-	18.18	6.92	14.28	14.30

(in "livestock marketing in Northern Communal Areas of Namibia", 2000)

Table : Prices asked by different traders for different cuts of meat in Opuwo (N\$/kg)

Sept-Dec 1998

Trader	Meat	Carcass	Rib	Shoulder	Leg	Intestines	Head	Cooked	Braaied
O	9.99	6.76	10.01	12.50	10.28	8.79	4.51	11.78	15.26
M	8.65	7.71	11.33	11.02	14.70	9.33	4.13	15.35	17.77
K	8.53	-	-	-	17.69	8.05	5.22	14.19	10.90

Jan-March 1999

Trader	Meat	Carcass	Rib	Shoulder	Leg	Intestines	Head	Back	Brisket	Cooked	Braaied
O	5.88	6.40	5.65	14.22	9.56	4.85	4.17	10.95	12.00	11.58	17.08
M	6.35	4.25	-	17.36	20.70	4.88	4.55	7.20	12.83	8.08	6.98
K	6.79	8.42	13.00	20.90	22.48	5.78	4.02	12.75	19.60	9.67	10.73

April-June 1999

Trader	Meat	Carcass	Rib	Shoulder	Leg	Intestines	Head	Cooked	Braaied
O	16.69	-	-	-	-	11.48	13.36	17.40	12.33
M	10.20	-	-	-	-	24.87	7.39	11.15	18.17

(in "livestock marketing in Northern Communal Areas of Namibia", 2000)

3.2.1.2. Prices obtained in Okangwati

Table : prices paid for small stock in Okangwati

Estimated weight of animal		Price range (N\$)	Average price (N\$)
Goats	All goats	25-170	104
	45 kg	60-100	73
	60 kg	120-170	132
Sheep		60-150	100

(in "livestock marketing in Northern Communal Areas of Namibia", 2000)

Table : average price paid per small stock at Okangwati, July 1998-March 1999

Month	Live sale (N\$)		Slaughtered (N\$)	
	Goats	Sheep	Goats	Sheep
July 98	87.15	100.00	135.00	
Aug 98	138.18	112.50	180.00	
Sep 98	158.33	120.00	160.00	180.00
Oct 98	116.92	120.00	126.00	
Nov 98	104.29	180.00	120.00	240.00
Dec 98	135.00			
Jan 99	88.00	110.00	93.57	85.00
Feb 99	118.27			
Mar 99	175.00			

(in "livestock marketing in Northern Communal Areas of Namibia", 2000)

Meat from the slaughtered animals is sold by the piece. Small pieces are sold at 50c each, but other 'normal' size pieces at N\$1.00 each. As is the case in Opuwo, it is the size of the piece of meat that varies while the price per piece stays the same. Here, too, raw and cooked meat is sold for the same price, while the size of the cooked meat is smaller. The blood of a slaughtered goat is cooked and some pieces of meat and fat added. This is sold to customers at 50 cents a spoonful. Some traders make biltong and sell it at N\$2.00 a piece. (in "livestock marketing in Northern Communal Areas of Namibia", 2000)

Table : Prices at which offal from slaughtered small stock is sold in Okangwati

Animal	Offal	Price range (N\$)
Goats	Neck	5-10
Sheep	Skin	5-20

(in "livestock marketing in Northern Communal Areas of Namibia", 2000)

In Okangwati the average price for meat is N\$10/kg. Intestines, head and legs are more valuable than in Opuwo. Whole or half carcasses were not traded in Okangwati and neither were small meat pieces, as the preference seems to be for specific pieces of a specific cut. The standard deviation and the coefficient of variation of prices for the different cuts are higher than for Opuwo. The gross profit rate in Okangwati is also substantially lower than in Opuwo, viz. 40c/kg live mass, meaning that if a goat of 50kg was purchased, the trader could make a gross profit of N\$20.00, this is more or less what the seller will be paid by the livestock

owner. On average the gross profit was N\$22.55 per small stock unit with a high standard deviation of N\$28.49. (in "livestock marketing in Northern Communal Areas of Namibia", 2000)

Table : Average prices per kilogram for different cuts of meat goat in Okangwati

Sept-Dec 1998

	Back	Rib	Shoulder	Brisket	Leg	Intestines	Head	Cooked	Braaied
Average price (N\$/kg)	6.66	10.13	10.05	10.24	9.89	10.17	9.06	9.98	11.95
Standard deviation	1.68	2.90	2.07	2.30	1.87	2.40	2.46	3.38	5.10
Coefficient of variation	0.25	0.28	0.21	0.23	0.18	0.24	0.27	0.33	0.42

Jan-March 1999

	Back	Rib	Shoulder	Brisket	Leg	Intestines	Head	Cooked	Braaied
Average price (N\$/kg)	7.18	10.77	12.33	10.85	12.58	11.14	9.63	10.75	11.94
Standard deviation	1.39	2.69	3.01	2.31	2.90	2.39	1.83	2.97	2.01
Coefficient of variation	0.19	0.25	0.24	0.21	0.23	0.21	0.19	0.27	0.17

April-June 1999

	Back	Rib	Shoulder	Brisket	Leg	Intestines	Head	Cooked	Braaied
Average price (N\$/kg)	7.13	15.92	9.33	8.40	7.87	8.64	8.25	11.28	-
Standard deviation	0.88	2.33	0.75	1.25	0.98	1.95	0.98	2.98	-

(in "livestock marketing in Northern Communal Areas of Namibia", 2000)

Table : Prices asked by different traders in Okangwati for different cuts of goat meat (N\$/kg)

Sept-Dec 1998

Trader	Back	Rib	Shoulder	Brisket	Leg	Intestines	Head	Cooked	Braaied
S	7.34	11.27	10.49	10.33	10.45	11.95	8.59	9.40	-
N	5.82	8.59	9.87	8.98	9.56	9.02	6.33	9.83	-
Mr P	7.67	10.66	10.36	11.31	11.56	10.21	11.71	12.56	12.34
D	6.28	6.58	10.08	8.32	9.68	12.34	9.30	11.27	10.28
M	5.31	8.14	90.49	7.92	10.80	9.48	9.07	8.67	8.22
K	7.97	12.31	11.09	11.76	9.02	10.08	10.43	10.02	17.82

Jan-March 1999

Trader	Back	Rib	Shoulder	Brisket	Leg	Intestines	Head	Cooked	Braaied
S	6.66	10.01	9.85	10.15	9.97	9.81	9.05	10.04	-
Mr P	6.65	9.92	10.03	9.52	10.00	10.07	9.08	9.72	12.00
M	7.65	11.49	11.18	10.71	12.84	12.15	9.37	11.69	-
N	7.91	11.10	15.51	12.30	11.75	11.60	10.41	12.28	-
S	5.23	8.87	9.00	7.47	8.79	8.71	6.14	4.60	-

April-June 1999

Trader	Back	Rib	Shoulder	Brisket	Leg	Intestines	Head	Cooked	Braaied
S	6.59	13.90	9.84	8.84	8.06	9.70	8.13	6.84	-
Mr P	7.31	19.46	8.85	9.64	9.41	8.18	8.93	16.74	-
M	8.06	15.63	8.99	5.80	5.57	6.33	9.26	-	-
M	7.64	18.76	8.61	8.44	8.02	8.25	6.94	14.34	-

(in "livestock marketing in Northern Communal Areas of Namibia", 2000)

3.2.2. The exchange value

Small stock are a food source and are used as exchange items in order to obtain maize, cheap alcohol, cloth and other goods (Bollig, 1996)

3.2.2.1. Exchange value in Opuwo

Table : Examples of the value of goods exchange for small stock in Opuwo

Animal (estimated weight)		Items exchanged	Retail value (N\$)
Goats	60 kg goat	1 box of Okandjembo liquor (traditional brandy)	150
	1 goat	4 bottle Okandjembo liquor (@ N\$ 10) plus 1 box of beer (N\$ 43)	83
	1 goat	1 bag of maize meal	70
Sheep		Box of Black Label Beer	43

(in "livestock marketing in Northern Communal Areas of Namibia", 2000)

3.2.2.2. Exchange value in Okangwati

Some traders transport up to 16 goats to Oshakati using a Ford one ton pick-up truck. These goats are generally purchased through the barter exchange for beer. One goat of 55kg will be bought for one case of beer. The goats are obtained from households in the villages 20kms away from Okangwati. The goats sell for between N\$200 and N\$360 per goat at Oshakati. Livestock are also traded for maize meal, blankets and other types of liquor at rates that seem to remain relatively constant over time. (in "livestock marketing in Northern Communal Areas of Namibia", 2000)

Table : Value of goods exchanged for small stock in Okangwati

Animal (estimated weight)		Items exchanged	Retail value (N\$)
Goats	1 goat	N\$180 + 4 bottles of Clubman	
	3 goats	2 cases of Okandjembo liquor (traditional brandy)	
	10 goats	5 tyres	
	2 small goats	1 bag of maize meal	120
	1 goat	1 crate Lion Lager or 10 litres Ombazu (traditional beer)	40
	5 small goats	2 crates Lion Lager	
	1 goat (60kg)	1 case of beer and 1 bag of maize meal	160
	1 goat (45kg)	5 bottles Okandjembo liquor	
Sheep	1 sheep (45kg)	1 bag of maize meal	120
	1 sheep (60kg)	1 case Black Label beer	

(in "livestock marketing in Northern Communal Areas of Namibia", 2000)

3.3. THE NUTRITIONAL VALUE

Small stock are a primary food source: meat and milk form the basis of the people's diet. Sheep and goats are more readily slaughtered for everyday use than are cattle. (Malan, 1974) The major meat producers for everyday life are small stock. Goats are slaughtered quite frequently. (M. Bollig, 1996)

In times of drought, or when the owner is too poor to own cattle, the small stock are milked for domestic purposes. They are slaughtered from time to time (apparently not very often) to provide meat. (Paskin, 1990)

See section 42 for more details.

4. SMALL STOCK PRODUCTS

Small stock are a source of milk, meat and hides (in “analysis of the farming systems in Otuni”, 2000)

4.1. MEAT

Goats and sheep are slaughtered for meat consumption when (Kakongo, 1999):

- there is no relish in the household
- a visitor is coming
- a gift is needed (in this case the animal can also be given alive).

With female animals the OvaHimba will wait for quite some time in order to be sure that the animal is beyond its reproductive phase before slaughtering it. (Bollig, 1996)

In Okangwati the blood from slaughtered animals is sometimes given to the dogs. Occasionally traders will cook the blood and eat it themselves or sell it. (in “livestock marketing in Northern Communal Areas of Namibia”, 2000)

4.2. MILK

Goats are milked but sheep do not get milked (Bollig, 1996)

4.2.1. Use of the milk

Goats are milked and the milk is used for children, however, sheep do not get milked. Adults use fresh goat milk mainly in coffee and tea (OvaHerero). (Kakongo, 1999)

4.2.2. Milk production

The production of milk is determined by the herder’s decision as to how much milk he leaves to the kid and how much he is prepared to spare for human consumption. The following figures therefore do not represent the total milk yield but rather the yield that goes to human consumption. Goats are not milked for several months in order to look after the kids (Bollig, 1996)

Goats have three kidding peaks over the year (November, March, June) so that milk production varies over the year. Goats milk is usually drunk in a soured state and is not buttered. (Bollig, 1996)

Table : Milk yields of goats between December 1994 and January 1996

Date	Yield (l)	Date	Yield (l)
02/12/1994	0.27	02/05/1995	0.17
03/12/1994	0.41	03/05/1995	0.19
04/12/1994	0.22	03/06/1995	0.30
01/01/1995	0.26	04/06/1995	0.24
02/01/1995	0.27	01/07/1995	0.19
03/01/1995	0.20	02/07/1995	0.32
04/01/1995	0.28	03/07/1995	0.35
01/02/1995	0.27	04/07/1995	0.35
03/02/1995	0.33	04/10/1995	0.18
04/02/1995	0.30	01/11/1995	0.12
01/03/1995	0.33	03/11/1995	0.29
03/03/1995	0.32	04/11/1995	0.29
04/03/1995	0.30	01/12/1995	0.27
01/04/1995	0.54	02/12/1995	0.20
02/04/1995	0.48	03/12/1995	0.21
03/04/1995	0.21	01/01/1996	0.13
04/04/1995	0.17	02/01/1996	0.18
01/05/1995	0.22	03/01/1996	0.21

(Bollig, 1996)

4.3. HIDES

Goat skins are usually fed to the dogs. Sometimes they are used to make mattresses with. Sheepskin is used for OvaHimba women's clothing. (in "livestock marketing in Northern Communal Areas of Namibia", 2000)

4.4. MANURE

Small stock manure is also used at times (same use as for cattle manure). (Kakongo, 1999).

5. SMALL STOCK HUSBANDRY

5.1. HOUSING

Goats are also shepherded year round, usually by younger boys, because of predators, hyena and jackal. (Behnke, 1998) However, the management seems to be less ordered that it is the case with cattle. Sometimes they are kept in a separate kraal, sometimes they sleep among the owner's huts, and sometimes they share the main kraal with the cattle. Sheep and goats are sometimes kept together, sometimes separately (Paskin, 1990)

5.2. FEEDING

Because goats are shepherded in all seasons, human rather than caprine logic determines their movements. But goats are taken to precisely those areas that meet their specialised feed preference, exploit their small stature and agility and keep them out of the way of the cattle (Behnke, 1998)

Small stocks are grazing on different areas than cattle. Sheep and goatherds are mixed. They may be sent to emergency posts as well during the dry season. However, even at the emergency grazing areas, they will be managed separately from the cattle and will not access the same areas. The small stock (goats and sheep) browse on the same site. Goats are grazing on the areas with no grass, because they trample the grass and the grass is needed for cattle. Goats have to go far for food during the dry season. (in "Analysis of the farming systems in Ohandungu", 2000)

The reason for this separate management is linked to the use of the natural resources (in "Analysis of the farming systems in Ohandungu", 2000):

- Cattle are eating grass and are kept in areas where grasses are dominant.
- Goats and sheep misuse grasses and are not eating them properly. They are not sent in areas where grasses are dominant. They are sent in areas where trees and bushes are dominant.

Goats are, of course, different from cattle. They require smaller volumes of water, are primarily interested in browse rather than pasture in the dry season, and are unimpeded by rough ground. When they do compete directly with cattle for pasture, goats are able to graze more closely, stripping an area clean and leaving nothing for the cattle. Even when they are managed from the same camp or settlement, goats are frequently watered from separate sources than the cattle and graze in different directions. Often, a few milking goats or females with young will share the larger water points with cattle, but there is considerable social pressure for the owners of large goat flocks to move their animals out to peripheral and smaller water points, which are often springs tucked away in inaccessible or rocky areas (Behnke, 1998)

Goats eat grass, especially annuals and "ongangahozu" (*Eragrostis nindensis*), a perennial found in stony, upland areas. But goats also browse in all seasons, relying on a wide range of tree and shrub species and moving from fresh leaves, flowers and shoots to dry leaves and fallen fruits and seeds as the year progresses. Important tree species for goats include (list far from exhaustive): "Omukaru" (*Ziziphus mucronata*, especially fallen dry leaves), "Omuhama" (*Terminalia pruinoides*) and "Omukaravize" (*Catophractus alexandrii*, eaten year round, green and dry), "Omuvapu" (*Grevia bicolor*) and "Omumbuti" (*Rhigozum virgatum*, green leaves in "Oruteni"), the seed pods of "Omue" (*Faidherbia albida*, the pods of which should not be shaken down but should be left as feed reserve to fall naturally at the end of the dry season), and "Omutati" (*Colophospemum mopane*), not dry leaves but early re-growth before the rains of "Oruteni". (Behnke, 1998)

In Etanga, herders from the "Omundjandu" consistently cite the better quality browse of the "Oukoto" as a reason for taking their goats to this region. Distinctive tree species of the "Oukoto" include, "Otjiti佟ndura", "Ondengura", "Ekwatambari" and "Onduyaturaua". (Behnke, 1998)

5.3. PHENOTYPE

Small stocks encountered in the region are small of frame and hairy. They have no uniform colour at all, are fine boned and the sheep are characterised by their coarse wool fat tails (Paskin, 1990) There are some taboos with some colours regarding sheep (Malan, 1974 – refer to section 10)

6. SMALL STOCK DISEASES IN KUNENE NORTH

The northern Kunene region is relatively healthy area with the only real threat posed by the smouldering incidence of sheep scab. (Paskin, 1990)

6.1. MANGE

This is caused by some parasitic mites that can hardly be seen by the naked eye. All stages of the life cycle (eggs, larvae, nymphs and adults) develop on the host and so spread is by contact between hosts. The mites damage the skin, usually accompanied by irritation, rubbing and scratching. Severe mange is extremely debilitating. (in "Animal health, volume 2", 1994)

There are two main types of mites (in "Animal health, volume 2", 1994):

- *Sarcoptes scabiei*: can affect all domestic livestock. It burrows into the skin, causing intense irritation and thickening of the skin. It is referred to as "sarcoptic mange"
- *Psoroptes spp*: it is a non-burrowing mite in superficial skin layers of the sheep (but also cattle and horses), causing intense irritation and severe skin damage. It is referred to as "sheep scab".

Sheep scab and goat mange are known to occur from time to time in Kunene North. For this reason, small stock leaving the region for the southern (commercial) regions of Namibia are quarantined and treated at the Omutambo Maowe quarantine farm before departure. (Paskin, 1990)

Mange is a common disease in the Kunene North and has been mentioned several times by community members. The sheep and goats are all dipped together when it is observed that they start losing their hair. This can be at anytime of the year. (in "Analysis of the farming systems in Ohandungu", 2000) In Zambia it has been found that the problem can be solved by providing the goats a raised platform made of free branches to rest on, which may be a simpler, economically and ecologically more sustainable solution. It has not been tested in Namibia. (Dolberg, 1999)

Mange in goat has been identified as a problem in Kunene North and the efficiency of the dipping under the local circumstances has been challenged. The Kunene North Farming System Research and Extension Unit (FSR-E Unit) has planned to compare two chemicals for treatment. Skin scrapping samples were collected two times from animals in Otvani community by the FSR-E Unit and analysed the first time at the Directorate of Veterinary Services, Opuwo and the second time at the Windhoek Central Veterinary Laboratory. The results from both analysis were negative. The difficulty with such analysis is that a negative result is not conclusive. Animals can be affected but the skin scrapping samples can be negative (if samples were taken at a place with no mites). The presence and importance of the disease in Kunene North could therefore not be confirmed. (in "Analysis of the farming systems in Otvani", 2000)

6.2. PASTEURELLOSIS

It is a bacterial infection of cattle, sheep and goats with *Pasteurella haemolytica*. *P. haemolytica* type A infection causes respiratory disease. In young lambs infection usually causes a very acute disease with rapid death. Older lambs and adults are less likely to die quickly. However, they develop a pneumonia which can be extensive and severe, characterised by respiratory distress ranging from coughing with discharges from the eyes and nose to severe depression with laboured breathing. *P. haemolytica* type T causes septicaemia. In an

outbreak of type T, animals may just be found dead or, if still alive, very distressed, fevered, presenting difficulties in breathing. (in "Animal health, volume 2", 1994)

The *Pasteurella* organisms are normal inhabitants of the upper respiratory tract and are stimulated to multiply and invade the lungs, causing respiratory diseases, or the body, causing septicaemia. The predisposing factors are not always known, but stress appear to be a major component of the disease. (in "animal health, volume 2", 1994)

This is one of the killers of young sheep and goats in the region. It occurs especially just after rain, when the animals are subjected to cold stress. Local stockowners are beginning to buy their own vaccines. (Paskin, 1990)

6.3. PULPY KIDNEY

It is a disease caused by *Clostridium perfringens* type D, mainly in sheep up to one year old, cattle and goats sometimes. The disease usually follows an improvement in nutrition (from the poor diet at the end of the dry season to the rich diet at the beginning of the rainy season). It is acute. Convulsion can be observed but usually animals are found dead. (in "animal health, volume 2", 1994)

It is rarer than *Pasteurellosis* in Kunene North, but it is known to occur. (Paskin, 1990)

6.4. FOOT ABSCESS

It is common in small stock, especially after good rains. It is the infection of interdigital wounds (caused by ticks, thorns or stones) usually occurring when animals are parked in muddy kraals. (Paskin, 1990)

6.5. EXTERNAL PARASITES

Clinical nasal worm infestations have been known to occur, but are very rare in Kunene North (Paskin, 1990)

6.6. INTERNAL PARASITES

Verminosis is rarely a problem in small stock in Kunene North. When seen, it is usually in young sheep or goats after good rains. (Paskin, 1990)

6.7. TOXIC PLANTS

Although the toxicity of *Pseudogaltonia clarata* is low or occasional, some stockowners in the region have reported symptoms in small stock strikingly looking like those of slangkop poisoning. (Paskin, 1990)

6.8. PREDATORS

Given the low visibility of wild game in the area it is astonishing to find that quite a number of cattle and small stock are lost to leopards and hyenas and even more goats and sheep are lost to jackals. (Bollig, 1996)

Section 33

Other animal production

1. HORSES

1.1. NUMBER OF HORSES

The combined figures for horses and donkeys were as follow (Page, 1976):

- 1970/71 – 3580
- 1973/74 – 3314
- 1974/75 – 5678

In December 1999 the number of horses in the Opuwo area was estimated to be 989, while that in the Sesfontein area it was estimated at 173, totalling 1162 for the entire region (Personal data Directorate of Veterinary Services Opuwo, 1999)

1.2. USE OF HORSES

The horses are mainly used for transport (riding to collect cattle or to go to further places (in “Analysis of the farming systems in Ohandungu”, 2000; in “Analysis of the farming systems in Otuni”, 2000)

1.3. FEEDING HABITS

The horses graze a bit far from the homesteads, preferably on a flat site called “Omuramba” (in “Analysis of the farming systems in Ohandungu”, 2000)

2. DONKEYS

2.1. NUMBERS OF DONKEYS

In December 1999 the total number of donkeys in the Opuwo area was estimated to be 6118, while that in the Sesfontein area was estimated at 79, totalling 6197 for the entire region (Personal data Directorate of Veterinary Services Opuwo, 1999)

2.2. USE OF DONKEYS

Donkeys are far more important than horses as they are used for dragging branches for gardens, transporting water, for transporting people and during ploughing. Donkeys are used as Draft Animal Power in Kunene North. (in "Analysis of the farming systems in Ohandungu", 2000; in "Analysis of the farming systems in Otuanani", 2000)

2.3. FOOD PREFERENCES

No special feeding or attention is given to donkeys. Donkeys pull grass tuff (with the roots) from the soil. Donkeys usually eat grass, devil's thorn (*Tribulus terrestris*) and sometimes *Boscia* barks. Donkeys prefer the following vegetations: *C. Mopane*, *B. Foetida*, *S. Sterestus* and *B. Albitrunca* (in "Analysis of the farming systems in Ohandungu", 2000)

3. PIGS

In 1973/74 there were 50 pigs in the region, while in 1974/75 there were 58 pigs (Page, 1976)

In December 1999 the total number of pigs in the Opuwo area was estimated to be 632, while that in the Sesfontein area was estimated at 93, totalling 725 for the entire region (Personal data Directorate of Veterinary Services Opuwo, 1999)

4. CHICKEN

4.1. NUMBER OF CHICKENS

Between 1973 and 1975 there were 5000 poultry in the region (Page, 1976)

In December 1999 the numbers of poultry in the Opuwo area was estimated to be 11,428, while that in the Sesfontein area was estimated at 1,458, totalling 12,886 for the entire region (Personal data Directorate of Veterinary Services Opuwo, 1999)

4.2. FEEDING

Chickens are fed with self-produced maize and some kitchen scraps as extra food in Ohandungu. They also feed on worms. Chickens are kept free ranging with enough water available to them (in “Analysis of the farming systems in Ohandungu”, 2000)

4.3. PREDATORS

Birds of pray, wild cats and black-tipped mongoose (*Myonax cauui*) causes losses among chickens. (in “Analysis of the farming systems in Ohandungu”, 2000)



Section 34

A mixed livestock production system

The most obvious production system in Kunene North is the livestock production system, whereby cattle and small-stock are raised for social recognition, as a saving source of cash and for food consumption. Farmers in Kunene North are therefore **pastoralists**. (in “analysis of the farming system in Ohandungu”, 2000).

Both cattle and small-stock are making use of pastures, either around the main settlement or in emergency grazing areas. Farmers in Kunene North may follow their animals to the emergency grazing areas and are therefore semi-nomadic, or may use herd boys and stay in the main settlement once they have become sedentary (and rich enough to afford the services of herd boys). The livestock production system in Kunene North is therefore **extensive**, making use of large areas. (personal data, Kunene North FSR-E Unit)

Small-stock and cattle are usually managed separately, not grazing/ browsing in the same areas at the same time. This is in order to make the best possible use out of the pastures. However, most farmers own both cattle and small stocks and are managing both herds. The livestock production system in Kunene North is therefore a **mixed livestock production system**. (in “analysis of the farming systems in Ohandungu”, 2000)

Neither cattle nor small stock receive intense care. Vaccination are carried out on a regular basis when free of charge (vaccination campaigns organised by the Directorate of Veterinary Services against the Contagious Bovine Pleuropneumonia and the foot-and-mouth disease) or in case of an outbreak. Very few veterinary drugs are used. Supplementary feeding is not done by most of the farmers. The livestock production system receives therefore as few inputs as possible. (Kakongo, 1999)



Chapter Six

**CROP PRODUCTION
SYSTEM**



Section 35

Crop production system

1. TYPES OF CROPS

1.1. ORIGIN OF THE CROP PRODUCTION IN KUNENE NORTH

End the XIX century a group of Dorsland trekkers sojourned in Kaokoland. At Otjitundua and Kaoko-Otavi the Trekkers planted crops, which they irrigated from the local springs. Some Kaokolanders were later to continue this practice and in the 1970s' wheat, tobacco and other crops are still grown under irrigation at these and other springs in the territory (Malan et al, 1974)

In the 1970s' virtually all Kaokolanders except some Himba and Tjimba groups in the west planted maize, pumpkin and gourds. Other crops cultivated by the Herero and a few Himba are sorghum, millet, cowpeas, squashes, watermelon and sweet cane. Small plots of wheat and tobacco are grown under irrigation at some larger springs. At some places with springs such as Ehomba, a wide variety of fruits and vegetable including orange, loquats, guava, papayas, tomatoes, potatoes, sweet potatoes etc are grown under irrigation (Malan, 1974; Page. D, 1976) At Warmquelle irrigation scheme millet and maize is produced as well as 17 fruit trees: 9 sub tropic fruits, 4 citrus, and 2 dates (Page, 1976)

1.2. SPECIES UNDER CULTIVATION NOWADAYS

It has been reported that:

- Farmers are cultivating maize, pumpkins and melons (in "Developing financial services in two regions of the northern Namibia", 1999)
- Farmers in Kaokoland are also known to grow tobacco where crops are irrigated (Behnke, 1997)
- In Purros crops include mealies, sweet cane, pumpkin, squashes, watermelon, gourds and since 1987 wheat (Jacobsonhn, 1988)
- Crops that are produced in Ohandungu are maize, water melon, beans, calabash, pumpkin, sweet melon, sugar cane, millet, sweet stored sorghum. All crops are rain-fed (in "Analysis of the farming systems in Ohandungu", 2000; Personal data FSR/E Unit Opuwo; in "Analysis of the farming systems in Otuari", 2000)

A certain amount of dry land cultivation, mainly of maize (an extremely hardy local variety) and also of pumpkins, is practised in the Kunene North by virtually all the ethnic groups resident there. (Paskin, 1990) According to prior 1994, those who engage in both pastoralism and agriculture are termed “agro pastoralism”. Over the past twenty years there has been a sedentarisation of the communities and the promotion of a crop production system (in “Analysis of the farming systems in Ohandungu”, 2000)

2. SEED VARIETY USED

The farmers in Ouozonduwombe and Ohandungu communities are usually planting the local maize varieties. Seeds from the previous harvest are planted. If the harvest of the previous season was very poor (could not sustain the whole family throughout the year) then seeds are obtained from farmers with a good harvest in exchange for something. The seeds are also bought from Agra or any other store that sell them. Millet and sorghum are rare and are especially found in households, which have lived in Angola for some time. Only occasionally maize or millet seeds are bought with traders (Bollig, 1996; Personal data FSR/E Unit Opuwo)

Little is known about the characteristics of the local seed varieties used. The local seeds are preferred to the bought type because (Personal data FSR/E Unit MAWRD, 2000):

- They mature earlier
- They are easy to grind (proper texture)
- The maize meal test well.

Farmers seem to be satisfied with the performance of the local seed variety although they mention the difference between the early maturing and late maturing species. They would like early maturing species to be introduced (Personal data FSR/E Unit Opuwo, 2000)

3. SEASON PLANTED AND METHODS TO PREPARE THE SOIL

3.1. CHARACTERISTICS OF THE GARDENS

3.1.1. Size of the gardens

In years of good rainfall less agronomy is practised than in dryer years. Crop production is practised in a form of small gardens at fountains in dry years. At single places along the Kunene river, agronomy is practised in a fragmented fashion. The Herero group usually cultivates an area that is on average 5 to 6 ha. (Page, 1976)

Gardens varying in sizes from half a hectare to 2 or 3 ha, surrounded by a fence made of cut down bushes and branches are found all over the region, mainly on the flood plains around Opuwo and also along banks of the Kunene river and some of the seasonal rivers (Paskin, no date) The average sizes of gardens varies from 0,1 ha to 1,5 ha (Bollig, 1996) The sizes of gardens vary between 0,5 ha to 2 ha in Otuari. (in “Analysis of the farming systems in Otuari”, 2000) The size of the garden is approximately 0,5 ha to 1 ha in Ohandungu. (in “analysis of the farming systems in Ohandungu”, 2000)

Cropping activities are also evident in Omuhonga where each family possesses a small garden situated alongside the Okamako river and in Enyandi along the Kunene river (A. Mbinga et al, 1999)

The number of existing gardens in communities is much more than expected and the crop production system, often neglected, is quite important in the region. Through the seasonal calendars carried out in Ohandungu, Omuhonga and Otuari it came to light that crop production cannot be neglected as it is time consuming, requiring high inputs for low outputs and as farmers are committed to it (Talavera, 2000)

3.1.2. Pool gardens

In Ohandungu some pool gardens have been recorded. A pool garden is a garden divided in plots belonging to the same household or to different households. (Personal data FSR/E Unit MAWRD Opuwo, 2000)

The reasons for pool gardens are (Personal data FSR/E Unit MAWRD Opuwo, 2000):

- To divide labour according to activities. For instance if one person is milking the other one can be at the garden for birds scaring or weeding.
- To divide labour. For instance fencing of gardens requires time and is labour intensive. Group work is time saving and less labour intensive.

There are no pool gardens in Ouozonduwombe. (Personal data FSR/E Unit Opuwo, 2000)

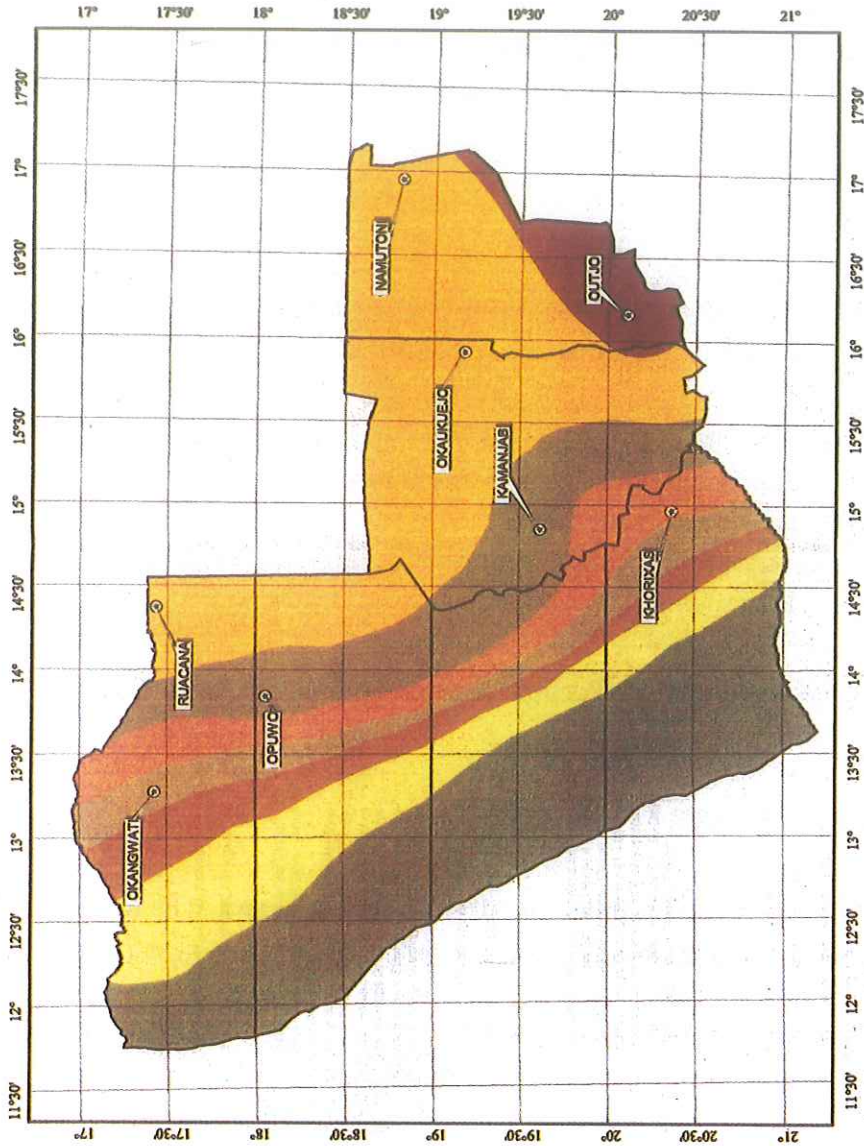
3.2. GROWING PERIODS

The growing period zones in Kunene follows the rainfall distribution pattern. The definition suggest that areas of low rainfall like most places in Kunene region will have short or no growing periods and those of high rainfall will long growing periods. In Kunene region, the growing period decreases westwards, just like rainfall. Growing period zones 6-11 cover the region. Growing period zone 6 has 41 to 60 days and growing period zone 11 has no growing period at all. The longer the growing period, the better the chances of raising a crop to maturity. In Kunene, not only are the growing periods short but also undependable for most crops including grass (in “Kunene integrated regional land use plan”, 1998)

The growing season may be quite long and the entire process of growing the annual maize crop may involve up to six month, depending upon weather conditions. The six months begin with the preparation of the soil and end with the harvesting of sun dried maize (Crandall, 1992)

KUNENE REGION

GROWING PERIOD ZONES



LEGEND

- Average growing period 81-90 days, dependable growing period 80% of average
- Average growing period 81-90 days, very short dependable growing period
- Average growing period 41-60 days, no dependable growing period
- Average growing period 31-40 days
- Average growing period 21-30 days
- Average growing period 11-20 days
- Average growing period 10 days or less
- No growing period

- Major Towns
- Constituencies



Produced by the NRSG, IMET
 Produced for the Ministry of Lands,
 Resettlement & Rehabilitation (MLRR)
 October 1988
 Source: IMA/FPD, AEZ Project, 1987

In "Kunene integrated Regional Land Use Plan, 1998"
 Ministry of Lands, Resettlement and Rehabilitation

3.3. SEASON PLANTED

The cropping activities seems to be evident as people comes down to the river during the rainy season to cultivate and then go back inland during the dry season. The gardens are placed on the alluvial soil on the riverbanks. There are no exclusive rights to certain places. Gardens are fenced-off carefully in order to prevent cattle and small stock to entering the gardens. Paid labourers frequently erect the gardens. The standard of payment for large gardens fence is one "tollie" or one steer. A small hut is built next to the garden or inside where mostly women and children spend their time to chase away birds and strengthen their defence against hungry goats. (Bollig, 1996)

The first phase of planting takes usually place in November after the first rain (Bollig, 1996) Planting is done mainly just after the first heavy rains early in the year, with harvesting taking place a few month later (Paskin, 1990) Planting in Ohandungu is done after the first rain, between December and February. (in "analysis of the farming systems in Ohandungu", 2000)

Ploughing and planting is done from December to February with a hand hoe or a tractor is the government ploughing services is timely carried out. (in "Analysis of the farming systems in Otvani", 2000)

When the first dark clouds begin to appear in the sky late in November or early December, marking the eminent arrival of the rain season, women begin to head to their gardens to prepare the ground for planting (Crandall, 1992).

If the rainy season begins early and if people are caught unaware, gardens are cleared and planted section by section and one sees in any given garden maize plants of various heights during the growing season. (Candall, 1992)

3.4. LAND CLEARING FOR CULTIVATION

The clearing and brush-fencing of lands for cultivation also entails cutting down many trees and shrubs. Crop growing is restricted to the short rainy season, with the result that when not in use, cleared plots are invaded by numerous weeds. When plots are abandoned after a few years, secondary succession takes place, and if not cleared again after a fallow period, will progress to secondary climax (Malan et al, 1974)

3.5. SOIL PREPARATION

3.5.1. Hand hoe and animal traction

The soil is cultivated with a hand hoe to loosen the topsoil thus making more water available to the plant and to allow root penetration. (in "use of PRA tools in Ouozonduombe", 2000)

In Ohandungu two methods to prepare the soil have been recorded (Personal data FSR/E Unit Opuwo, 2000):

- Farmers who do not use animal traction. The soil is cultivated with a hand hoe before the first rain. Sometimes a part of the garden is dry planted and the other part is planted after sufficient moisture is available.
- Farmers who use animal traction (plough). They do not cultivate their garden before the planting commences

In Ohandungu maize is not planted in line (in “Analysis of the farming systems in Ohandungu”, 2000)

Among the Herero group oxen are used to plough land prior to planting, whereas very few Ovahimba employs their animals in this manner. A variety of crops are sown on the same plot, which is used for three to six successive years, after which declining yields necessitate its abandonment (Malan, 1974)

The mayor tool on the entire horticultural enterprise is the hand hoe. The majority of gardens are cultivated entirely by a hoe. Few people own ploughs and will use oxen or donkeys as draught animals. Plough owners sometimes hire their services. Gardens that have been ploughed will, of course, have maize growing as a single plants in rows while those whose field were planted by a hoe will plant in dusters about half a meter apart (Crandall, 1992)

3.5.2. Intercropping and temporal spacing of planting

Intercropping has been recorded in Ohandungu and Otuari. (in “analysis of the farming systems in Ohandungu”, 2000 and “analysis of the farming systems in Otuari”, 2000) Risks of crop failures are diminished by intercropping maize and millet with various sorts of pumpkins and legumes (Bollig, 1996)

Note that crop rotation is not common practice (personal data FSR-E Unit Opuwo)

The temporal spacing of planting reduces the risk that all seeds will be damaged by dry spell in the rainy season. Another advantage of temporal spacing is that the harvest may take place over several weeks. (Bollig, 1996)

Apart from the few areas where simple furrow irrigation is practised, cultivation generally takes the form of shifting, mixed crop horticulture. A suitable site is selected, preferably on deep alluvial soil, which is then cleared and enclosed with a fence of thorny branches. In the case of the Ovahimba these gardens (“Ovikunino”) are seldom more than a hectare in extent. (Malan, 1974)

3.5.3. Manure and fertilisers

The poor soil makes cultivation of crops difficult over most of the area. With addition of manure from the cattle pens, however, the soil can be made to yield fair crop if water is available for irrigation. Gardens are near springs and dry riverbeds with subterranean water (Hvidsten et al, 1997) The Ovahimbas recognise the benefit of manure as fertiliser and hence encourage the animals to graze in their gardens after the harvest. (Crandall, 1992) The common form of fertilising soils in Kunene North takes place when animals are put on the field after harvesting. (Bollig, 1996)

The statistics showed that in 1974/1975, 300 farmers fertilised their crops: 24-ton kraal manure was used on

A field of maize, in one of the gardens at Otjitanda. It is a rain-fed cropping system, using local seeds.



F. Cornu

312 ha. In 1973, only 200 farmers used 11 ton of manure on 260 ha. Judged by these figures it appears there is an increase in crop production. (Page, 1976)

Chemical fertilisers are virtually not used in Kunene North (Bollig, 1996; in “analysis of the farming systems in Otuni”, 2000)

There is however an indirect way to fertilise soils through the alluvial deposit caused by flooding in the riverbanks. (M. Bollig, 1996; Personal data FSR/E Unit Opuwo, 2000)

4. WEEDING

Weeding in Ohandungu is done from December to April with a hand hoe (in “Analysis of the farming systems in Ohandungu”, 2000)

Weeding is done at least twice, once before planting and once after the seedling are ten to twenty centimetres high. Weeds are not carried away from the crop field but turned into the soil or sometimes piled up to be burned after the harvest. (Crandall, 1992)

5. HARVESTING

In Ohandungu harvesting is done between April and July. In good years two harvests can be expected (March and July). A harvest that sustains a family till the next ploughing season is a good harvest. (in “Analysis of the farming systems in Ohandungu”, 2000; in “Analysis of the farming systems in Otuni”, 2000)

Harvesting is a task undertaken by all able hands in the family as most of the people who have to go to the cattle post are back at the main settlement. The ripe, dried ears of the maize are taken from gardens to the kraals either by filled baskets on the women heads, on donkeys back or by an ox- or donkey drawn sledge (Crandall, 1992)

Note that there is not a single record about yields in any place in Kunene North in any of the literature quoted.

During drying each family will spread out the ears on the roof of a shelter specifically made for drying maize belonging to the family. The ears of the maize remain on the roof of this structure for six to eight weeks until it is completely dried. (Crandall, 1992, in “analysis of the farming systems in Ohandungu”, 2000)

At this point the maize kernels are removed by hand from the cob and stored in grain silos. The whole process of harvesting, shucking the maize and storing takes weeks to complete. (Crandall, 1992) Threshing is carried out by women (in “analysis of the farming systems in Ohandungu”, 2000)

Grinding is a daily activity carried out by women (in “Analysis of the farming systems in Ohandungu”, 2000; in “Analysis of the farming systems in Otuni”, 2000)

The maize stalks, which are unpalatably hard and subsequently uneaten by animals, must be removed from the field. (Crandall, 1992)

6. STORAGE

The products such as maize are stored in traditional storage – called “Ombombo” and “Otjindu”. Seeds to be used for planting are sometimes treated with ashes and stored in bottles apart. Other products like pumpkins and watermelons are stored in rooms. As these products are stored in rooms they tend to rot and they are eventually given to animals or totally discarded (Personal data FSR/E Unit Opuwo, 2000)

After drying the maize, the kernels are removed by hand from the cob and stored in grain silos. Grain silos are built by both men and women, each gender having its specific tasks. Men normally built the wooden structure while women are responsible for plastering. The silo does not have any doors or windows. The maize is completely sealed in and thus protected against vermin and the elements. Unshackled ears of maize are also stored, but not in great quantity (Crandall, 1992)

7. PESTS AND INSECTS

Birds are normally feeding on harvest during drying periods. Seeds are also eaten by worms and birds. Sometimes porcupines and cattle do enter the gardens and destroy the crop (in “Analysis of the farming systems in Ohandungu”, 2000; in “Analysis of the farming systems in Otuanani”, 2000)

Small pests like rats and other rodents attack stored maize. Problems with pests like guinea fowl, ground cricket, “Ozondjere” monkeys etc are also reported. (Personal data FSR/E Unit Opuwo, 2000)

No data about the economic losses due to pests and insects could be found in any of the literature quoted.

8. WATERING AND IRRIGATION

Irrigation systems exist along the seasonal rivers and along the Kunene river. (Crandall, 1992) Due to low rainfall, successful cropping can only be carried out under irrigation in the region. It is practised at different scales and with different crops.

The largest irrigation scheme in the Kunene region is Etunda, which is supported by water from the Kunene river, and which is on the border with Omusati region. There is a potential to expand the scheme to 1,200 ha from the present 600 ha. The potential for diversifying crops exists if markets could be secured. Practically, the scheme benefits people in Omusati more than in Kunene. (in “Kunene integrated regional land use plan”, 1998)

Along the Huab and Ugab rivers, farmers abstract water from sand and use it to irrigate small gardens producing mainly maize and vegetable for subsistence purposes. The gardens are small due to water limitations. The most well known gardens in the region are in the Seesfontein/Khowarib basin. There are community gardens, a government garden and individual gardens. They all use spring water from a number of fountains in the area. (in “Kunene integrated regional land use plan”, 1998)

Large dam sites with potential for irrigation have been identified in the region but in some cases there are no potentially irrigable soils nearby. The most promising dam site in terms of water yield is at Purros. This area is not densely settled and those people who are settled there have no cropping tradition despite the fact that they can be trained. Irrigators would have to come from outside the region with all the potential social problems. Over and above all these, dams are not considered a good proposition in this area due to potential adverse environment effect they may create. Water remains the greatest constraint to cropping. (in “Kunene integrated regional land use plan”, 1998) This statement is in contradiction with Jacobsohn. Irrigated gardens have been developed at the lower Purros settlement, which consequently has been permanently occupied most of this decade. These gardens, in silt deposit along the river’s edge, are a mayor factor contributing to the present cohesiveness of the community. The gardens furrow irrigation, leading in water from the river, is a co-operative venture although individuals and families, Ovahimba and Herero, tend their own plots (Jacobsohn, 1988)

The controversial Epupa dam, if it should go ahead will not create any opportunity for irrigation, as there are no potentially irrigable soils (in “Kunene integrated regional land use plan”, 1998):

Gardens are always located near a river or stream and also on flood plains. A garden located on a flood plain will receive water even if the rain is falling on the hills and mountains and not directly on the valley floor. If hard rain persist for a quarter of an hour or longer, inevitably the run-off will collect into the river beds and a swift and powerful rush of water will force its way down the river bed and eventually into gardens. Horticulture among Ovahimba communities is dependent upon rainfall and flooding (Crandall, 1992)

Simple furrow irrigation is practised where large springs are available (Malan, 1974; Paskin, 1990)

9. USE OF PRODUCTS

The primary aim of a garden is to provide food for home consumption (in ‘Analysis of the farming systems in Otuni’, 2000; Personal data FSR/E Unit Opuwo, 2000)

In case of a very good harvest, which is rare, the surplus produced is either given to animals or sold for cash. The decision is taken collectively and the cash, if any, is for both the husband and wife(ves). Maize can also be given to friends and relatives. Pumpkins are for home consumption but it can also be sold for cash (Personal data FSR/E Unit Opuwo, 2000)

If the harvest is good, no food will be bought. If the harvest is poor, animals will be sold to buy maize meal. Crop production is therefore a way to save capital (Personal data FSR/E Unit Opuwo, 2000)

All residues are given to animals and the farmers regard the maize and sorghum stover as the best feed. The farmers expressed interest in fodder species and indicated that they will plant some in their fields if seeds are made available to them. They are also willing to sow some seeds of grasses if they get them (Personal data FSR/E Unit Opuwo, 2000)

During the dry season, when a majority of people, especially men, leave the permanent kraal and head out to the post, those stays behind (at the main or home kraal) will subsist almost entirely on maize (Crandall, 1992)

There is a progressive increase of the cropping areas and the diversification of the economic activities to ensure the food production and to generate income. In the villages, depending on agronomic factors and water availability, there is a development of the cropping systems to ensure the household's consumption as well as the marketing of the products (in cash or in kind by exchanging with goats). The main constraints are the rainfall dependency, the lack of appropriate technologies and the lack of irrigated schemes. Among the villages visited, some are currently moving towards the crop's production. (in "developing financial services in two regions of the Northern Namibia", 1999)



Chapter Seven

**MARKETING
OPPORTUNITIES**



Section 36

The existence of two markets

Since cattle have assumed strong religious significance for the people of the region, resistance to marketing animals is strong. There are few farming areas readily accessible by good roads and few loading ramps. (Paskin, no date)

In a small survey carried out, six out of seventeen indicated a willingness to market some livestock in order to obtain certain things (for instance a car, paying school fees or buying clothes), three refused point-blank to market livestock and eight gave a very guarded 'maybe' on the question of selling livestock (Paskin, 1990).

The military occupation in the region in the 1980's gave some of the local populace an introduction to the cash economy. Some were able to join the military, others found a market for their livestock amongst the soldiers. These opportunities disappeared with South African withdrawal and Namibian independence (1990). More recently, however, the Meat Corporation of Namibia (MeatCo) has opened new marketing channels for beef cattle, and the pastoralists are once again being exposed to the cash mechanism (Paskin, no date).

However, the northern part of the country as well as other regions in the north are cut off from the rest of Namibia by a Veterinary Cordon Fence due to the risk of an outbreak of the Contagious Bovine Pleuropneumonia and the foot-and-mouth disease. Cattle and pigs cannot be moved from the northern side to the southern side of the fence. Small stock can only be moved after a period of quarantine (Smit, 2000)

Smallholder farmers are pressurising the government to move the Veterinary Cordon Fence to the border with Angola so that livestock marketing opportunities could be opened. The movement of the fence could generate euphoria that could well see a substantial increase in the numbers of livestock in the region at the expense of most other land users such as game and tourism. It is likely that more boreholes will be drilled to cater for the increase in livestock numbers and as a result livelihood strategies may be less diverse, making people more vulnerable to the risk associated with variability. Livestock numbers can only be kept at the level rangeland can sustain. The movement of the veterinary cordon fence to the border with Angola is not something that is foreseen in the next 5 years. It is as much a technical problem as it is political. It will have to be carefully planned (in "Kunene integrated regional land use plan, 1998)

Therefore for the time being cattle are sold either through the **informal market** (which supplies local meat demand) or through the **formal marketing system**, mainly to Meatco. According to the Directorate of Veterinary Services estimates, the informal market accounts for 3% of the total off-take (2,9% in Opuwo). The majority of farmers prefer to sell to the informal market because they get higher prices. The alternative marketing option is through the formal marketing system operated by Meatco, which accounts for 2 to 3% of the total off-take. (Bennison et al, 1998)

Table : Marketing data for cattle - results obtained during a formal survey*

	Whole sample	OvaHimba	Herero
Formal market	1.7	0.9	2.0
Informal market/own use	2.9	3.0	3.1
Total off-take	4.6	3.9	5.1

*Figures are given as percentages of total herd
(in Paskin, 1990)

Table : Marketing data for sheep and goats -results obtained during a formal survey*

	Market	Whole sample	OvaHimba	Herero
Sheep	Formal markets	0.0	0.0	0.0
	Informal markets/own use	4.3	6.4	3.8
Goats	Formal markets	1.0	0.0	1.4
	Informal markets/own use	21.4	23.6	22.2

*Given as average number sol/consumed per household
(in Paskin, 1990)

Section 37

The livestock informal market

Classifying and categorising the markets in the Northern Communal Areas as “informal meat markets” obscures important differences between markets and impedes understanding of their operation. To understand the informal meat trade a disaggregated view of markets as well as the linkages between markets are needed. Although informal markets share many characteristics and features, they differ in terms of (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000):

- The sector in the meat trade that they serve. Some markets are linked to livestock supply areas serving producers and livestock traders, while others are linked to consumer areas serving butchers and consumers;
- The nature of the trade practices. Some markets are livestock markets while others are consumer markets;
- Their place in the market chain and linkages with other markets.

On the basis on these differences, informal markets can be classified as either livestock markets or meat markets, trading regularly or occasionally, providing trading opportunities to established or not, controlled by owners, trader fraternities, traditional authorities or Town Councils, and frequented by established clients or occasional buyers. (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

1. BASIC ACTIVITIES IN THE INFORMAL MEAT MARKETING CHAIN

Basic activities are (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000):

- Trading livestock
- Slaughtering livestock and
- Selling meat.

Livestock traders (who buy cattle, goats and sheep from producers of livestock markets), butchers (who buy animals to slaughter from traders or producers) and meat sellers (who either sell for others or who buy meat to sell to the public) perform these activities. While many participants in the informal meat market specialise in one of these roles, there are many that combine different roles in the trade. It is therefore not possible to place people involved in the livestock and meat trade in airtight compartments. The informal meat trade is, after all, largely unregulated. (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

Livestock traders: they buy and sell mainly cattle and goats. Although sheep are also traded, livestock traders tend to specialise in either cattle or goats. (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

Cattle traders: based on the market they supply, they can be subdivided into two groups (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000):

- cattle traders who supply livestock markets: they operate from the production areas in Kunene. They form a vital line with the market for producers from rural villages and cattle posts
- cattle traders who supply the meat markets with live cattle for slaughter. Their main customers are the urban butchers in urban centres. They are quite rare in Kunene North.

Goat traders: they can also be subdivided into two groups (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000):

- goat traders buying live goats from production areas. They are mainly found in Angola and Kunene North and supply the livestock markets of Epalela, Ombalanhe and Namakunde, traders trading live goats from the urban centres of Ondangwa and Oshakati and any point with possible buyers. Traders living in Kunene North go on buying expeditions in the Kunene with 4x4 vehicles loaded with bags of maize meal or alcohol to barter for goats
- goat traders supplying butchers, mainly in Oshakati.

Meat sellers: they do not buy live animals to slaughter. They only sell meat, either fresh or cooked, roasted or fried meat ready for consumption and known as *kapana*. *Kapana* sellers are part of the meat market chain. They provide prepared food to passers-by and workers in their lunch hour. For many, selling *kapana* is seen as a way to get into the marketing chain and a step towards a more lucrative marketing career. Most *kapana* sellers are female from no particular age group. But older boys, who have been able to leave the street, also make a living by selling *kapana*. Many are encountered in Opuwo. (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

In 1992, it has been recorded that an informal market exists, managed by itinerant traders, mainly from the North Central Division. These traders buy up cattle cheaply, or barter them for grain or alcohol, to sell them on the highly lucrative ‘bush markets’ that exist in the neighbouring Ovambo-speaking regions. Both Herero and Himba groups marketed in the region an average of 30 small stock per owner in 1991, both preferring to market goats. (Paskin, no date)

2. INFORMAL MARKET IN OPUWO

2.1. OPUWO: A SYNOPSIS OF MARKET CONDITIONS

Opuwo is host to a relatively large number of wage employees, making the trading of meat more profitable than in the rural villages. 23 traders (8 women) are involved in the livestock or the meat trade on a full-time basis and 7 only intermittently (from July to mid December). Many traders are located close to the main (tarred) road in Opuwo and usually adjacent to bottle stores, drinking places and other stores. The traders help each other to slaughter and sometimes trade meat for someone else for a nominal fee or meat. Occasional traders rent the place of regular traders at a nominal fee or in exchange of meat. (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

Livestock owners in the Opuwo district are an important source of supply for livestock transported to Oshakati. More animals are slaughtered in Opuwo and vicinity than are sold to Oshakati in the winter, yet in the dry season there is an increase in sales to Oshakati. (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

The village council provides no amenities to the traders, despite earlier attempts to charge a levy from traders to pay for services. The traders need no permit or permission to trade. The traders are fairly young and generally poor. Traders have few assets, and employ few people. Some traders appoint a person to sell meat on their behalf. They pay from N\$ 10 to N\$ 30 for goats and sheep, and up to N\$ 60 for cattle. (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

Many of the traders specialise in the trading of goats and sheep and goat meat and mutton. Traders generally keep their selling prices constant, but vary the size of the meat they are selling. In most cases the animals are slaughtered in the open due to the lack of clean facilities. Mostly the skins are left to rot. (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

Most traders buy the animals from individuals who need to sell an animal to meet some household expense. Occasionally a livestock owner will slaughter his/her own animal and sell the meat. Traders occasionally go to the villages to buy animals. Most trading is on a barter rather than a cash basis. (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

2.2. TRADING POINTS IN OPUWO

Five different trading points were identified in the Opuwo area (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000):

- Okatutura
- Epupa (in the Ozombapa township)
- Otuzemba
- Ouranda
- Okondaunue

The last three ones been the places where most of the trading activities are taking place. Otuzemba accounts for between 62% and 78% of all meat trade in the Opuwo area.

The consumption of meat is normally a social event, with many people (between 30 and 90) gathering around the trading posts and the traders socialising with their customers. In most places the trading places are close to bottle stores or traders selling traditional brews. In essence the consumption of meat, both cooked and braaied, goes with the consumption of alcohol. (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

During 1997, the traders at Otuzemba paid the village council N\$ 10 per month to build up a fund which was intended to provide better and cleaner facilities for the meat traders. The traders have discontinued these payments, probably because nothing was done. In Otuzemba there is a paddock (kraal) where the traders can keep their livestock for a fee of N\$ 2 per night per animal. (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

2.2.1. Permanent traders in Opuwo

Generally, the 23 regular traders are young, mostly falling into the 24 to 40 year age groups. Exceptions include a high school scholar aged 18 who trades in meat during the school holidays, and 7 women. They own few assets and have what is the most basic equipment, with no vehicles or other means of transport. The traders at Otuzemba and Ouranda locations own their stalls, which are generally made of sticks around a frame of droppers and a thatched or iron roof. The traders in the other areas in Opuwo do not have their own

stands and slaughter and trade under trees. Traders in Opuwo are all micro-entrepreneurs with a very low asset base and few, if any, workers employed. (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

During week days customers frequent the trading places around lunchtime to buy cooked or braaied meat. During the week-end customers prefer to buy fresh meat to cook themselves. Some of the regular traders trade every day but generally slaughter every second day and more regularly at month-ends. (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

2.2.2. Intermittent traders

In addition there is seven traders who slaughter livestock and sell meat only intermittently. They often rent someone’s trading place or pay a regular trader to sell their meat on their behalf against N\$ 20 to 30 for cattle and N\$ 10 for small stock. In some cases meat or the skin is provided as payment. Most of these traders sell animals or meat when they are in need of cash to buy food, clothes and liquor or for payment of school fees and medical bills. Occasional trade also occurs close to the soccer field of Opuwo when matches are played or other events are taking place. Here, some traders sell braaied or cooked meat at N\$ 1,50 for a piece of meat of roughly 130g. (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

2.2.3. Specialization of traders

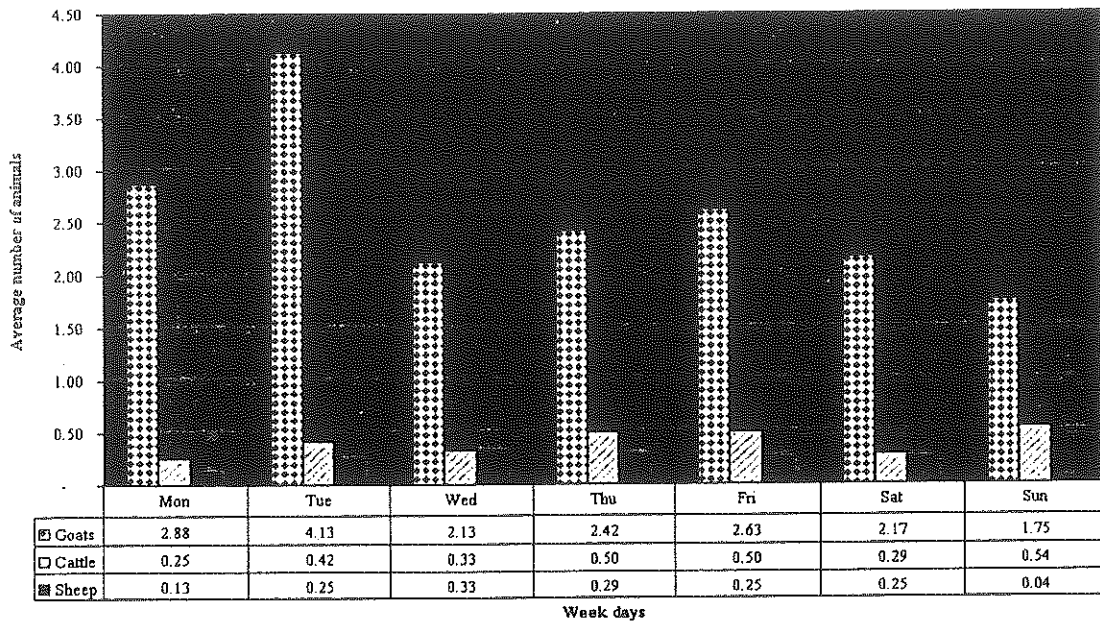
Many of the traders specialised in the trading of goats and sheep and goat meat and mutton. Around 1300 goats have been slaughtered against 210 head of cattle (mid-1998 to mid-1999). (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

Some traders prefer to slaughter sheep, since they consider it to be more profitable and cheaper to buy. The skin sheep has more value than the skin of other animals. There is a good market for sheep skin in Kunene North and a good trade in cattle skin, which are sold to a trader based in Outjo. Some of the goat skins, however, are chopped up, cooked and then fed to dogs. (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

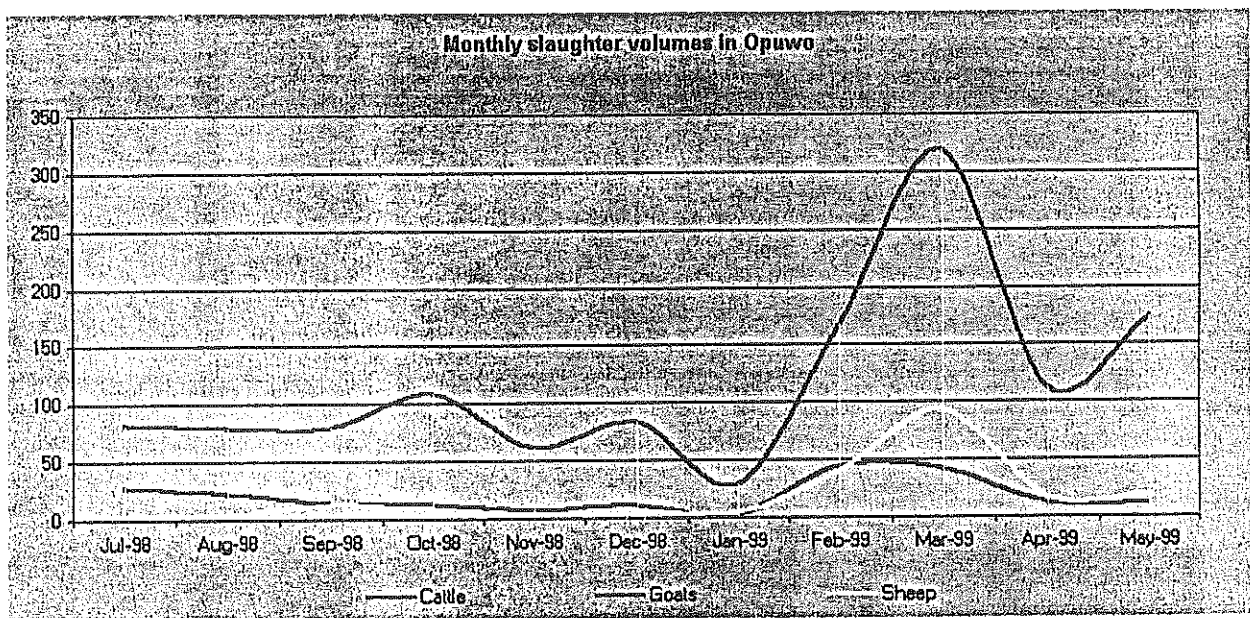
2.2.4. Typology of traders

For the majority of traders in Opuwo, the income from trading in meat (and sometimes livestock) is their sole source of livelihood. Many of the enterprises have been in existence for a number of years. However, there are new entrants to the trade. It indicates that there is sufficient demand for meat and subsequently profit to be made. (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

The traders will buy livestock from livestock owners in the villages surrounding Opuwo. They will slaughter the animal (sometimes a helper will assist) and sell the meat. In some cases the traders obtain animals on credit and pay at the end of the day or once the meat is sold. Some traders pay cash and sometimes they barter for liquor and maize meal. Some traders also sell live animals. Thus, most traders can be classified as livestock traders/ butchers/ meat sellers. The livestock traders transporting livestock to Oshakati district also exchange the animals for maize meal, liquor and other goods. Livestock sales to Oshakati traders increase dramatically during the dry season (end July to November), when the need for other foodstuffs increases drastically (not enough milk). Traders usually exploit this situation and exchange the goods for livestock at a very favorable rate (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)



Average number of animals slaughtered per weekday at Opuwo, July 1998 to May 1999



Number of animals slaughtered per month at Opuwo, July 1998 to May 1999

Table: typology of traders in the Opuwo area

Livestock trader/ butcher/ meat seller	19 (83%)
Meat sellers (mainly cooked meat and offal)	4 (17%)

(in "livestock marketing in the Northern Communal Areas of Namibia", 2000)

Table: characteristics of three traders in Opuwo

	Mr O	Ms M	Mr K
Origin	North central	North central	Kunene North
Employment	Security officer	No full-time	No full-time
Labour	2 young men	None	None
Meat turnover	N\$ 42,000 per annum	N\$ 21,600 per annum	N\$ 30,000 per annum
Own transport	Ford 4x4 bakkie	None	Wheelbarrow

(in "livestock marketing in the Northern Communal Areas of Namibia", 2000)

Table: the supply chain in Opuwo

	Mr O	Ms M	Mr K
Quarter 2			
% Mass turnover (1)	60%	18%	22%
Sales/day	28,6 kg	8,5 kg	10,4 kg
Profit/kg	N\$ 0,97/kg	N\$ 3,53/kg	N\$ 0,96/kg
Margin/day	N\$ 27,74	N\$ 30,00	N\$ 9,98
Quarter 3			
% Mass turnover	46%	20%	34%
Sales/day	22,1 kg	10,2 kg	16,5 kg
Profit/kg	N\$ 1,48/kg	N\$ 2,33/kg	N\$ 2,53/kg
Margin/day	N\$ 32,70	N\$ 23,76	N\$ 41,74
Quarter 4			
% Mass turnover	60%	40%	In hospital
Sales/day	24,0 kg	17,6 kg	
Profit/kg	N\$ 1,00/kg	N\$ 0,44/kg	
Margin/day	N\$ 24,00	N\$ 7,74	

(1) the proportion of meat sold by this buyer

(in "livestock marketing in the Northern Communal Areas of Namibia", 2000)

2.2.5. People employed in the informal market

Generally, the meat traders buy the livestock themselves. A friend or a relative or other traders help in slaughtering the animal (usually one assistant in the case of small stocks and two to three in the case of cattle). These assistants normally receive a piece of meat (usually the neck) or skin as payment. Some of the traders doing brisk business occasionally appoint a female relative or friend to help with receiving and keeping the money earned during the trade. Some traders appoint a person to sell the meat on their behalf. The payment for these sellers of the meat ranges from N\$ 10 to N\$ 30 for goats and sheep, N\$ 40 to N\$ 60 for cattle (in "livestock marketing in the Northern Communal Areas of Namibia", 2000)

A profile of the informal meat traders in Opuwo

Name	Gender	Personal details	Method of trade	Source of supply	Position in chain	Other activities	Other details
Mr D J	M	38 years, married, 1 child, own house	Buys livestock, 1 person slaughters for neck, sells alone. Sometimes appoints a person to sell, pays \$30. Sometimes sells on behalf of someone else for \$35.	Any person, no own livestock	Buys from livestock producer or trader and sells meat to public	Nothing	Mainly goats, pays between \$120 and \$160. Exchanges liquor or maize meal for livestock from people far away from Opuwo. Gets \$160 and \$300 per animal.
Mr K M	M	28 years, married, 1 child, own house	Ditto. Girlfriend sometimes helps – sells cooked meat.	Ditto	Ditto	Nothing	Mainly goats, bought from outside Opuwo on credit. Slaughters and sells meat and pays farmers at the end. Farmers sell old goats. Sells in open place with thatched roof. Meat sold at \$1 per 250g of meat. Around 40 people present – plus other trading activities traditional beer and other food. Always thought will one day buy cattle. Did not make enough profit and as a result specialises in goats and sheep. Been in the business since 1991.
Ms T	F		Buy livers and lungs for around \$9 a piece – will make around \$20 from selling cooked meat	Meat traders or people slaughtering goats	Sells cooked lungs, hooves, liver to public	Nothing	Bought @ \$8. After doing this business for a while she slaughtered her own goat on 1 November – brought from their cattle post 30km from Opuwo.
Mr T	M	30 years, married 1 child, own house	Buys livestock, 1 person slaughters for neck, sells alone	Anyone, no own livestock. Mainly cattle	Buy from livestock producer or trader and sell meat to public	Nothing	Rented the trading spot of Mr T and slaughtered a goat which he purchased for \$140. The rent was again paid in the form of the skin.
Mr M	M		Buys livestock and slaughters	Anyone, no own livestock. Mainly cattle	Sell meat to public – cooked or fresh	Nothing	Has employees working for him and has light so he can do business until late at night. Has a trading site close to bottle store. People take alcohol together with the meat they purchase. There are also some seats at his store so people come and enjoy their cooked meat in 'restaurant' style. Often buys through exchange of liquor and maize meal for goats. Sometimes slaughters some of his old goats. He asked \$240 for the service but they did not have cash and gave him the goat instead.
Mr S	M	43 years, married, children live outside Opuwo	Sometimes people help him to slaughter in exchange for meat.	Sometimes own livestock and sometimes from farmers. Bought goats from a farmer in Oroutumba around 220 km away in October.	Buy from farmers slaughters and sell meat	Livestock owner	Mr S bought a goat from Mr K from Ovinggange Village for \$95 - does business from June to September. Lungs were cooked and sold for \$1.00 big piece and 60c small piece. Get around \$4.00 profit from sales of lungs.
Mr E S	M	40 years single,	Buy livestock, employ 3	Any person – no own	Buy livestock,	Governme	

Name	Gender	Personal details	Method of trade	Source of supply	Position in chain	Other activities	Other details
Ms P	F	own house – trade at Oranda	labourers paid monthly	livestock	slaughters mainly cattle and sell meat to public	nt officer, security duties	
Ms U	F	Buy lungs, liver from cattle slaughtered by Mr T and others	Buy lungs and liver. But later also buys livestock to slaughter. Sheep and goats – prefer sheep because it is cheaper. Sell also other cooked food such as macaroni and cooked meat.	Mr T and other informal butchers	Buy lungs, etc and cook it and sell at \$1 a piece to public		She first specialised in the buying, cooking and selling of lungs and livers. She has now made enough money and on 14 Aug bought her first goat (\$120) also bought a second at \$75 – kept both.
Ms S M	F	Buy cattle and slaughters	Buy cattle and slaughters	Farmers from outside Opuwo	Ditto – Buy lungs at \$20		Started her business by selling cakes and cooked hooves and heads. Now buys cattle to slaughter (bought one on 29 Aug at \$800). Not sold by herself but by Mr K – paid him \$35
Mr V	M	24 years single live in commune	Buy livestock, slaughters and sell meat	Any person, no own livestock	Buy – slaughters and sell meat cooked or fresh	Nothing	
Mr M	M	38 years, married, own house	Buy livestock, any person help slaughtering and get neck in exchange. Later he is not there and his wife started to manage the business – 2 workers to help.	Any person – also own livestock	Buy from producer or trader and sell meat to public. Buy only sheep and goats.	Livestock owner	Slaughters goats and sheep every day except Sundays and Saturdays. Slaughters at his home and brings meat to trading post. Buys from villages by exchanging goods. Takes livestock to his cattle post, and bring to business when needed.
Mr P	M						Speculator – buys low (maize and liquor) and sells at high prices. Bought 3 cases of Okandjemo liquor, took it to villages outside Opuwo and exchanged it for an ox. Slaughtered by Mr J D
Ms U	F	34 years, female, single own house	Buy fresh meat from Mr S and other informal butchers. Sells only cooked meat.	Local butchers	Sells only cooked meat		
Mr P T	M		Buy livestock and slaughters. Sell meat cooked and fresh – weighing around 150gm a piece.	Buy from anyone.	Buy livestock, slaughters, and sell meat to public.		Built a trading place with stricks and thatched roof. Started trading on 19 Aug after buying his first goat for \$100. Wanted to start his own business to be able to pay school fees and buy clothes for his kids. Did not get many customers at Ouranda location and moved to Otuzemba on 23 September.
Ms S M	F		Buy livestock and slaughters to sell meat				
Mr K	M		Ditto				

In "livestock marketing in the Northern Communal Areas of Namibia"
Ministry of Agriculture, Water and Rural Development, April 2000

Name	Gender	Personal details	Method of trade	Source of supply	Position in chain	Other activities	Other details
Mr D	M		Manages his business alone – buys livestock and sells meat.				
Ms U	F		Buys livestock and slaughters to sell meat.	Anyone			
Mr K	M		Ditto	Ditto			
Mr K	M	26 years, single, live in commune	Ditto. Sometimes another person will help him to slaughter	Ditto			
Mr S	M	Young, still at school – does business during school holidays.	Ditto	Ditto			Makes around \$40 profit per goat.
Ms K	F		Buys livestock, slaughters to sell meat. Started her business with the help of Mr K who used to sell meat for other traders. 5 people helped with slaughtering	Ditto			Used to sell traditional beer but discovered that the quickest way to make money is to Slaughter livestock and sells meat

2.3. ECONOMIC ANALYSIS OF THE INFORMAL MARKET IN OPUWO

Table: number of animals traded or slaughtered in Opuwo, July 1998 to June 1999

Species	Lives sales (transported to North Central Division)	Slaughtered and sold at Opuwo markets	Total
Cattle	1101	210	1311
Goats	4974	1300	6274
Sheep	1456	211	1667
Total	7531	1721	9252

(in "livestock marketing in the Northern Communal Areas of Namibia", 2000)

An average of two goats is slaughtered everyday in Opuwo. There is an increase demand for meat (especially goats) during the Christmas period. There is then a huge surge in animals moved to Oshakati. (in "livestock marketing in the Northern Communal Areas of Namibia", 2000)

Many of the traders who buy livestock, slaughter them and sell fresh meat also sell cooked or braaied meat. They cook between 150 to 170 pieces of meat and sell it for N\$ 1,00 to N\$ 1,50. This price is very standard. The size of the piece may, however vary according to the time of the day, the number of customers or potential customers and whether the meat is sold fresh or cooked. Especially when the meat goes into the second day after slaughtering, they sell more cooked meat. It is worth noting that male customers usually buy cooked meat while female customers prefer the fresh uncooked meat since they prepare it themselves. (in "livestock marketing in the Northern Communal Areas of Namibia", 2000)

Some traders create the illusion to customers that they sell bigger pieces by selling big cuts to the first customers. After the trick has succeeded in attracting customers, the piece become smaller again. (in "livestock marketing in the Northern Communal Areas of Namibia", 2000)

There is no difference in the price of cooked and uncooked meat. The more value is added to the product, the smaller the piece becomes. Thus, the cooked piece of meat is usually smaller than the fresh piece. (in "livestock marketing in the Northern Communal Areas of Namibia", 2000)

The consumer prices per piece/cut show differences per kilogram, although each piece was sold at the standard prices. Head and feet have the lowest price/kg (N\$ 4,56), followed by the intestines (N\$ 8,74), mixed meat (N\$ 8,99), rib (N\$ 10,66) and shoulder (N\$ 11,38). The average price for a whole or half carcass was N\$ 7,23. Cooked meat (N\$ 13,41) and braaied meat (N\$ 13,94) fetched quite high prices, but is still cheaper than fresh cuts of leg (N\$ 14,22). Furthermore, one day old meat yielded the same price as two day old meat. However, it has to be noted that the coefficients of variation indicate that the average price for rib and head is higher than the 20% significance level. (in "livestock marketing in the Northern Communal Areas of Namibia", 2000)

3. INFORMAL MARKET IN OKANGWATI

3.1. OKANGWATI: A SYNOPSIS OF MARKET CONDITIONS

Okangwati is little more than a small village that is more important as a source of live animals for the Ombalantu market. The community is very poor and cash income is limited. Some sellers are prepared to wait for the Meeatco buyers to visit Okangwati region as they believe that they can get better prices there. The trade in meat is not as organised, as well-structured and as frequent as in Opuwo. (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

There are three regular meat-trading points in Okangwati, all within 150 metres from one another. Meat traders go to the villages to purchase livestock. There are also occasional meat traders who sometimes rent the trading place of the regular traders at a nominal fee. There are no amenities, and licences for trading are not required. The profile of the meat traders in Okangwati is very similar to those in Opuwo. The informal meat traders in Okangwati is very similar to those in Opuwo. (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

The informal meat traders deal more in goat’s meat and live goats than in cattle (beef) and sheep (mutton). Some value adding takes place, with meat, lungs, kidneys, livers and offal being cooked and sold. The selling of meat usually goes with other trading activities, such as the selling of “otombo” (local brew) and vetkoek. (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

Many of the meat traders in Okangwati are appointed by the livestock owners or others to slaughter their animals and sell the meat. It is only occasionally that these traders will buy their own animals. Most of the trade is for goods and not cash. (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

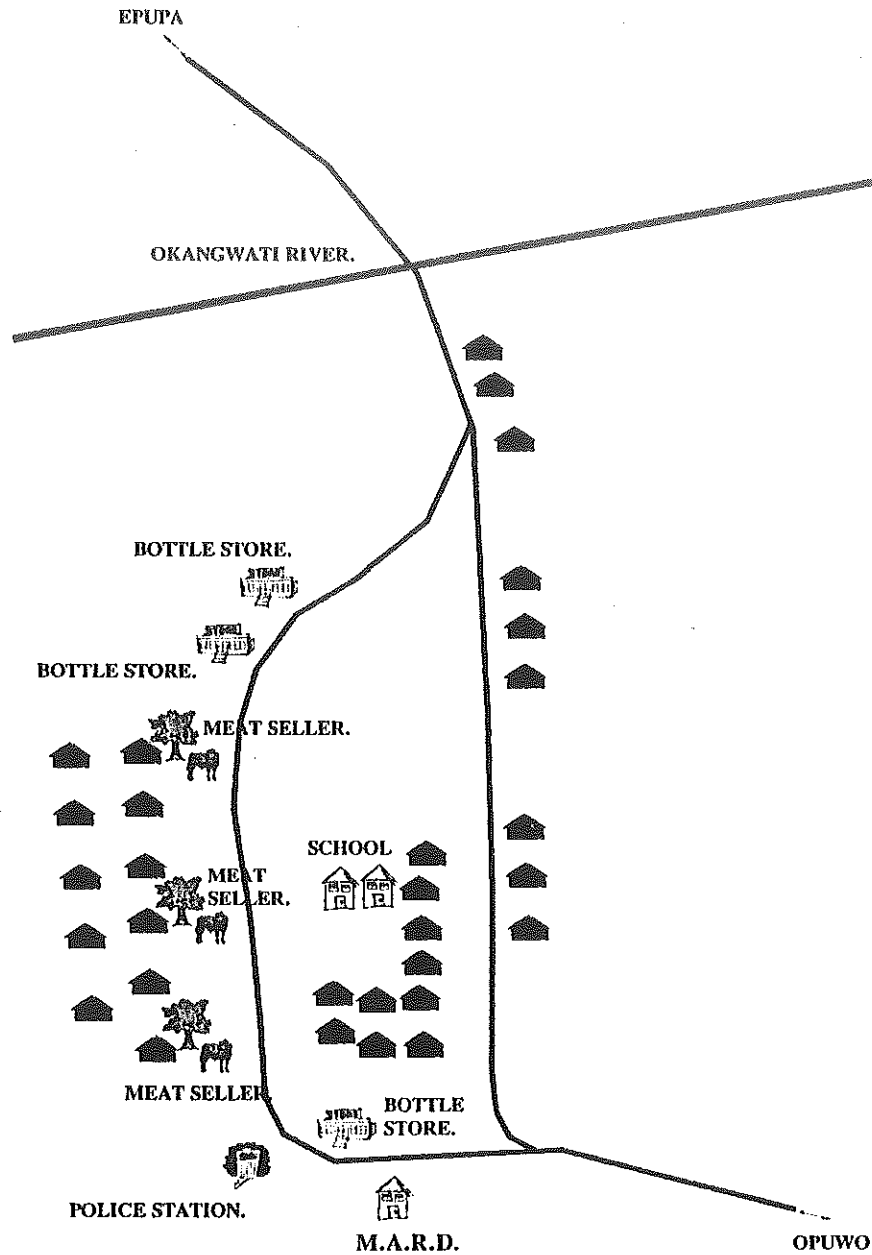
3.2. TRADING POINTS IN OKANGWATI

3.2.1. Permanent traders in Okangwati

Okangwati has no local authority providing amenities or issuing licences for trading. There are no health workers and no health inspection takes place. Eight traders (27 to 45 years in age) sell meat on a regular basis. Three of them are women. Traders in Okangwati only own the basic equipment necessary for meat trading. Some of them have permanent positions. They are located on the main road going through Okangwati. (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

Virtually all the meat traders in Okangwati are appointed by the livestock owners or others to slaughter their animals and sell the meat. It is only occasionally that some of these traders (mainly two individuals) will buy their own animals. In some cases, two persons are appointed: one person to “weigh” the meat pieces and one to receive payment (the reason for appointing someone to handle money is mainly as a result of illiteracy and the fear that they may give the incorrect change to the customers). In Okangwati traders are meat sellers. They receive a “wage” from the livestock owner to slaughter the animal and sell the meat. They usually receive between N\$ 10 and N\$ 20. (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

OKANGWATI MEAT MARKETS.



-  MEAT SELLER.
-  HOUSE.
-  HOSPITAL.
-  STORE.
-  POLICE STATION.
-  SERVICE STATION.
-  BANK.
-  BUILDING.

The meat of one goat will be sold within one or two days while a beef carcass could take as much as four days to sell. (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

Some livestock owners come as far as 60 kilometers from Okangwati to bring their livestock to slaughter and to trade in the meat. They usually appoint a local person to sell the meat and provide the neck of the goat or cash payment for the service rendered. (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

3.2.2. Typology of traders

Examples (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000):

- A woman in Okangwati bought a goat (60 kg live mass) for N\$ 150 to slaughter. Since she was still busy selling her own traditional beer she appointed another woman to sell the meat on her behalf. The meat sold quickly (less than a day). She grossed N\$ 280 in total. She paid her seller N\$ 20, thus making total profit of N\$ 110 for the day.
- Another trader bought a goat for N\$ 120 and made only N\$ 5 margin after having to pay the seller N\$ 10.
- A woman trader slaughtered a goat that she bought for N\$ 60. Her gross income from the sell was N\$ 190, thus resulting in a profit of N\$ 130.

Table: the supply chain in Okangwati

	N	M	Mr P	S
Quarter 2				
% Mass turnover (1)			25%	20%
Sales/day			14,0 kg	11,1 kg
Margin/goat			N\$ 15,00	N\$ 15,00
Margin/day			N\$ 4,20	N\$ 4,00
Quarter 3				
% Mass turnover	7%	2%	20%	7%
Sales/day	3,4 kg	1,1 kg	10,3 kg	3,4 kg
Margin/goat	N\$ 15,00	N\$ 15,00	N\$ 15,00	N\$ 15,00
Margin/day	N\$ 1,00	N\$ 0,33	N\$ 3,00	N\$ 1,10
Quarter 4				
% Mass turnover	15%	10%	24%	50%
Sales/day	11,6 kg	9,0 kg	20,0 kg	40,8 kg
Margin/goat	N\$ 15,00	N\$ 15,00	N\$ 15,00	N\$ 15,00
Margin/day	N\$ 3,00	N\$ 3,00	N\$ 6,00	N\$ 12,00

(1) the proportion of all meat sold in the village

(in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

For the Okangwati traders, the meat not traded but used for home consumption has to be added to the margin/day. This portion amounts to at least N\$ 10,00/animal slaughtered. Although this is not much, it contributes to the family food requirement and reduces expenditures. Adding this value to the calculation, it increases the margin/day with a minimum of N\$ 2,00 to a maximum of N\$ 10,00. (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

A profile of informal meat traders in Okangwati

Name	Gender	Personal details	Method of trade	Source of supply	Position in chain	Other activities
Ms P	F	42 years, married, children own house	Buy livestock, 2 help slaughter for neck. She is appointed by M	Any person, do not own livestock	Buy from producer or any trader and sell meat (fresh and cooked) to public	Sells <i>veitkoek</i> or anything that goes with meat
Ms N	F	28 years, married to D (see below), 7 children, own house	Buy livestock, helps slaughter for neck, sells also otombo (customer prefer this combination)	Any person, Also own livestock	Buy from producer or trader and sell meat (fresh and cooked) and otombo to public	Sells <i>veitkoek</i> and <i>otombo</i>
Mr K	M	45 years, married, no children, own house	Seller of meat for other people, some help with slaughtering - get neck as payment People not happy with his work!!	Owner of livestock Any person, no own livestock	Sell on behalf of producer or trader and sells fresh meat and otombo	Sells <i>otombo</i>
J	M	27 years	Buy livestock, slaughter under tree	Any person	Sometimes involved in selling of meat	Nothing
D	M	34 years, married to Ms N	Ditto	Ditto	Ditto	Nothing
S	M	29 years	Ditto	Ditto	Ditto	Nothing
M	M	30 years	Ditto	Ditto	Ditto	Nothing
M	F	17 years	Ditto	Ditto	Ditto	Nothing

3.3. LIVESTOCK TRADERS AND SPECULATORS

Livestock traders and speculators from Opuwo and Oshakati frequent the Okangwati district to purchase animals for resale in other markets such as Ombalantu, Oshakati and Opuwo, probably because the desperate situation of many households and their remote location results in lower prices. This is compounded by the existence of barter trade, with livestock sold for food or liquor. (also in “Developing financial services in two regions of the Northern Namibia, 1999 and Cornu, 1999) There are also cases of speculators who own farms or grazing land at places such as Ruacana where they will hold the animals for 2 to 3 months to gain weight before they take them to the markets at Ombalantu or Oshakati. Some livestock traders buy goats for N\$ 110 a head in Okangwati. They keep them for a few months on a farm in Omakange, until for instance the festive season when goat prices can go as high as N\$ 360 per head, yielding a profit of N\$ 240 per animal. (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

Many livestock owners and households in and around Okangwati sell their animals at times of financial stress, for instance when they face hospital bills, school expenses and in some extreme cases, hunger. In the winter months, the lack of grazing also results in larger volumes of sales. Negotiations between livestock owners and buyers about prices are therefore largely determined by how desperate the seller is. (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

The practice of exchanging maize meal for goat and sheep still forms part of the purchasing of most of the livestock and meat traders. Some traders go back to villages where they have sold maize or liquor and other goods on credit some time before. The redemption of their outstanding debt is done through giving the debtor an animal. Some of the meat traders also use this practice to acquire animals for slaughter. (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000). Most traders are well known in the area they trade in and give goods on credit. They send “boys” to the various debtors to collect livestock debts afterwards. (Bollig, 1996)

Although the transfer costs of traders are quite high (gathering livestock, transporting livestock over 300 km to the Oshakati abattoir, etc.), profit margins seem to be reasonably high. For a goat which they can sell at the abattoir for about N\$ 180, they barter goods worth N\$ 60 to N\$ 80. Furthermore, the many would-be traders or civil servants who engage in that sort of trade, hint at the good profit margins to be obtained in the business. (Bollig, 1996)

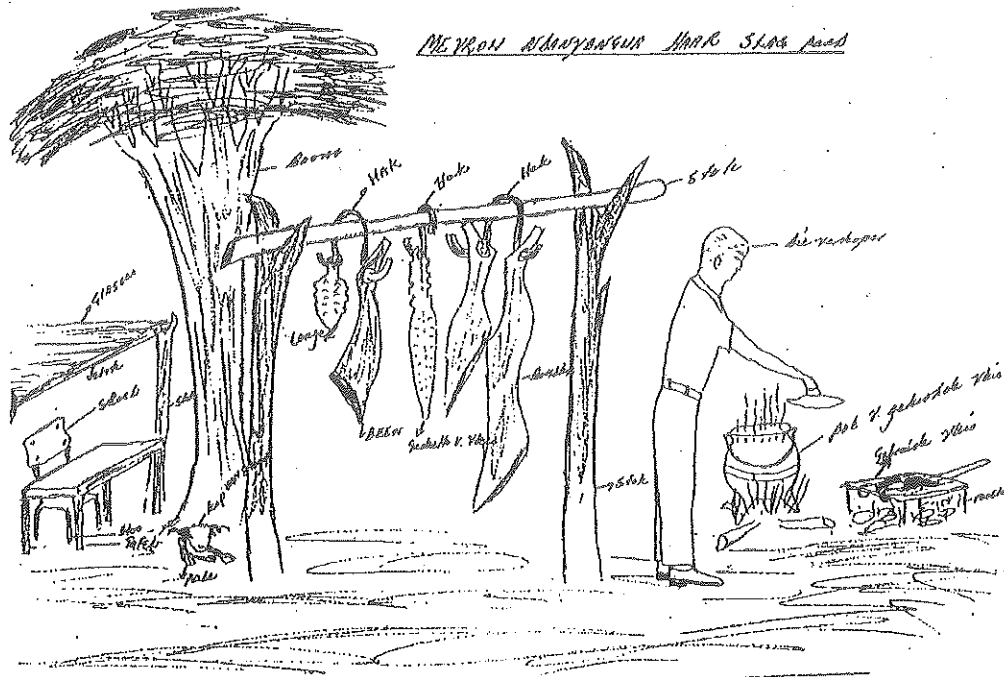
3.4. ECONOMIC ANALYSIS OF THE INFORMAL MARKET IN OKANGWATI

3.4.1. Number of animal sold

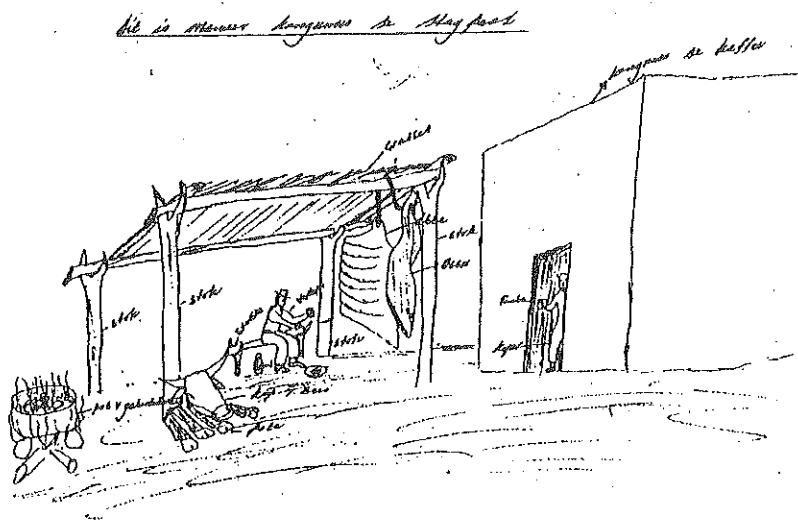
Table: numbers of animals traded or slaughtered in Okangwati, July 1998 to June 1999

Species	Live sales (transported to North Central Division)	Slaughtered and sold in Okangwati	Total
Cattle	180	30	210
Goats	238	203	441
Sheep	30	22	52
Total	448	255	703

(in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)



A second trading position in Okangwati



A third trading position in Okangwati

In Okangwati, the goat trade dominates, with 63% of the animals sold. The number of animals slaughtered per week is much lower in Okangwati than in Opuwo. From July 1998 to May 1999 the maximum number of animals slaughtered in one month was 36 (27 goats, 6 cattle and 3 sheep) in September 1998. (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

In Okangwati, due to the limited demand and the risk that meat might rotten before it is sold:

- Slaughtering of cattle is not a regular occurrence
- One goat is slaughtered each day on average

(in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

A substantial live trade in goats and cattle is evident during the months of July, August and September, with as many as 80 goats and 44 cattle sold or bartered to livestock traders, mainly from Oshakati. It has been estimated that between July 1998 and June 1999 448 animals (64% of all sales) have been sold to traders supplying the markets in the North Central Division. This is however substantially less than the 7531 animals moved from Opuwo region. Live goat sales make up around 53% and cattle 40% of all live sales in Okangwati. (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

3.4.2. Price expectations of sellers

There is always a big gap between the price expectations of buyers and sellers of livestock in Okangwati. Buyers are usually prepared to offer only N\$ 500 for cattle but sellers normally look at prices of N\$ 700 to N\$ 1000. Occasionally, animals are sold for cash to individuals or at Meatco auctions. Meatco held their first auction in four month at Okangwati on 13 October 1998 where 240 cattle were sold (140 to Meatco and around 100 to livestock traders from Oshakati). (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

4. COMPARISON OF THE SITUATION BETWEEN OPUWO AND OKANGWATI

Table: a summary of the informal trade in Okangwati and Opuwo: July 1998 to June 1999

Species	Live sales		Slaughter		Average price per animal (N\$)		Average price per meat cut (shoulder) (N\$/kg)	
	Opuwo	Okangwati	Opuwo	Okangwati	Opuwo	Okangwati	Opuwo	Okangwati
Cattle	1101	180	210	30	613,50	537,38	111,80	4,00
Goats	4974	238	1300	203	159,45	125,00	15,80	12,50
Sheep	1456	30	211	22	129,78	131,00	25,10	11,00
Total	7531	448	1721	255				

(in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

Using a 50 kg goat as reference, the profit margins will be as follow:

- Opuwo: N\$ 50,00
- Okangwati: N\$ 22,50

(in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

The meat market in Opuwo is classified as “urban market” while the one in Okangwati as “rural market”. (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

5. THE CASE OF OHANDUNGU

In Ohandungu animals are sold on eye value. The normal price is about N\$ 800.00 for a big ox. Ohandungu is particularly interesting due to the numerous infrastructures present (cattle auction pen, goat auction pen, clinic and school notably). This community therefore attracts capital (records of cash paid during large stock and small stock auctions should be kept) and people (farmers from surrounding communities going there for auctions, children from surrounding communities going there for schooling and sick people from surrounding communities going to the clinic). This regular flow of capital from the outside (and especially the role of the informal market) and of persons from the surrounding communities should be looked into. Ohandungu is most probably an attracting sub-centre for surrounding communities. (in “analysis of the Farming Systems in Ohandungu”, 2000).

6. MAIN SUPPLY LINES FOR THE INFORMAL LIVESTOCK MARKETING

The main supply lines for the informal livestock marketing in the Northern Communal Areas are (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000):

- Angola > Ombalantu > Oshana markets (Oshakati, Ondangwa)
- Onamacunde (Angola) > Oshikango
- Kunene (Opuwo) > Oshakati
- Supply routes to Rundu
- Caprivi supply lines

Table: Main destination of animals transported from Opuwo region

Destination	Cattle	Goats
Ombalantu	1160	494
Okahao	35	0
Oshakati	532	1757

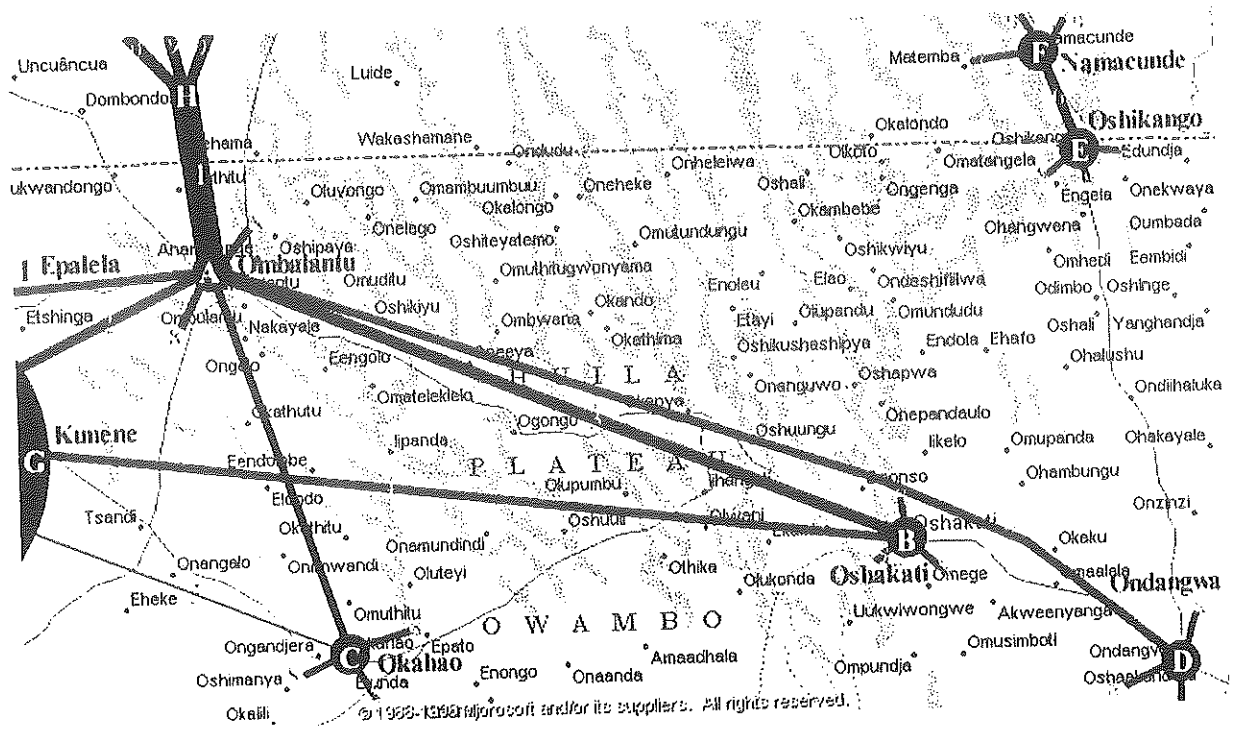
(in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

6.1. THE ANGOLA > OMBALANTU > OSHANA MARKET

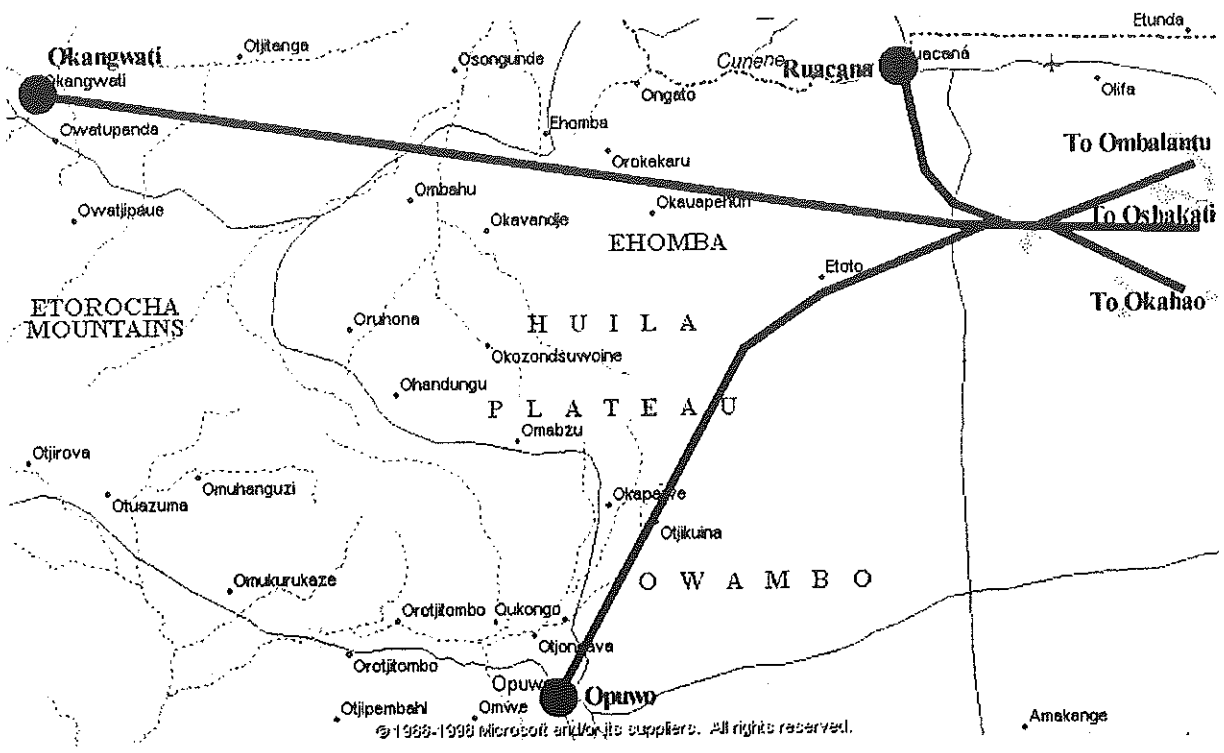
73,7% of the cattle brought to the Ombalantu market (in Omusati Region) comes from Angola, 16,6% from Omusati Region and 9,7% from Kunene North. The cattle purchased at Ombalantu market are intended for a large number of destinations (around 350) mainly in the North Central Division. However, most animals (33%) go to the main markets in the Oshana Region (Oshakati and Ondangwa). Some animals are also destined for Angola (3,4%) (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

6.2. THE KUNENE (OPUWO) > OMBALANTU > OSHAKATI SUPPLY LINE

The villages surrounding Opuwo seem to be the main area of supply, with an estimate of 1700 cattle and 2200 goats transported along this supply route annually. Although many more goats (around 5000) are moved



Supply chain: Angola > Ombalantu > Oshana



Supply chain: Kunene > Ombalantu > Oshakati

away from Opuwo annually, many go elsewhere than the main markets. (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

The price for cattle sold live at Opuwo destined for the North Central Division is around N\$ 450 per animal. Transport cost are in the range of N\$ 50 per head and traders typically net on average N\$ 311 per head of cattle at the Omatala open market in Oshakati or at the Ombalantu cattle market. (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

Table: a synopsis of the channel

Intermediates	Steps	Description	Value
Namibian producer (Opuwo)	Value added	Sale cattle price	N\$ 900
	Total income producer		N\$ 900
Namibian middle-man (Opuwo-Oshakati)	Intermediate goods and service	Cattle purchase in Opuwo from producer	N\$ 900
		Feeding cost between Opuwo and Oshakati	N\$ 45
		Feeding cost at the Oshakati market	N\$ 40
		Fuel cost (Opuwo/ Oshakati)	N\$ 60
	Total cost		N\$ 1045
	Other cost	Cattle escorter salary (trekking from Opuwo to Oshakati)	N\$ 50
		Oshakati taxes	N\$ 2
		Herd boy in Oshakati market	N\$ 3
	Total other costs		N\$ 55
	Value added		N\$ 300
Margin middle-man		N\$ 245	
Output value		N\$ 1500	
Butcher woman (Oshakati)	Intermediate goods and service	Cattle purchase in Oshakati	N\$ 1500
		Slaughtering and cutting payment	N\$ 35
		Stall renting	N\$ 1
		Cold storage	N\$ 65
	Total cost		N\$ 1601
	Other costs	Meat seller salary	N\$ 100
	Total other costs		N\$ 100
	Value added		N\$ 399
Margin butcher		N\$ 299	
Output value		N\$ 2000	

(Liagre et al, 1998)

6.3. SUPPLY AREAS AND CONSUMER AREAS

Livestock markets are either linked to supply areas or consumer areas and are therefore divided into livestock markets linked to supply areas and livestock markets linked to consumer areas. (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

The main supply areas for the larger consumer markets are Angola and Kunene North. Livestock markets linked to supply areas include (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000):

- Ombalantu livestock market (also referred to as Oshana or Onhimbu livestock market). This market receives livestock from farming areas in Kunene North and from the farming areas between (and beyond) Ruacana and Calueque in Southern Angola. Livestock originating from Kunene North are brought or bartered directly from producers or brought from Meatco auctions (also in “Developing financial services in two regions of the Northern Namibia”, 1999). The Ombalantu market links production areas in Kunene North and Angola either directly or indirectly with the larger consumer markets of Oshakati and Ondangwa. Livestock traders and butchers who buy live animals for slaughter from Oshakati and Ondangwa are the main patrons of the Ombalantu livestock market. Its existence as a livestock supply market is therefore directly related to the urban demand for meat and the limited supply of livestock from within the North Central Regions.
- Namacunde livestock market: it is about 10 km across the Oshikango border and is linked to the livestock production areas in Southern Angola.

Livestock markets linked to consumer areas include the Omatala livestock market, also known as the Oshakati open market. At Omatala, livestock traders supply livestock originating mainly from either Angola via Ombalantu or Kunene North to butchers who supply meat to meet the urban demand for meat at Oshakati and Ondangwa. (in “Developing financial services in two regions of the Northern Namibia, 1999; in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

Table : Selected purchase and selling prices of cattle from Kunene region sold at Omatala market

Buying price	Selling price	Gross margin (%)
520	900	173
560	880	157
600	1000	166
600	970	161
400	800	200
570	830	146
500	920	184
680	1020	150
530	830	157

(in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

Table: cattle trade in Ombalantu market from Kunene North

Year	Number from Kunene North	% cattle from Kunene North versus total cattle
1993	48	0,5%
1994	251	0,8%
1995	28	0,9%
1996	185	1,8%
1997	358	2,0%

(Liagre et al, 1998)

Table: use of cattle from Kunene North in Ombalantu market in 1997

Type of animal	Use	Number	Percentage
Bulls	Breeding	20	95%
	Slaughtering	1	5%
	Missing data	0	0%

Type of animal	Use	Number	Percentage
Oxen	Breeding	98	39%
	Slaughtering	110	44%
	Missing data	41	16%
Cows	Breeding	46	71%
	Slaughtering	14	22%
	Missing data	5	8%
Heifers	Breeding	21	95%
	Slaughtering	0	0%
	Missing data	1	5%
Total cattle	Total breeding	185	52%
	Total slaughtering	125	35%
	Total missing data	47	13%
Grand total		357	

(Liagre et al, 1998)

Section 38

The formal livestock market

1. THE FORMAL MARKET PRIOR TO INDEPENDENCE

It was most probably not really important. However, Page report auctions that took place in the 1970s' in former Kaokoland.

Table : Livestock sales in Kaokoland from 1971 to 1975

Year	Number of auctions	Livestock sold	Directly marketed	Own use
1970/71	1	189		
1973/74	12	2469 cattle 112 small stock 1 horse	300 cattle 100 small stock	106 cattle 2040 small stock
1974/75	17	1739 cattle 416 small stock	560 cattle 400 small stock	680 cattle 2000 small stock

(in Page, 1976)

Sales from hides and skins also contributed a substantial amount to the total income derived from sales (Page, 1976)

The abattoir in Opuwo has never been used. The nearest large market is the abattoir at Oshakati. Although the prices compare favorably with other markets in the country, the abattoir is about 270km from Opuwo (Paskin, 1990).

The data gathered in a 1992 survey to show what marketing had occurred indicated that Hereros sell 2.0% of their herds on the formal market compared to 0.9% for the Ovahimba. It was also recorded that Herero owners had been marketing goats on the formal market (this is probably a reflection of the proximity of the Herero to official quarantine camps at Omutambo Moawe and Khowarib) (Paskin, no date).

2. MEATCO

2.1. MEATCO, A PARASTATAL ORGANISATION

The National Meat Corporation of Namibia, "Meatco", is a parastatal organisation that was set up by the government after independence to slaughter, process and market livestock for export to the European Union and the Republic of South Africa markets. (Bennison et al, 1998). Meatco, has the concession to buy cattle north of the Veterinary Cordon Fence. Due to the cost involved and the lack of market opportunities, Meatco can only offer low prices. Private buyers and private auctions take place, provided that animals remain north of the Veterinary Cordon Fence. (Smit, 2000)

Cattle purchased by Meatco from the Kavango, Omusati, Ohangwena, Oshana, Oshikoto and Kunene North are slaughtered at the Meatco abattoir at Oshakati. The Oshakati abattoir has sufficient facilities to slaughter about 250 head of cattle daily. Kunene North (49%) and Kavango (41%) region are the major supply source for the Oshakati abattoir. Only 10% of the cattle slaughtered at the Oshakati abattoir comes from North Central Division (in "livestock marketing in the Northern Communal Areas of Namibia", 2000)

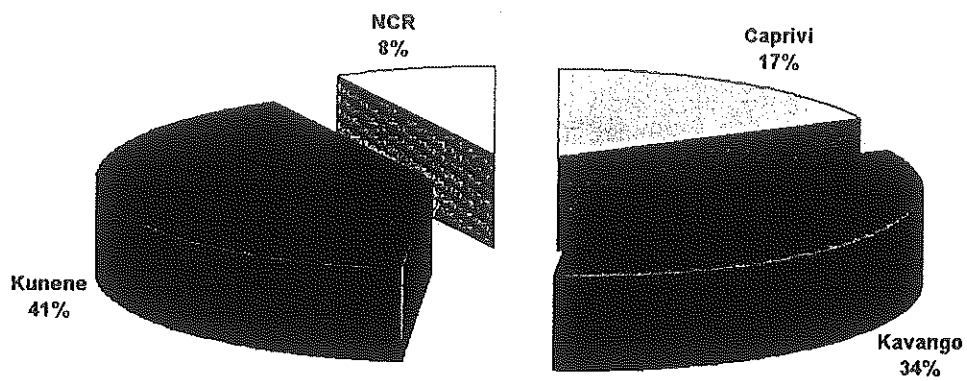
2.2. MEATCO AUCTIONS

2.2.1. Auctions from 1995 to 1997

Table: Kunene procurement per buying points, 1995 to 1997

Place	1995	1996	1997	Total
Sesfontein	333	221	120	674
Otuani/ Otjomatamba	-	502	324	826
Otjivero	-	216	-	216
Kaoko-Otavi/ Etanga	-	686	1273	1959
Opuwo	2276	2374	501	5151
Ombombo	1845	2405	2348	6598
Otjikauare	1051	376	1004	2431
Omakange	-	846	-	846
Okangwati	161	838	587	1586
Otjetjeka	569	-	90	659
Otjondeka	-	459	1311	1770
Kaoko-Otavi	-	-	280	280
TOTAL	6235	8923	7838	

(Liagre et al, 1998)



The origin of cattle purchased by Meatco in the Northern Communal Areas: June 1998 to May 1999

2.2.2. Auctions from 1998 to 1999

Table: cattle purchased by Meatco at buying points in Kunene North (June 1998 – May 1999) for the Oshakati abattoir

	Number bought	<300 kg	300–350 kg	350–400 kg	400–450g kg	>450 kg	Number slaughtered
June							
Auction 1	216	86	36	35	21	20	198
Auction 2	66	36	7	9	6	4	62
Auction 3	304	148	38	33	27	24	270
July							
Auction 4	489	166	119	51	50	66	452
Auction 5	72	42	7	12	5	2	68
Auction 6	258	74	54	27	37	41	233
Auction 7	151	66	36	20	14	7	143
August							
Auction 8	112	32	26	18	15	12	103
Auction 9	300	78	60	39	63	27	267
September							
Auction 10	270	115	64	25	17	15	236
Auction 11	311	150	51	16	27	22	266
November/December							
Auction 12	165	100	23	8	10	10	51
January 1999							
Auction 13	279	116	26	14	6	10	172
February							
Auction 14	173	43	14	10	5	6	78
March							
Auction 15	289	9	8	8	1	1	27
April							
Auction 16	289	20	13	8	6	2	49
May							
Auction 17	385	3	3	1	4	2	13

(adapted from: "livestock marketing in the Northern Communal Areas of Namibia", 2000)

The average live weight of cattle slaughtered by Meatco in the Northern Communal Areas was 298,85 kg per animal and the average carcass mass 144,84 kg for the June – November 1998 period. From the sale of these carcasses, Meatco received a gross income of N\$ 6,13 per kg dressed meat or N\$ 888 per head of cattle slaughtered. Cattle from Kunene North are generally lighter (masses range from 200 to 350 kg) than those from Kavango and the North Central Division. (in "livestock marketing in the Northern Communal Areas of Namibia", 2000)

70% of the head of cattle slaughtered in the Oshakati abattoir were purchased at the Meatco buying points (auction pens). The buying point systems is therefore an important element in ensuring a regular supply of animals to the abattoir in order to keep overhead costs at a minimum. (in "livestock marketing in the Northern Communal Areas of Namibia", 2000)

Table: statistics of Meatco's buying points (June 1998 – May 1999)

Date	Place	Number purchased	Total kg	Producer price
1/6	Ombombo	216	71,075	N\$ 161,715.00
11/6	Etanga	304	94,990	N\$ 200,900.00
15/6	Ombombo	66	19,530	N\$ 41,830.00
30/6	Okangwati	359	126,015	N\$ 270,888.00
1/7	Otjongdeka	151	46,750	N\$ 100,220.00
14/7	Ombombo	72	21,680	N\$ 48,260.00
21/7	Kaoko-Otavi	258	91,905	N\$ 205,965.00
18/8	Otuani	300	107,585	N\$ 243,895.00
25/8	Ruacana	107	44,425	N\$ 102,100.00
8/9	Otjokavare	270	84,700	N\$ 189,880.00
22/9	Etanga	311	93,975	N\$ 203,200.00
6/10	Ombombo	323	98,050	N\$ 181,035.00
13/10	Okangwati	243	69,005	N\$ 136,310.00
20/10	Ruacana	21	7,975	N\$ 17,910.00
27/10	Omakange	257	71,460	N\$ 142,610.00
3/11	Ombombo	83	24,110	N\$ 51,575.00
17/11	Opuwo	81	21,590	N\$ 43,785.00
24/11	Otuani	165	45,615	N\$ 85,320.00
3/12	Etanga	83	24,435	N\$ 50,645.00
6/1	Kaoko-Otavi	68	18,775	N\$ 36,680.00
12/1	Kaoko-Otavi	15	4,275	N\$ 9,200.00
19/1	Kaoko-Otavi	196	55,320	N\$ 119,442.50
9/2	Otuani	86	23,325	N\$ 48,850.00
16/2	Etanga	28	7,275	N\$ 13,125.00
2/3	Ombombo	61	17,410	N\$ 37,020.00
11/3	Ruacana	6	2,350	N\$ 5,240.00
16/3	Ombombo	74	22,370	N\$ 45,730.00
30/3	Otjokavare	154	52,820	N\$ 114,420.00
5/4	Kaoko-Otavi	70	24,415	N\$ 52,620.00
15/4	Ohandungu	31	9,410	N\$ 17,520.00
20/4	Omakange	126	40,175	N\$ 81,165.00
28/4	Otjongdeka	76	26,705	N\$ 56,100.00
4/5	Ombombo	154	52,375	N\$ 110,260.00
18/5	Otjongdeka	231	78,520	N\$ 171,575.00

(Adapted from: "livestock marketing in the Northern Communal Areas of Namibia", 2000)

On a regular basis Meatco compiles a buying programme for the communal areas from Kavango to Kunene North. For specific dates, purchasing points for cattle are announced in the settlements near to the buying points. The purchasing takes place on the basis of grading and the weight of cattle, and depends on the willingness of a producer to sell for a set price. If farmers are in need of cash, the Kunene North livestock producers trek some of their cattle to such a place and sell them to Meatco or to private purchasers. (Bennison et al, 1998; in "livestock marketing in the Northern Communal Areas of Namibia", 2000)

In drought period each farmer who sells an animal to Meatco also receives N\$ 120.00 from the government as a drought payment. (Cornu, 1999; in "livestock marketing in the Northern Communal Areas of Namibia", 2000)

2.2.3. Description of an auction held in Okangwati

In Okangwati, livestock auctions in 1996 were relatively few (usually two to three per year). Few Himba pastoralists from the Epupa areas would drive their cattle down to Opuwo, next auctioning place. At the cattle auction in Okangwati in July 1995, the average weight of cattle sold was 292,33 kg (weight of a 3 to 5 years old tollie). This figure reflects the fact that tollies are given the first priority for marketing. It also reflects the fact that the Himba group selling strategy is price responsive, as tollies gain a much higher per kilo price than oxen do. (Bollig, 1996)

Table: auction held in Okangwati, 13 October 1998

Weight of animal (kg)	Meatco price (N\$)	Drought payment (N\$)	Total paid (N\$)	Price per kg (N\$/kg)
445	965	120	1085	2,44
425 (4 teeth)	990	120	1110	2,61
215 (B grade)	375	120	495	2,32
250	400	120	520	2,08
370	905	120	1025	2,77
170	250	120	370	1,48
450 (bull)	1035	120	1135	2,57
445 (bull)	965	120	1085	2,44
540 (bull)	1315	120	1435	2,66
110 (calf)	140	120	260	2,36

(in "livestock marketing in the Northern Communal Areas of Namibia", 2000)

During this auction, private buyers were also present, ready to pay higher prices than Meatco. 240 heads of cattle were sold, with Meatco buying 140 heads and livestock traders 100. (in "livestock marketing in the Northern Communal Areas of Namibia", 2000) However, prices are not always competitive for the private buyers. Sometimes, they come to such auctions not to buy cattle but to sell to Meatco cattle they have obtained for cheap prices while bartering (Bollig, 1996) At cattle auctions in Okangwati usually Meatco is the only buyer, as local traders cannot compete with the high prices offered by Meatco (Bollig, 1996)

2.2.4. Description of an auction in Omuramba South

Once the animal is on the scale (in the corridor going through one pen to the other) a Meatco official opens its mouth to look at the teeth and calls out the age. The grader then called out the grade (three quality classes). A third checks the scale and calls out the weight. A Meatco official correlates the data on a sheet of paper. Another prepares the form with all details for purchasing. Once data have been correlated, he calls out the price. At this time, a N\$ 120.00 for drought subsidy was added. (Bollig, 1996; in "livestock marketing in the Northern Communal Areas of Namibia", 2000)

When private buyers are present, traders compete for animals. Among them, prices are pushed up. The buying patterns for traders buying at Meatco auctions in Kunene North are determined by the size and condition of cattle (they prefer older, bigger and fat animals), the price Meatco offers and the logistic of driving the animals to Oshakati. (in "livestock marketing in the Northern Communal Areas of Namibia", 2000)

2.2.5. Description of an auction in Sesfontein

Auction in Sesfontein, 17 November 1998: animals were in poor condition. The auction was called on a short notice. Producers offered 64 heads of cattle, most of which were either young or growing animals. Meatco bought more than 50. 8 heads of cattle were bought by livestock traders. (in "livestock marketing in the Northern Communal Areas of Namibia", 2000)

2.2.6. Description of an auction in Otuanani

Auction in Otuanani, 25 to 27 November 1998: the drought was severe in the area at the time of the auction. The first day 99 cattle were sold to Meatco, the second day 110 and the third day 60. 84% were grade 0 to 1 and 16% grade 2. No grade 3 to 6 were traded. Meatco paid an average price of N\$ 501,03 per animal. It was increased by the government subsidies (N\$ 120 per head). During the auction, 53 head of cattle were sold to 3 private buyers. Government subsidy is only payable for cattle sold to Meatco, not to private buyers. (in "livestock marketing in the Northern Communal Areas of Namibia", 2000)

In Otuanani, Meatco auctions were held on average 3 to 4 times a year between 1997 and 1999 (in "analysis of the farming systems in Otuanani", 2000)

3. THE OSHAKATI ABATTOIR

The condition of the majority (68,5%) of cattle slaughtered in Oshakati is lean and only 30,7% comply with the market requirement (grades 2 to 4) while 0,6% are too fat. 51,1% of the slaughtered animals are adult. The Meatco prices paid for the same quality fluctuate according to the Meatco field worker's judgement of grading and is not consistent with the weekly prices. In about 20% of the case studies in Kunene North, inconsistent grading was observed. (in "livestock marketing in the Northern Communal Areas of Namibia", 2000)

Table: grading statistics of beef slaughtered at the Oshakati abattoir (% of animals slaughtered)

	A 0/1	A 2/4	A 5/6	B 0/1	B 2/4	B 5/6	C 0/1	C 2/4	C 5/6	Total
Oshakati	9,7	0,7	0,0	30,0	8,3	0,0	28,8	21,7	0,6	100

(in "livestock marketing in the Northern Communal Areas of Namibia", 2000)

Table: types of cattle slaughtered during 1998/99 per quarter (%)

Animal	June/Aug 1998	Sept/Nov 1998	Dec 98/Feb 99	March/May 1999
Cow/heifer	30,44	29,21	39,96	33,56
Ox/tollie	42,71	27,48	30,99	36,28
Bull	26,85	43,31	29,04	30,16

(in "livestock marketing in the Northern Communal Areas of Namibia", 2000)

For the months June to November, the live mass of purchased cattle was on average 37 kg higher than the mass at slaughtering. This loss of 37 kg/head presents the mass loss due to quarantine process. This means that the pasture in the quarantine camp is poorer than outside the camp. In the period from December to May the cattle gained on average 25 kg/head in the 3 weeks of quarantine. (in "livestock marketing in the Northern Communal Areas of Namibia", 2000)

In Oshakati Meatco and Oshakati Hides and Skins deal with skins. In 1998 prices fluctuated between N\$40.00 and N\$50.00 per skin. (in "livestock marketing in the Northern Communal Areas of Namibia", 2000)

4. THE QUARANTINE SYSTEM

4.1. THE Omutambo-Womane Quarantine Camp

Cattle purchased by Meatco in Kunene North are quarantine at the Omutambo-Womane quarantine camp. In Omutambo-Womane quarantine camp, the quarantine officer controls the quarantine regulations. One quarantine farm manager and three workers are responsible for water supply, range management and maintenance. The cattle bought by Meatco are trekked by horses or transported by truck to the nearest quarantine camp gate. The trucks bring the cattle to where they can be off-loaded at the main gate of the camp. An additional gate is situated west of the camp, used mainly for trekked livestock. The third gate is on the south-western border of the camp. The cattle are inspected and kept in the camp for 21 days. After the quarantine period, the cattle are inspected again and loaded on trucks, which are sealed by a veterinary officer and then transported to the Oshakati abattoir. (in "livestock marketing in the Northern Communal Areas of Namibia", 2000)

The Omutambo-Womane quarantine camp consists of an old and a new part. The old part covers approximately 20,000 ha subdivided in 1,000 ha camps, while the newly established part covers about 30,000 ha divided in 5,000 ha camps. Bush encroachment is evident in the old part, while the new part shows good pasture condition and composition. (in "livestock marketing in the Northern Communal Areas of Namibia", 2000)

The constraints faced by the majority of the farmers for delivering their animals to the valuable market places are high. The current marketing systems favor mainly the farmers who can afford the transportation costs, as well as the costs related to marketing (quarantine camps). (in "Developing financial services in two regions of the Northern Namibia, 1999)

4.2. SELF QUARANTINE

Farmers have also the option of assuming the responsibility for quarantine and transport of cattle to the abattoir. If he does so, he is paid on grade and weight of the carcass (and not on the live weight). (Bennison et al, 1998)

During the North Central Division farmers liaison committee meeting, in April 2000, Meatco informed Farmers Unions that field auctions will be phased out and self-quarantine will be promoted. This will obviously affect marketing in the area. (in "minutes of the NCD farmers liaison committee meeting, April 2000; in "analysis of the farming systems in Otuni, 2000).

Table: cattle slaughtered per Meatco from Kunene North per type of collect

Year	Type of collect	Number
1994	Buying days	11000
	Private quarantine	Nd
1995	Buying days	6508
	Private quarantine	100
1996	Buying days	6925
	Private quarantine	300
1997	Buying days	3321
	Private quarantine	1400

(Liagre et al, 1998)

4.3. CARCASSES FROM QUARANTINED ANIMALS

The cattle are then slaughtered, the carcasses are deboned and the meat wrapped or vacuum-packed. The deboned meat has to be kept for 21 days in the cooling facilities at the abattoir before it can be transported to Cape Town, or recently also to Johannesburg and Durban. The trucks, which bring vegetables and fruits to Oshakati, are used to transport meat back to South African markets. (in "livestock marketing in the Northern Communal Areas of Namibia", 2000)

4.4. THE STORY OF ETANGA

During the period 22 to 24 September 1998, Meatco purchased 311 head of cattle in Etanga. These were weighted (total 93,975 kg), graded and each numbered with ear tags. They were trekked by men on horseback to a place west of Opuwo where 6x6 trucks could load them and transport them to the Omutambo-Womane quarantine camp. They arrived at the main gate of the camp between the 26 and 28 September. Five animals died along the way. (in "livestock marketing in the Northern Communal Areas of Namibia", 2000)

The ones that arrived safely were inspected for foot-and-mouth disease on 29 September. They were branded to indicate their origin (Etanga auction) and quarantine for 21 days. During this period, 8 were stolen and 2 found dead. After 21 days, 30 were missing. The remaining 266 were weighed (72,996 kg) and inspected by the state veterinarian, loaded on trucks, sealed by a veterinary officer and transported to the Oshakati Meatco abattoir. Initially, the 266 cattle weighed 80,705 kg, implying a live mass loss of 29 kg per head over the whole period from purchase until slaughtering (24 days). The total carcass mass of these cattle was 34,814.08 kg, which represents a dressing percentage of 47,6%. (in "livestock marketing in the Northern Communal Areas of Namibia", 2000)

Table: the cost of the Etanga case

	Price (N\$)
Costs	
Payment to the producers	N\$ 203,200
Meat Board levy	N\$ 3,125
Inspection fee	N\$ 995
Commission to people who advertised the auction by word of mouth	N\$ 3,094
Oshakati abattoir costs	N\$ 24,880
Herding cattle by horse	N\$ 4,146
Transport by trucks	N\$ 49,949

	Price (N\$)
The cost of the field division and the quarantine camp (approximately)	N\$ 29,545
Total costs	N\$ 318,936
Income	
Gross receipts (deboned meat= 78% of carcass x N\$ 10/kg)	N\$ 271,019
Plus 7660 kg bones for bone meals and sales to local markets	N\$ 8,043
Plus Hides for N\$4/kg @ 20kg/skin	N\$ 21,280
Plus offal @ N\$ 2/kg – 50 kg per animal	N\$ 26,600
Minus transport costs to South Africa 45c/kg	(N\$ 12,195)
Net receipts	N\$ 314,747
Net loss	(N\$ 4,189)

(in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

5. THE WAY FARMERS IN KUNENE NORTH PERCEIVE THE FORMAL MEAT MARKET

In a formal survey conducted 100% of the Ovahimba (n=15) questioned stated that they were dissatisfied with the present marketing opportunities and 86.6% of them stated that they wished to market more animals in future, while 94.7% of the Herero (n=38) questioned were dissatisfied with the present marketing opportunities and 73.7% of them stated that they wished to market more animals in future (Paskin, no date).

In a formal survey conducted with herders relating to non-disease problems, 0.0% of the Ovahimba respondents thought that not enough auctions was a constraint for them, while 10.5% of the Herero respondents thought that not enough auctions was a constraint for them. The Hereros are generally more concerned with marketing (Paskin, no date).

However, Ovahimba pastoralists do not just store wealth in the form of livestock, but actively trade and barter their stock. In a average herd, there are about 6% more heifer than tollies. The tollies have been sold, bartered or slaughtered for various purposes. The fact that this relation does not change much when adult females and adult males are compared gives evidence to the fact that male stock is preferentially sold at an early age. This probably reflects the pricing policy of Meatco and local livestock traders who acknowledge better prices for young male stock than for oxen. (Bollig, 1996)

However, another report indicates that livestock owners in Kunene North sell animals they no longer want, based on poor performances or bad visual appearance. Old animals of both sexes are usually selected for sale or slaughter. It is rare to find young and tender meat being sold by informal meat traders. (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

General issues raised by farmers in Kunene North regarding the formal meat market (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000):

- Low prices paid by Meatco
- Meatco should get an opposition to provide competition
- The Veterinary Cordon Fence reduces possibilities
- Animal health issues and lack of support
- No buyers for small stocks, especially in the desolated western parts
- Problems with the quarantine camp
- Lack of farming principles, need for training programmes and demonstrations
- Poor livestock condition, no access to farm inputs such as mineral licks, medication, etc.

- Distance to quarantine camp/ abattoir too far, loss of condition of animals in the process
- No sustainable production environment
- High cattle losses while in transit to markets (transport, quarantine, bad roads, long distances chase, weight loss, etc.)
- Farmers not informed about the pricing system of Meatco

However, data from Meatco's feedlot operations indicate that daily live-weight gains of at least 1 kg are possible if A and B grade animals are selected. A feedlot operator in the Northern Communal Areas should select A and B grade animals weighing 200 to 250 kg if the production objective is grade and weight improvement. The age of animal is not so important if the production objective is grade and weight maintenance during quarantine. However, operators should be aware that animals in better condition will lose more weight during periods of feed scarcity. (Bennison et al, 1998)

Table of problems and constraints in livestock production as ranked by village discussion groups

Village	Mortality	Roads	Water	Knowledge	Markets	Inputs
Okangwati	3	1	2			
	1	3	2			
	1		2	3		
	3		1	2		
	3		1	2		
	2	3	1			
	1		3	2		
	1		3	2		
	1		2	3		
	2		1	3		
	1				3	2
	2			1	3	
	1			2		3
			1	2	3	
		3	1			2
Opuwo	3		1	2		
Omakange	2	2	1			
	1		3	2		
Okavare	2		1	3		
Ondereko	1		2		3	
Otuvero	3		1		2	
Etangwa	3	1	2			
	2	1		3		
Omumbonde	2			1		3
	2			1		
Oruseu	3	1	2			
Etanga	2		1	3		
Otjinunguwa		1			2	3
Ehomba	2	1			3	
		2		1	3	
	3	2		1		
Okapembambu	1	2			3	
Werda Hek	2	1	3			

Village	Mortality	Roads	Water	Knowledge	Markets	Inputs
Times ranked 1 st	10	8	10	4	1	0
Times ranked 2 nd	10	4	9	6	2	2
Times ranked 3 rd	8	3	4	7	6	3
Overall ranking	1	3	2	4	5	6

(in "livestock marketing in the Northern Communal Areas of Namibia", 2000)

Mortality is generally regarded as the major problem for the producers, followed by availability of drinking water for livestock, roads, knowledge, markets and inputs. The direct problems are thus production-oriented while market-related problems range secondarily. (in "livestock marketing in the Northern Communal Areas of Namibia", 2000)

Section 39

The crop market

There is virtually no information regarding the crop market, neither formally nor informally. However, it has been reported that, in case of a good harvest, farmers will sell the surplus of maize (in “analysis of the farming systems in Ohandungu”, 2000) and in case of poor harvest farmers will buy seeds for the next year. (in “survey on crop production”, 2000). There is therefore exchange of crops and seeds but no record and/or survey results are available.

The only information found is the market price for maize seeds (in “Survey on crop production”, 2000):

- The price of a 50 kg bag of maize is N\$ 70.00 in Opuwo.
- Traders who move from village to village price the 50 kg maize bag between N\$ 100 and N\$150, depending on the distance from Opuwo.



Section 40

Cash flow, banking and credit facilities

1. INCOME PER CAPITA IN KUNENE NORTH

Table : Per capita income

Region/area	Per capita income (N\$)
Kunene	2203
Omusati	1452
Oshana	1922
Oshikoto	1680
Ohangwena	1070
Kavango	1763
Caprivi	1598

(adapted from UNDP 1996 'Namibia Human Development Programme, quoted in "livestock marketing in the Northern Communal Areas of Namibia", 2000)

Table: detailed income per capita in Kunene region

	Average household size	Total regional income (Million N\$)	Average household income (N\$)	Average per capita income (N\$)	Economically active labour	Un/under employed
Kunene Region	5,7	107 (2,8%)	10,385	1,829	18,957	12,484 (66%)

(central statistical office, 1995, quoted in "Kunene integrated regional land use plan", 1998)

The economically active population is the population that is between 15 and 65 years old. The number of persons un/under employed is taken out of the economically active population. This figure has to be analysed carefully, as it is not clear for instance where such classification puts a Himba young man who looks after someone's cattle all year round and is paid in kind through milk and calves. The Himba people do not have the skills that would put them to compete favourably on the conventional job market. The conventional ways of analysing such data unfairly judge the circumstances of indigenous people such as the Himba. (in "Kunene integrated regional land use plan", 1998)

Table: human development and poverty indices for Kunene Region in comparison with neighbours

Region	Namibia Human development index	Namibia human poverty index
Kunene	0,555	37,7%
Erongo	0,825	15,7%
Omusati	0,595	34,0%

(data source: UNDP 1997, quoted in “Kunene integrated regional land use plan”, 1998)

The Human Development is “a process of enlarging people’s choices” and Human Poverty is a “process of limiting choices” (UNDP). Two indexes measure such processes. Kunene region lags behind Erongo and Omusati regions with respect to development. (in “Kunene integrated regional land use plan”, 1998)

2. CASH AND CREDIT SYSTEMS IN KUNENE NORTH

2.1. A TRADITIONAL SYSTEM WITH NO CASH

Since most people have little or no access to the modern financial process and not much concept of the use of money, the logically invest in livestock. (Paskin, 1990) Among the Ovahimba, herding of livestock falls within the domain of men and constitutes their principal economic activity. (Crandall, 1992)

Cattle and small stock are essential as articles of trade for subsistence requirements such as grain, sugar, tobacco, liquor, weapons, knives, iron, copper ornaments, shells, etc. (in “the Nomadic pastoralists”, no date)

2.2. THE EXISTENCE OF INFORMAL CREDITS

Credit is advanced all down the marketing chain. Producers and livestock traders sell on credit to butchers, butchers provide credit to meat sellers, and butchers and meat sellers sell on credit to *kapana* sellers as well as consumers. The risks involved are well known, and although most traders would prefer not to sell on credit, credit seems to be unavoidably part of the meat trade. Credit is given on short and longer terms. Transactions between traders are usually extremely short-term arrangements, as are transactions between traders and butchers, and butchers to meat and *kapana* sellers. Payment is usually due the following day or the day thereafter when the meat is sold. (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

Credit to customers is usually granted over a longer term. Butchers and meat sellers usually provide credit to customers until month end or the 20th in the case of teachers, usually a period of two or three weeks. To traders in the informal meat trade credit is either a means to manage risk or a business strategy to ensure a ready market. Traders are often forced to sell on credit, and credit is more often than not a tool to manage the risks inherent in all levels of the informal meat trade. Traders often revert to credit when animals that have been standing at the market for two weeks or more start to lose condition. Butchers and meat sellers sell on credit to the public to manage the danger of meat spoiling, especially from the second day when meat is not kept in a freezer. (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

Following is an example of risk linked to such credit: a woman butcher from Oshakati approached Kunene farmers who were selling goats from their bakkie. She told them that while the goat she bought from them was being slaughtered she would go and collect the money from her friend who was selling meat at the Open Market. Upon returning, she told them she could not find the person but gave the goat sellers an ID card of the person so that they could find her to get the money for the goat. The person on the ID, however, proved to be unknown to all present. Then a resident livestock trader warned the farmers to keep a close watch on her, as she owed money to a lot of livestock traders. At a rough count she owed them more than N\$ 2000.00. Traders chatted about the matter and decided they should have a short meeting to discuss how to deal with her. They agreed to stop selling her animals on credit and to speak to her family and, if that failed, to go to the police. (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

2.3. THE MONETARISATION OF KUNENE NORTH

The evolution has been towards monetarisation in the area. Even though the financing systems of the households are mostly based on exchanges, there is an increase for consumption of goods and purchasing of materials (for gardening, housing, shops). The consequences are a higher monetarisation within the villages, especially within the Herero group. For the Himba group, monetarisation has been less developed. The access to the North of Kunene North is difficult. The exchange system is still important. The impact of tourism over the monetarisation of the area should not be underestimated. Conservancy areas are created within villages to collect fees from tourists. (in “Developing financial services in two regions of the Northern Namibia, 1999) Some traditional camps to attract tourists are being developed in Opuwo and Okangwati (personal data, Talavera).

The need for cash has been created since some of the Herero farmers own vehicles, maintain properly fenced kraals and send children to school (Paskin, 1990) However, it has to be noticed that there is no bank in Kunene North and the only place where to save money is at the post office (in “infrastructures in Opuwo”, 2000)

The local economy of the villages is mostly based on the exchange system for investing in livestock activities (cattle, goat and sheep). The livestock is the source of capital for financing the activities (water, labour and inputs) and the household’s needs (food, school fees, hospital costs and alcohol). According to the amount of capital needed, the farmers will either sell cattle (for maintenance costs mainly) or goats (for household’s needs and unexpected expenses). (in “developing financial services in two regions of the Northern Namibia”, 1999)

The situation of poor households, without livestock, is rather difficult. They could not rely on the saving in kind and mostly secure their livelihood by hiring their labour and by developing staple crops. They could also get support from relatives through donations of food and milk. (in “developing financial services in two regions of the Northern Namibia”, 1999)

To invest in new activities, some rich farmers could take the decision to sell some cattle but it is still rare to meet such a situation. As another financing source, the pensions are regular incomes in the household for people above 64 years old (about N\$ 165 per month). The income from the family’s members who migrated to the towns or more south in Namibia is uncertain and irregular. (in “developing financial services in two regions of the Northern Namibia”, 1999)

The people with livestock living in the rural areas are not poor. Their cash economy, however, is negligible

because they convert capital (livestock) into cash only when needed. (Hvidsten et al, 1997) The situation is changing, in part due to efforts by the Northern Regions Livestock Development Programme (NOLIDEP) based within the Ministry of Agriculture, Water and Rural Development, to improve livestock marketing in the area. Etanga produces surplus livestock for sale, and local herd owners have participated enthusiastically in the livestock sales at the new auction facility built by NOLIDEP and the Farmers Association and currently managed by the Association. Inevitably, sales will transform into cash many of the surplus animals now circulated within the rural areas and foster increased economic inequality. When this happens the prognosis is not good for the continued survival of local institutions in their present form, based on precedents elsewhere in semi-arid Africa and the experience of more commercialised pastoral regions of Namibia (in “Kunene integrated regional Land use plan”, 1998)

2.4. THE NEED FOR SAVING AND CREDIT SERVICES IN KUNENE NORTH

One survey carried out in Kunene North recommended the creation of saving services to secure the capitalisation in cash for the farmers wishing to diversify their sources of capital. Credit services could support the evolution of the household’s economy by introducing a diversification in the activities of the farmers. (in “Developing financial services in two regions of the Northern Namibia, 1999)

3. THE NATIONAL AGRICULTURAL CREDIT PROGRAMME

The Board of Directors of the Agricultural Bank of Namibia in consultation with the Government of Namibia during 1995 approved the National Agricultural Credit Programme. Farmers from the Kunene North can benefit from this scheme. (Mate, 1999)

People who qualify for this scheme are (Mate, 1999):

- individual full-time or part-time farmers who can furnish other kinds of security (for instance fixed deposit, investments etc.)
- informal groups (joint liability) of at least 5 people (preferably not more than 10).

Types of loans (Mate, 1999):

- crop loans: to buy inputs such as fertiliser, seeds, ploughing services etc.
- stock loans: repayable over a period of 5 to 10 years at an escalating rate of interest, for the purchase of breeding stock. It will be considered provided that sufficient grazing and water is available (to be certified by an Agricultural Extension Technician)
 - large stock loan: cows and bulls (oxen considered only for draft animal power purposes) with a repayment period of 5 (bulls) to 10 (cows) years
 - small stock loan: repayment period of 5 (rams) to 8 (ewes) years
- infrastructure loans: for the fencing of cultivated land, irrigation equipment etc. with repayment over a period of 5 to 10 years at an escalating rate

Section 41

Labour division at household level

1. GENDER ANALYSIS

1.1. THE TASKS UNDER THE RESPONSIBILITY OF THE MEN

The major task of men is the organisation of labour within the household and, in the broadest sense, the maintenance of good relations with other households (such as settling conflicts, gathering of livestock debts, etc.) They maintain highly complex networks of cattle which buffer minor and major risks (Bollig, 1996)

Table: data relating to household and stock owners in Kunene North

	Whole sample(1)	Ovahimba	Herero
Number of owners	57	15	39
Percentage of male owners	100%	100%	100%
Percentage of female owners	0%	0%	0%
Average age of male owner	54,6	56,3	55,1

(1) 39 Herero, 15 Ovahimba and 2 Ovambo herders are include in the whole sample (Paskin, 1990)

A lot of work involved in shifting from place to place and the watering of livestock is regarded as a male task. (Bollig, 1996) Men over the age of 30 still participate in herding and watering livestock. Men are the decision-maker regarding anything concerning livestock. (Page, 1976) Men are responsible for slaughtering and butchering animals (Jacobsohn, 1988)

Men do some of the more necessary women-only tasks such as cooking collecting fire wood, moving ashes from an overflowing hearth, etc., when they have no option. (Jacobsohn, 1988)

1.2. THE TASKS UNDER THE RESPONSIBILITY OF THE WOMEN

Women are responsible for getting water for human consumption, collecting firewood, buttering and producing food. (Bollig, 1996) Women who have given birth to their first child are completely confined to household work and only under exceptional circumstances participate in herding. (Bollig, 1996). In the afternoon, they are responsible for gathering the calves to the kraal. (in "analysis of the farming systems in Otuni", 2000) Women are responsible for the weeding, done from December to April, the harvesting (done

between April and June), the drying of the harvest (from June to August) and the threshing (from August to October). (in “analysis of the farming system in Otuari) Grinding is a daily activity carried out by women. (in “analysis of the farming system in Otuari)

Women will perform so-called men’s work, such as slaughtering and butchering a goat, where no men are available (Jacobsohn, 1988)

1.3. THE ROLE OF CHILDREN

In Kunene North, most rural households rely on the traditional household labour for production purposes. Especially among the Ovahimba people, children are kept at home as to secure family labour. (in “developing financial services in two regions of the Northern Namibia”, 1999)

Children are integrated at an early stage into the work process. From the age of five or six children of both sexes will help with goats herding (Paskin, 1990; Bollig, 1996). Then they are under the surveillance of a more experienced herder (between 12 and 18) and are free to drop out occasionally. From the age of 10, boys start working at the cattle camps. This will be their major task until they are 25 to 30. The main work here is not herding (cattle herds are not guarded over the day), but the search for lost livestock and the watering of livestock at wells during the dry season. Young girls usually keep on herding goats and gradually take over more tasks in the household (such as grinding the maize and buttering). (Bollig, 1996)

Children are also responsible for planting and harvesting (Paskin, 1990)

Schooled children cannot fulfil their task and this causes a lack of manpower at home (in “analysis of the farming systems in Otuari”, 2000) Among the Herero communities, migration of the active production force (the youth) is creating labour shortage for the household production. Most of them migrate to Opuwo and other urban centres in search of formal employment opportunities. (in “developing financial services in two regions of the Northern Namibia”, 1999)

Note that if parents divorce or separate, the father may always retain custody of the children, both boys and girls (Crandall, 1991)

1.4. TASKS UNDER THE RESPONSIBILITY OF SEVERAL GENDER GROUPS

Milking is reported to be done:

- By women: In the morning and in the evening women milk goats. Mainly during the rainy season, they are also milking cows (in “analysis of the farming systems in Otuari”, 2000)
- By both men and women (Bollig, 1996)
- By women and children (Paskin, 1990)

Managing livestock in the enclosure (for instance separating goat’s kids from adult goats) is carried out by both sexes (Bollig, 1996) Moving animals to cattle post is done by men and women. They are usually joined by kids from December to February. Old people are left behind at the main settlement. (in “analysis of the farming systems in Otuari”, 2000)

In some areas both men and women are responsible for (in “analysis of the farming systems in Otuni, 2000):

- the fencing off of garden, before the rainy season.
- The ploughing, after the first rains, between December and February,
- The planting, at the same time.

In other areas farmers reported that women are in charge of most, if not all, daily activities carried out in gardens, including ploughing and planting (in “use of PRA tools in Ouozonduombe”, 2000)

In Purros it is reported that men may help with the heavy work, such as clearing bushes or digging irrigation ditches, but most of the work is done by women (Jacobsohn, 1988)

Rich households employ workers for building houses and erecting the inner and outer fences of the household and garden. (Bollig, 1996)

2. SEASONAL CALENDARS

2.1. LIVESTOCK RELATED ACTIVITIES

Table: seasonal calendar in Otuni (Herero community) – livestock related activities

Activities	Dec	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sep	Oct	Nov
Cattle at cattle post												
Cattle in Otuni												
Looking for donkeys												
Milking goats and cattle												

(in “analysis of the farming systems in Otuni”, 2000)

Table: seasonal calendar in Ouozonduombe (Himba community) – livestock related activities

Activities	Dec	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sep	Oct	Nov
Cattle at cattle post												
Cattle in Ouozonduombe												
Herding of livestock												
Milking goats and cattle												

(in “use of PRA tools in Ouozonduombe”, 2000)

2.2. CROP RELATED ACTIVITIES

Table: seasonal calendar in Otuani (Herero community) – crop production related activities

Activities	Dec	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sep	Oct	Nov
Fencing off of gardens												
Ploughing												
Planting												
Weeding												
Harvesting												
Drying												
Threshing												
Grinding of maize												

(in “analysis of the farming systems in Otuani”, 2000)

Table: seasonal calendar in Ouozonduuombe (Himba community) – crop production related activities

Activities	Dec	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sep	Oct	Nov
Fencing off of gardens												
Ploughing												
Planting												
Weeding												
Harvesting												
Drying												
Threshing												
Grinding of maize												

(in “use of PRA tools in Ouozonduuombe”, 2000)

Chapter Eight

NUTRITION, HEALTH AND LITERACY



Section 42

Nutrition

1. NUTRITIONAL STATUS

In a survey undertaken, 69,4% of the respondents said that their sources of food were adapted to their needs (based on their own judgement). More or less 90% of babies weighed in the sample below the age of 2 years were either above or near the expected weight-for-age. Less than 10% would qualify for a feeding scheme. Most children were fed on cereals, milk and meat and had a correspondingly high haemoglobin level. (Paskin, no date).

Table: percentage of children with moderate to severe underweight

Age	Percentage with moderate to severe underweight
New-borns weighing less than 2500g	4,3%
0 to 5 months	2%
6 to 11 months	2,4%
12 to 23 months	4%
24 to 35 months	2,4%

(in "Ministry of Health and Social Services, Kunene Region, Annual report 1999/2000)

Percentage of anaemia in pregnant women: 3,4% (in "Ministry of Health and Social Services, Kunene Region, Annual report 1999/2000)

2. THE STAPLE FOOD

The main staple food in Kunene North is:

- Unquestionably maize, according to Crandall (1991)
- Sour milk and meat, according to the Kunene North Farming System Research and Extension Unit (in "use of PRA tools in Ouozonduuombe", 2000; in "survey on crop production", 2000)
- Meat and milk, according to Malan (1974) and in "livestock marketing in the Northern Communal Areas of Namibia (2000)
- Maize porridge and sour milk ("omaere"), according to Paskin (1990)
- Goat meat, mutton and milk, according to Page (1976)

The debate is strengthened by Paskin (1990) who stated that crops do not contribute greatly to household food security, as 31,7% of the households do not produce crops at all and only 21,7% produce enough to last longer than 12 months. According to this author, most households are heavily dependant on animals as a food source.

However, he also states in the same report that people in Kunene North rarely slaughter cattle for own use, as staple food. They may however slaughter small stocks. (Paskin, 1990)

However, findings from the Kunene North Farming System Research and Extension Unit is that if a good harvest is attained, no food is bought. In case of a poor harvest, animals, in most cases small stocks, are bartered for maize meal or sold for cash. The cash is in return used to buy maize meal and other necessities (in “use of PRA tools in Ouozonduombe, 2000) This shows the importance of maize as a staple food.

In Purros, apart from milk and garden vegetables, the community’s diet includes goats meat usually several times a month and, less often, mutton. The only beef eaten during 1987 was the meat of a cow that die after ingesting a plastic bag. Mielies, mealie-meal, sugar are rapidly becoming co-staples with milk, especially during the lean, late dry season months when the milk supply is not enough anymore. Mealies are dried and ground into meal by women or roasted fresh. (Jacobsohn, 1988)

In Etanga, a detailed look at the off-take rate of the small stocks shows that the typical households slaughter 140 goats per annum, meaning 0,5 kg boned meat per capita per day. In this area, the maize meal is very scarce. (in “livestock marketing in the Northern Communal Areas of Namibia, 2000)

Using an average household of 10 persons, the meat consumption for small herd owners with access to markets is between 6 and 48 kg per capita per year, while small herd owners in distant areas consume more than double, namely 112,5 kg per capita per year. (in “livestock marketing in the Northern Communal Areas of Namibia, 2000)

The large owners with access to markets, meaning free access to purchase or barter foods like maize meal, consume 45 to 120 kg meat per capita per year, while large herd owners without access to other food consume 195 to 468 kg per capita per year of boned meat. Of the boned meat, only 70% can be regarded as deboned. (in “livestock marketing in the Northern Communal Areas of Namibia, 2000)

It can therefore most probably be confirmed with Crandall that meat and milk are often thought of as the most important mainstays in the diet but this is a conceptual illusion. They are the most desired, but the least consumed (Crandall, 1992)

3. MEAT AND MILK CONSUMPTION

3.1. MEAT CONSUMPTION

Table : The average own consumption of beef meat

Place	Herd size	Number of cattle
Opuwo	Small herd	2
	Large herd	6
Okanguati	Small herd	5
	Large herd	10
Omuramba South	Small herd	0
	Large herd	0

Place	Herd size	Number of cattle
Otjondeka	Small herd	0
	Large herd	5
Etanga	Small herd	5
	Large herd	18
Weighted average	Small herd	1.8
	Large herd	6.5
	All herds	3.3

(in "livestock marketing in the Northern Communal Areas of Namibia", 2000)

Table : Meat consumption of ten households between April 1994 and January 1996 (4)

Wealth category	Number of cattle
Poor	0
Poor	0
Medium	4
Rich	2
Rich	2
Rich	4
Very rich	5
Very rich	8
Very rich	9

(Bollig, 1996)

Cattle are used for food production, especially meat. Meat is not used on a daily basis but during weddings, funerals, circumcision ceremonies and holy fire celebrations (Kakongo, 1999).

Table: average own consumption of goat meat and mutton in Kunene North Region

Areas	Herds	Goats	Sheep
Opuwo	Small	10	2
	Large	20	6
Okangwati	Small	25	0
	Large	30	0
Omuramba S.	Small	15	0
	Large	30	0
Otjondeka	Small	2	2
	Large	22	4
Etanga	Small	20	5
	Large	140	16
Weighted average	Small	9.1	1.6
	Large	37.2	6.3
	All Herds	18.1	3.5

(in "Livestock Marketing in the Northern Communal Areas of Namibia Nolidep, 2000)

Table : Meat consumption of ten households between April 1994 and January 1996 (4)

Wealth category	Number of goats	Number of sheep
Poor	12	1
Poor	12	4
Medium	9	4
Rich	6	10

Wealth category	Number of goats	Number of sheep
Rich	9	8
Rich	10	20
Rich	19	25
Very rich	11	7
Very rich	13	13
Very rich	17	9

(Bollig, 1996)

The table shows that the number of livestock that were slaughtered over a 22 month period differs widely from household to household. (Bollig, 1996)

In Opuwo at the informal market the blood of slaughter animals is either given to dogs or cooked. (in “livestock marketing in the Northern Communal Areas of Namibia”, 2000)

3.2. MILK CONSUMPTION

The sour milk or “omaere” is protein-rich and highly nutritious. (Paskin, 1990)

Goat milk is used for children or with tea and coffee (in “analysis of the farming systems in Otuanani”, 2000)

Cattle milk is mainly used for children. However, during the dry season there is usually not enough milk coffee (in “analysis of the farming systems in Otuanani”, 2000)

4. OTHER NATURAL PRODUCTS

They are hunters and gatherers and depend on food from the veld, including berries, roots, grass seeds, honey, insects and animals. (Malan, 1974, Page, 1976)

4.1. GAME MEAT

Herero and Himba are also at times hunters and gatherers. Although game is still relatively plentiful in many parts of the territory, hunting activities are primarily aimed at predators which threaten domestic animals. Wild ungulates do not represent an important source of food for stock owners. (Malan, 1974; Page, 1976)

4.1.1. Reptiles

The tortoise (“ozonduzu”) is roasted by hurrying the whole animal upside-down in hot coals. Snakes are not eaten. (Malan, 1974)

4.1.2. Birds

Guinea fowl (“ozonganga”) and francolin (“ozongwari”) are often caught with snares, while rock pigeon (“omakutipongo”) and doves (“ozonguti”) are poisoned. For the later purpose small drinking troughs are carved from the very soft wood of *Pachypodium lealii*. The water is poisoned with sap of *Adenium boehmianum*, which is so potent that the birds die almost immediately after drinking the water. The crop and stomach of birds killed in this manner are removed before they are roasted and eaten. Other birds frequently eaten are red-billed queleas (“ozondjandja”), the young of which are collected in large numbers from communal nesting sites, and hornbills (“omatoko”), which are caught by breaking open the nests that are located in hollow tree trunks and removing the brooding female and the chicks. (Malan, 1974)

4.1.3. Mammals

Large ungulates are hunted with bows and poisoned arrows. Burchell’s zebra (“ozongoro”), Hartmann’s zebra (“ozongoro ohambarundu”), kudu (“ozohorongo”) and impalas (“ozongotu”) are generally ambushed at springs, while sprinbock (“ozomenye”) and klipspringer (“ozongorowe”) which seldom visit waterholes, are stalked and shot during the day. Snares (“omihuva”) are used to catch steenbuck (“ozombwindja”), duiker (“ozombambi”) and dikdik (“ouseni”). For the mountain-dwelling Tjimba group, the rock hyrax or dassie (“ohere”) is the most abundant and readily available supply of meat. These small animals are driven from their crevice hide-outs by poking, either with long sticks or with burning stumps. Flushed dassies are then killed with clubs. (Malan, 1974)

4.2. FRUITS, BERRIES AND SEEDS

Far more important is the gathering of veld foods which constitute an indispensable supplement to their basic diet. (Malan, 1974; Page, 1976) Fruits and berries are collected mainly by women and children in dishes made of palm fibre (“ovimbara”) or in roughly woven grass baskets. Edible tubers are dug out with digging sticks (“omapingo”) which are usually cut in the veld from the very common bush *Rhigozum brevispinosum* (“omuporamapingo”). (Malan, 1974)

Vegetable food provides important supplementary nourishment in the basic meat-and-milk diet of the nomadic pastoralists. In Kunene North, veld food can be regarded as a primary source of vitamin C and minerals. The fruit of the baobab (*Adansonia digitata*) is an outstanding source of vitamin C, but also contains vitamin B1 and calcium in significant proportions. The herbs *Amaranthus thunbergii* and *Gynandropsis gynandra* have a reasonably high protein content but also have calcium, magnesium, iron and potassium. Sugar is obtained from sweet fruits, but the starch content of veld food is usually quite low. Its fibrous matter, however, is quite high and provides the necessary roughage for the alimentary canal, preventing constipation. In addition, there is a variety of bulbs, roots, tubers and juicy fruits which are important sources of water. (Malan et al, 1974)

4.2.1. Bulbs and tubers

Tylosema fassoglensis (“otjipiva”), *Coccinea sessilifolia* (“otjimaka”), *Cyperus fulgens* (“oseu”) and *Lapeirousia* sp (“onduvi”) are commonly used (Malan, 1974)

4.2.2. Fruits and berries

Fruits and berries of *Berchemia discolor* (“omuve”), *Adansonia digitata* (“omuzu”), *Grewia flava* (“omundjembere”), *Grewia villosa* (“omuhamati”), *Grewia flavescens* (“omuhe”) and *Sclerocarya birrea* (“omungongo”) are commonly eaten. (Malan, 1974)

4.2.3. Grass seed

“Ombuma” is a porridge made from grass seeds collected by robbing the storage chambers of harvester ants. (in “the Nomadic Pastoralists”, no date)

4.3. OTHER PRODUCTS

Honey: “outji wozonyuti” from the honey bee, “ondungu” from the mapone bee and “ondiho” which is probably from a solitary ground nesting bee. Honey is much sought after delicacy. (Malan, 1974)

Caterpillars: the mopane worm or “omungu”, “ombwakarumbu”, also occurring on mopane trees and “oruwowo”, a caterpillar found on *Commiphora virgata*. During late summer caterpillars form an important and protein-rich element of the Tjimba diet (also in “the Nomadic Pastoralist”, no date)

Section 43

Human health

In general the aspects of diseases and the treatment thereof have extensive religious implications in all Herero societies. However, they also recognise purely organic disorders associated to some diseases, as well as natural physiological processes of healing brought by administering the appropriate remedies. This category of diseases mainly comprises: stomach ailment of which constipation and diarrhoea are the most common, all the symptoms of bronchitis and cold, fever arising from influenza and malaria, venereal diseases, infections of the eyes and ears, all type of skin diseases, ulcers and infection resulting from wounds, difficulty in expelling afterbirth. Traditional remedies can also be taken from such diseases, but they don't have any significance and are essentially and economic asset. (Malan et al, 1974)

1. HEALTH STATUS

1.1. MORBIDITY RATES

Life expectancy in Kunene Region is 62,6% (Adapted from UNDP 1996, quoted in "livestock marketing in the Northern Communal Areas of Namibia").

1.1.1. Morbidity rate in under five years old

The total population for this age group at 99/2000 reporting period was 13,694. (in "Ministry of Health and Social Services, Kunene Region, annual report 1999/2000", 2000)

Table: morbidity rate in under five years old

Diagnosis	Morbidity rate /10,000
Acute Respiratory Infection	3784
Ear, Nose, Throat and Mouth Infection	2723
Malaria	1995
Diarrhoea with no blood	1932
Skin diseases	1306
Other respiratory diseases	1038
Other diagnosis	863
Trauma	408
Pneumonia	335

(in "Ministry of Health and Social Services, Kunene Region, annual report 1999/2000", 2000)

Acute respiratory infection is the leading cause of morbidity in the region, followed by ear, nose, throat and mouth infection. This can be attributed to the wind and dusty environment of the region and the cold weather. (in “Ministry of Health and Social Services, Kunene Region, annual report 1999/2000”, 2000)

A survey carried out in 1992 pointed out that 5,6% of the children had eye infections. This is attributed to frequent exposure of the eyes to dust and foreign bodies in a dry environment, and to the scarcity of water. (Paskin, no date)

1.1.2. Morbidity rate in five years and older

The population of five years and older at the period of the survey was 77,604. (in “Ministry of Health and Social Services, Kunene Region, annual report 1999/2000”, 2000)

Table: morbidity rate in five years and older

Diagnosis	Morbidity rate/10,000
Musculoskeletal	1016
Malaria	964
Acute Respiratory infection	896
Ear, Nose, Throat and Mouth infections	803
Skin diseases	539
Trauma	456
Other diagnosis	450
Gastro/ endocrine	436
UTI	331
Eye disease	330

(in “Ministry of Health and Social Services, Kunene Region, annual report 1999/2000”, 2000)

Fungal skin infections seen in a small percentage of the people are thought to be due to a lack of water for bathing and laundry. However, the validity of such indicators in a culture where western norms are hardly known is questionable. (Paskin, no date).

1.2. MORTALITY RATES (DEATH)

A health survey carried out in 1992 indicated that the infant mortality in the Kunene Region was 56 per 1000 births, slightly below the national average (57 per 1000 births) and well below the rates of most sub-Saharan countries. (Paskin, no date)

1.2.1. Top five causes of death by age and by sex

Table: causes of death by age and sex under 28 days old

Males	Females
Pre-maturity	Pre-maturity
Anemia	Chromosomal abnormalities
HMD	Malaria

(in “Ministry of Health and Social Services, Kunene Region, annual report 1999/2000”, 2000)

Table: causes of death by age and sex over 28 days old to 1 year old

Males	Females
Malnutrition	Gastro-enteritis
Pneumonia	Aspiration
Gastro-enteritis	Pneumonia
Malaria	Burns
	Malnutrition

(in "Ministry of Health and Social Services, Kunene Region, annual report 1999/2000", 2000)

Table: causes of death by age and sex over 1 year old to 4 years old

Males	Females
Gastro-enteritis	Gastro-enteritis
Malnutrition	Pneumonia
Pneumonia	Malnutrition
Septicemia	AIDS
AIDS	Burns
Malaria	

(in "Ministry of Health and Social Services, Kunene Region, annual report 1999/2000", 2000)

Table: causes of death by age and sex over 5 years old to 9 years old

Males	Females
Gastro-enteritis	Motor Vehicle Accident
Malnutrition	Pneumonia
Hydrocephalus	

(in "Ministry of Health and Social Services, Kunene Region, annual report 1999/2000", 2000)

Table: causes of death by age and sex over 10 year old to 19 years old

Males	Females
Hernia	Meningococcal septicemia

(in "Ministry of Health and Social Services, Kunene Region, annual report 1999/2000", 2000)

Table: causes of death by age and sex over 20 year old to 29 years old

Males	Females
AIDS	AIDS
Applastic anaemia	Motor Vehicle Accident
Toxic Megacolon	PTB
Anaemia	CA pancrease
Hepatic hepatitis	Hepatic hepatitis

(in "Ministry of Health and Social Services, Kunene Region, annual report 1999/2000", 2000)

Table: causes of death by age and sex over 30 year old to 39 years old

Males	Females
AIDS	AIDS
Tuberculosis	Tuberculosis
Cerebro-vascular diseases	Lung abscess
CA	Post Partum Haemorrhage

(in "Ministry of Health and Social Services, Kunene Region, annual report 1999/2000", 2000)

Table: causes of death by age and sex over 40 year old

Males	Females
AIDS	AIDS
Tuberculosis	CA
Cerebro-vascular accident	Cerebro-vascular accident
Pneumonia	Congestive cardiac failure
Congestive cardiac failure	Tuberculosis

(in “Ministry of Health and Social Services, Kunene Region, annual report 1999/2000”, 2000)

1.2.2. Mortality rates

Table: mortality rates per age group

Age group	Mortality rate
Perinatal mortality rate	3,07%
Still birth rate	2,54%
Neonatal mortality rate	1,52%
Infant mortality rate	3,96%
Under 5 years mortality rate	4,8%
Maternal mortality rate	2,97/1000

(adapted from “Ministry of Health and Social Services, Kunene Region, annual report 1999/2000”, 2000)

1.3. CASE FATALITY RATES

The case fatality rate is the number of death occurring for a specific disease divided by the number of case diagnosed.

Table: case fatality rate for top 5 diseases

Disease	Opuwo	Kunene Region
Malaria	0,03%	0,05%
Tuberculosis	8,2%	4,96%
HIV/AIDS	28,6%	42,76%
Injuries	0%	0,06%
Diarrhoea	0,48%	0,6%

(in “Ministry of Health and Social Services, Kunene Region, annual report 1999/2000”, 2000)

1.4. DISABILITIES

It is estimated that Kunene Region has a total of 2830 people with disabilities (0,031% of the population). (in “Ministry of Health and Social Services, Kunene Region, annual report 1999/2000”, 2000)

A Committee working towards the betterment of people with disabilities was formed. It is supported by one Social Worker and a Medical Rehabilitation Worker. (in “Ministry of Health and Social Services, Kunene Region, annual report 1999/2000”, 2000)

Social welfare status

Table: top ten problems attended by the Social Workers in Kunene Region

	Social problem	N° of cases
1	Children in need of care	12
2	Juvenile delinquency	7
3	Disabilities	6
4	Marital problems	6
5	Suicide attempts	5
6	Alcohol abuse	4
7	Health related problems	3
8	Old age care	2
9	Poverty	2
10	Domestic violence	1

(in “Ministry of Health and Social Services, Kunene Region, annual report 1999/2000”, 2000)

Juvenile Justice Forums have been established in Outjo and Opuwo. In Opuwo, one Social Worker is a member of both the forum and the awaiting trial committee. Screening and diversification programmes were also implemented for juvenile offenders in Opuwo. (in “Ministry of Health and Social Services, Kunene Region, annual report 1999/2000”, 2000)

Table: top five social welfare problems in communities

	Social welfare problem
1	Alcohol and Drug Abuse
2	Unemployment
3	Violence Against Women
4	Disabilities
5	Juvenile delinquency and Teenager Pregnancies

(in “Ministry of Health and Social Services, Kunene Region, annual report 1999/2000”, 2000)

One of the most important social problems in the region is the abuse of alcohol among all ethnic groups, both sexes and all ages (personal data Talavera). For instance the trade in meat in Okangwati does not seem to be as organised, as well structured and as frequent as in Opuwo. It looks more like organised chaos, and there is considerable evidence of alcohol abuse. This situation gives rise to a host of social problems. In a number of observed cases the need for alcohol is so severe that many livestock owners sell their animals at far below market value. (in “livestock marketing in the Northern Communal Areas of Namibia, 2000)

Recognising the problem of alcohol in the Etanga region, the Ngatuzirwe Farmers’ Association has banned the sale of alcohol by itinerant traders at the Meatco Auctions organised by the Association.

The OTJIOMO Committee, Committee Against Alcohol Abuse, was formed in November 1999 in Opuwo. The Committee is led by a Social Worker. It consists of 9 permanent members from the Ministry of Health and Social Services, the Ministry of Agriculture, Water and Rural Development, the Ministry of Basic Education,

Sport and Culture and Churches. It has undertaken various awareness campaigns, especially during the World Narcotic Day and the Valentine Day. (in “Ministry of Health and Social Services, Kunene Region, annual report 1999/2000”, 2000)

3. STD/HIV/AIDS IN KUNENE REGION

The HIV/AIDS infection is spreading at alarming rate in Kunene Region. The group worst affected is between 16 and 45 years of age. Due to sexual behaviours among the population of the region, the Sexual Transmitted Disease rates are extremely important. If the current attitude and practice of sexual behaviour do not change, HIV infection rate is expected to continue increasing. (in “Ministry of Health and Social Services, Kunene Region, annual report 1999/2000”, 2000)

Deaths due to HIV/ AIDS were 25 in 98/99 and have increased to 42 in 1999/2000. (in “Ministry of Health and Social Services, Kunene Region, annual report 1999/2000”, 2000)

Table: HIV/AIDS statistics for Kunene Region

Indicator	Year 1998/99	Year 1999/2000
Pre-test counselling	649	633
Post-test counselling	261	267
Follow-up counselling	81	102
Total negative	415	389
Male	203	197
Female	203	215
Total positive	192	151
Male	86	67
Female	89	73
Children	9	12
Self Referral	110	210
Refuse test	18	20

(in “Ministry of Health and Social Services, Kunene Region, annual report 1999/2000”, 2000)

It has to be remembered that for every positive result there are 6 more undetected. Statistics obtained do not reflect the real ground situation. (in “Ministry of Health and Social Services, Kunene Region, annual report 1999/2000”, 2000)

The role of Social Workers with regard to people with AIDS was mostly centered on support to orphans in terms of (in “Ministry of Health and Social Services, Kunene Region, annual report 1999/2000”, 2000):

- Assisting in the process of placement in foster care
- Processing of applications to the Michelle McLean Children Trust for Emergency Relief
- Counselling services to families in crisis situations
- Processing of applications for exemption from school and hostel fees.

4. TUBERCULOSIS IN THE KUNENE REGION

Tuberculosis remains a major health problem in the region. A total of 179 new cases were reported during the period 1999/2000. Defaulters and contact tracing remain the main problem in the tuberculosis control programme, mainly due to lack of transport. (in "Ministry of Health and Social Services, Kunene Region, annual report 1999/2000", 2000)

5. VECTOR-BORNE CONTROL PROGRAMME

Table: Opuwo Malaria Control and Spaying Programme

Type of structures	N° structures sprayed	N° refused entry	Closed at time of visit
Huts	3056	141	878
Canopies	164	24	41
Brick houses	649	21	29
Corrugated iron sheets	64	19	31
School hostels	250	0	0
Prisons	12	0	0
Clinics	40	0	0
Hospitals	120	0	0
Informal hostels	90	0	0
Agricultural settlements	21	0	0
Total region coverage		81,53%	

(in "Ministry of Health and Social Services, Kunene Region, annual report 1999/2000", 2000)

6. IMMUNISATION DAYS

Once a year, immunisation days are carried out in Kunene North. During the last immunisation days, in Kunene North, 13 to 14 June 2000, 6450 children under 5 were vaccinated against polio, 5628 were treated against measles and 5799 received vitamin A. (personal data Ministry of Health and Social Services).

During a survey held in 1990 people were asked about their perception of some problems.

Table: herders' perception of non-disease problems

	Ovahimba(1)	Herero (2)	Author's comments
Lack of clinics	6,6	21,1	Most himba have poor access to clinics

(1) 15 respondents

(2) 38 respondents

(Paskin, no date)



Section 44

Education and literacy

The Kunene Region has on average a high number of illiteracy rates with 49% of the people who have not been at school. (in “developing financial services in two regions of the Northern Namibia, 1999)

Van Warmelo, in 1951, reported that there were no mission or schools in the Kaokoveld proper, though there was one at Sesfontein. The Herero who learnt to read and write in the South passed on this knowledge to the younger generation. Many more than expected could, at this time, read and write in Otjiherero (Van Warmelo, 1951). The development of schools in Kunene North is therefore fairly recent. Since independence, the high development of education infrastructures (including mobile schools for the Ovahimba children) is favouring the building of local capacities for the future. (in “developing financial services in two regions of the Northern Namibia, 1999)

1. LITERACY IN KUNENE REGION

Table: literacy in Kunene region

	Literacy (%)	Enrolment (%)
Kunene Region	45	62
Namibia average	66	83

(adapted from UNDP 1996, quoted in “livestock marketing in the Northern Communal Areas of Namibia, 2000)

Table: literate population in Kunene Region, from the age of 10

Age group	Total population in group	Percentage
10-14	7416	16,6
15-19	6885	15,6
20-24	5199	11,6
25-29	4870	10,9
30-34	4039	9,0
35-39	3280	7,3
40-44	2575	5,8
45-49	2110	4,7
50-54	1779	4,0
55-59	1416	3,2
60-64	1431	3,2
65 and more	3616	8,1
Not stated	37	0,2

(in “Kunene integrated regional land use plan”, 1998)

Table: literacy by origin and sex in Kunene Region

Category	Literate	Illiterate	Totals
Rural	19291 (51%)	18562 (49%)	37853
Urban	4698 (70%)	1988 (30%)	6686
Male	12830 (57%)	9831 (43%)	22661
Female	11159 (51%)	10719 (49%)	21878

(Central Statistical office, 1991, quoted in "Kunene integrated regional land use plan", 1998)

2. LITERACY IN KUNENE NORTH

Most schools are in the areas around major urban centres and settlements, as well as along the Kamanjab/Ruacana road. The North Western part of Kunene North does not have a single school. 50% of the school do not have phones and 45% do not have electricity (in "Kunene integrated regional land use plan", 1998)

In 1998 there were 37 primary school, one combined school (grade 6 to 10) and 3 secondary schools in Kunene North (see section 3 for more details). (in "school address for Namibia", 1998)

2.1. ATTITUDE OF INHABITANTS

During a survey held in 1990 people were asked whether they would like education to be improved (Paskin, no date)

Table: attitudinal survey of stock owners

	Ovahimba (1)	Herero (2)
Number desiring better education	0	0

(1) 15 respondents

(2) 38 respondents

(Paskin, no date)

During the same survey herders were asked about their perception of some problems.

Table: herders' perception of non-disease problems

	Ovahimba(1)	Herero (2)	Author's comments
Lack of schools	13,3	5,3	Most Ovahimba have poor access to schools

(1) 15 respondents

(2) 38 respondents

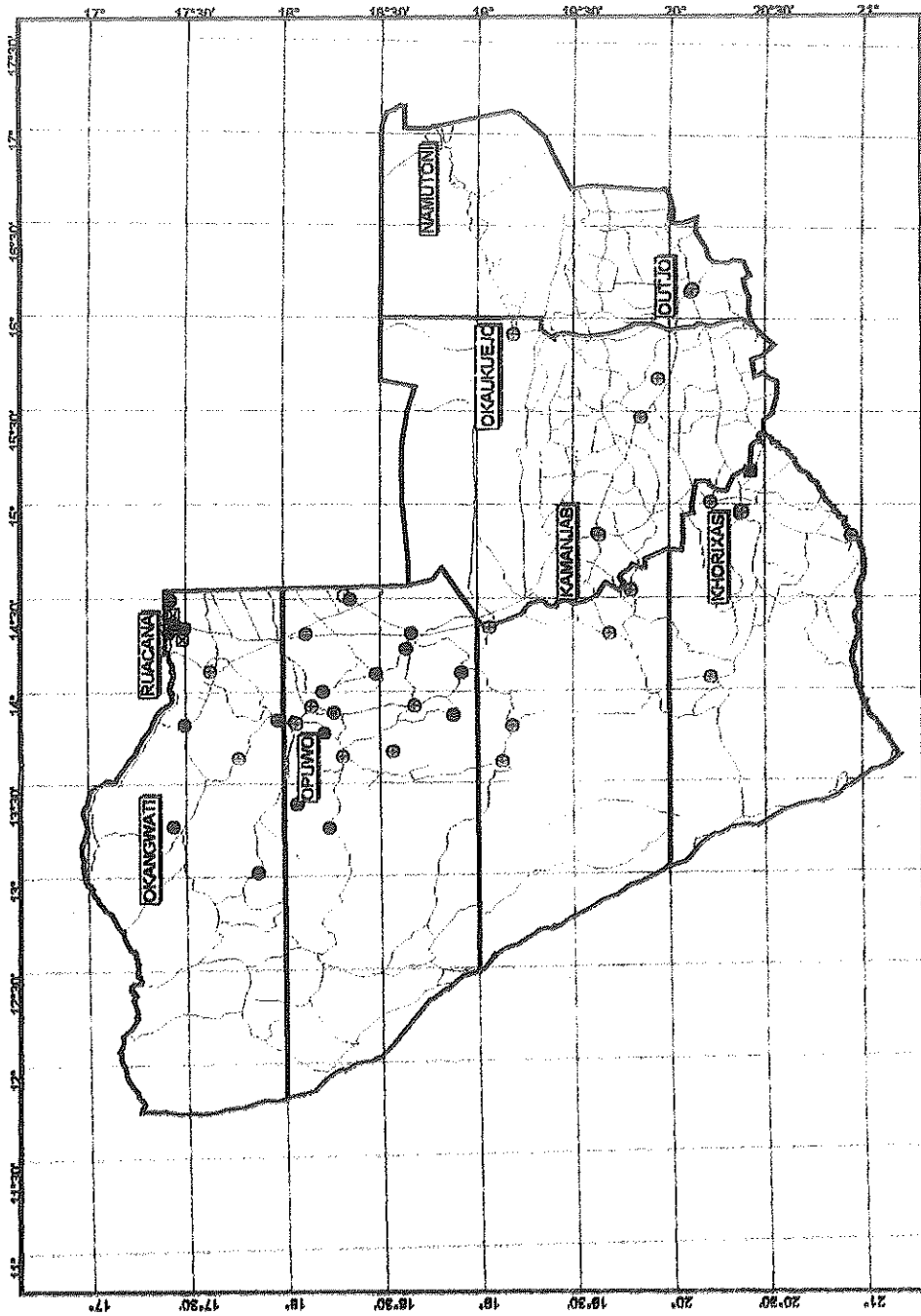
(Paskin, no date)

Other surveys concluded that Himba people were not keen in sending their children to school (in "Kunene integrated regional land use plan", 1998) In Ovahimba communities, the illiteracy rate is estimated to be 98% among adults (Hvidsten et al, 1997)

One of the headman of the Kunene North explained that inhabitants from Kunene North want education for their children. However, if they send them to school far away, the children stay without any parental care, which is not good to them. Once back home, they do not respect any longer their elder and parents. They show contempt for the traditional way their parents are living. The headman condemned this situation. (Hvidsten et al, 1997)

KUNENE REGION

SETTLEMENTS AND SCHOOLS



Produced by the NRSC, MET
 Produced for the Ministry of Lands, Resettlement & Rehabilitation (MLRR)
 October 1998

100 Kilometers

0

Urban Areas
 CS: Combined Schools
 HS: High Schools
 JPS: Junior Primary Schools
 JSS: Junior Secondary Schools

Primary Schools
 SPS: Senior Primary Schools
 SS: Senior Secondary Schools
 Uninhabited

Roads
 Constituencies

In "Kunene integrated Regional Land Use Plan, 1998"
 Ministry of Lands, Resettlement and Rehabilitation

Furthermore, if girls are sent away for education in the present system, they are considered as lost for the community. They do not come back home to marry and raise a family. This is a threat for Ovahimba families (Hvidsten et al, 1997)

2.2. ENROLMENT OF OVAHIMBA AND OVADHEMBA LEARNERS

Table: Enrolment of Himba and Zemba learners in established schools within the Ovahimba area:

Name of the school	Total enrolment 1997	Himba/Zemba enrolment 1997
Otjitanda	50	50
Etanga	29	29
Ongongo	82	82
Otjiu	39	39
Ehomba	139	139
Oukongo	122	122
Otjekua	30	30
Etoto	144	144
Otjorute	21	21
Kaoko Otavi	166	150
Okorosave	103	103
TOTAL	925	909

(Hvidsten et al, 1997)

Enrolment of Ovahimba children (6 – 15 years old) in school: 909. Estimate of unrolled Ovahimba children (6 – 15 years old): 2800. Therefore only 32,5% of Ovahimba children are currently schooled. (Hvidsten et al, 1997)

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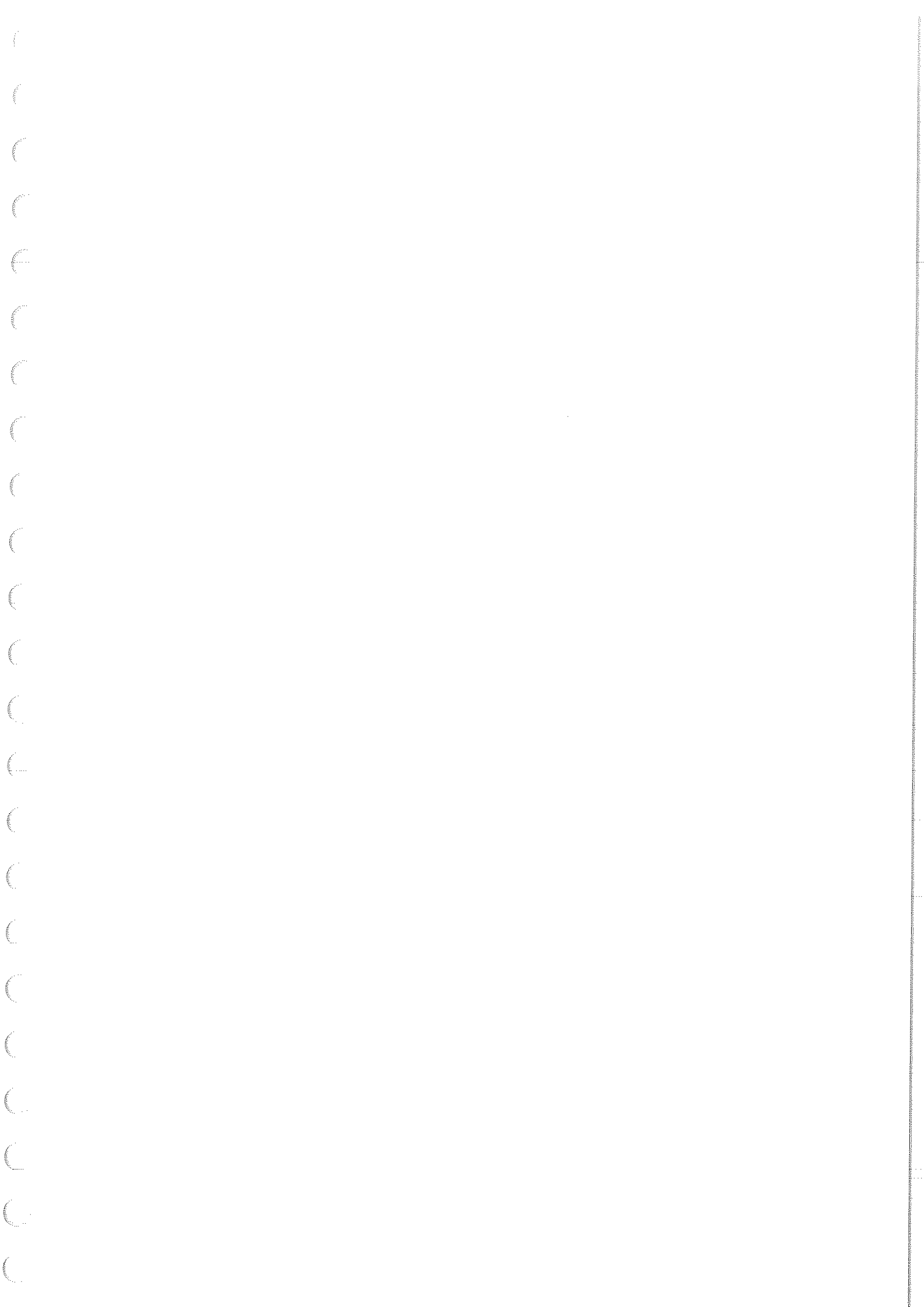
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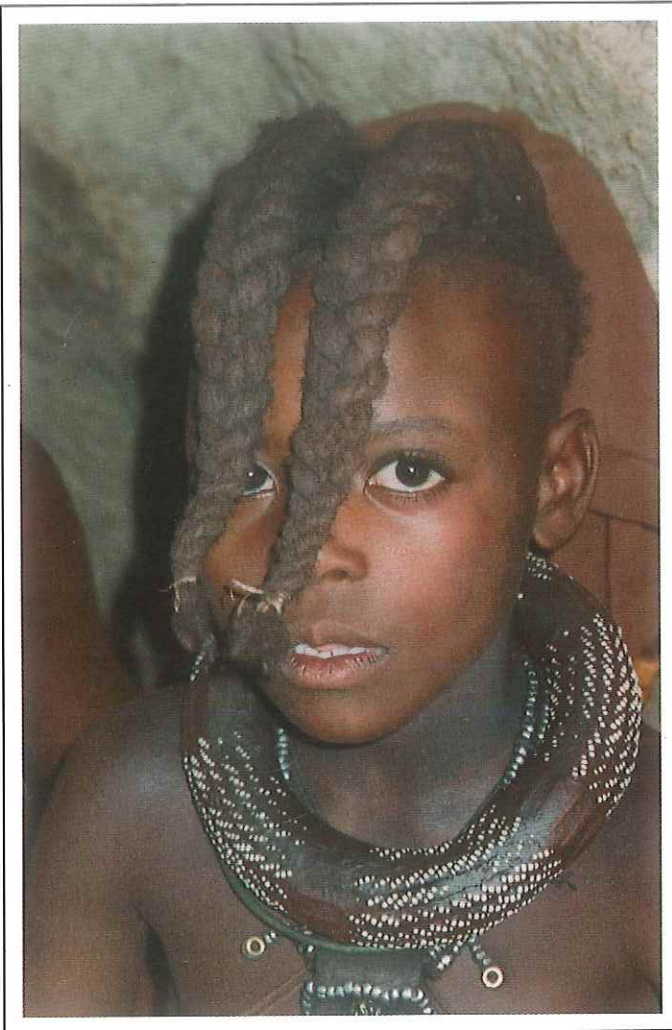
Farming Systems in Kunene North

A resource book

Various farming systems are present in Kunene North. The two main ones are:

The Farming systems of the pastoralist groups. Farmers are semi-nomadic or sedentary, the main production system is a mixed livestock system in which cattle are the more valuable (and valued) animals. Animals are a sign of social wealth-fare, of cash (especially through the informal markets) and food. A subsistence cropping system exists but is unreliable. Cultural tradition are still extremely strong. The agro-ecological environment is characterised by low rainfalls, poor soil types and the absence of perennial river (except the Kunene River).

The farming systems of the hunter and gatherer group, much more precarious and much less known. This group is semi-nomadic, do not own much properties and rely on an environment that is not always favourable.



Kunene North Farming Systems Research and Extension Unit

Ministry of Agriculture, Water and Rural Development