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Flora and Fauna of the Okavango River Basin (Angolan Sector)

Specialist Report prepared by Filomena Amaral dos Santos Leite for :

PERMANENT OKAVANGO RIVER BASIN COMMISSION

Angola

Ministério da Energia e Águas
GABHIC
Cx. P. 6695
LUANDA

Tel: +244 2 393 681
Fax: +244 2 393 687

Botswana

Ministry of Mineral Resources and Water Affairs
Department of Water Affairs
Private Bag 0029
GABORONE

Tel: +267 360 7100
Fax: +267 303508

Namibia

Ministry of Agriculture, Water and Rural Development
Department of Water Affairs
Private Bag 13193
WINDHOEK

Tel: +264 61 296 9111
Fax: +264 61 232 861

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Report prepared by:

**F. A. Leite
FIESA
P.O.Box 6707
Luanda
Angola**

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REFERENCES

LIST OF REFERENCED STUDIES

Note : The information on the ecosystems of the Cubango (Okavango) River Basin gathered for this report, has been compiled from the scarce literature available in Angola. From the literature survey carried out, emphasis has been given to the vegetation bio-diversity, and there is little or no reference to fauna, particularly fish, birds and reptile species.

At this stage the data being collected will be used for planning a more detailed study scheduled for later stage, with respect to both the physical and biological environment of the Cubango (Okavango) River Basin on Angolan territory. Only a bibliographical listing of published studies conducted, written prior to the independence of the Republic of Angola, which are at present not available on Angolan territory, will be presented in the report. These publications could be acquired for future studies given more time.

1. GENERAL

1.1 Locality

Map 1 shows the hydrographical basins/catchments of the main rivers of Angola.

The catchment of the Cubango (Okavango) River Basin, (Map 2) in Angolan territory, covers an area of 148 860 km² with its source in the Huambo and Cuando Cubango provinces.

The river basin comprises two main sub-catchments, namely the Cubango and the Cuito Rivers, which are perennial rivers. The sub-catchments of Cutato, Cuchi, Cueba and Cuatia Rivers are tributaries of the Cubango River, and the sub-catchments of the Cuanavale and Longa Rivers are tributaries of the Cuito River.

1.2 Orography and Geology

From an orographical point of view, the Cubango (Okavango) Basin is divided into four regions from north to south.

A region of rough terrain in the north-west with altitudes ranging from 1500 to 1800m.

The north-east-region of undulating elevation with altitudes ranging from 1400 to 1500m.

The transitional westerly region with altitudes ranging from 1200 to 1400m, but decreasing in altitude towards the south.

The slightly undulating southerly region, where the altitude decreases to 1000m.

From a geological point of view, the Basin is made up of two types of geological formations, namely eruptive and metamorphic in the north-west, and of ferrous-clay soils and sedimentary formations in the other areas with psammitic soils.

1.3 Climate

Thornthwaite classifies the Basin climate, (Map 3), as being humid in the north-west (B3), dry sub-humid in the north-east (C1), and semi-arid in the south (D).

In the Köppen classification, (Map 4) the climate of the north-west (CWB) and the north-east (CWA) regions is described as being temperate with a dry winter, while the Southern (Bsh) region is described as a dry sparse climate.

2. BIOLOGICAL DIVERSITY

The biodiversity of the Basin is closely related to the climate and soil types in each of the regions.

2.1 Flora

Few studies relating to the classification of Angola's floral biodiversity have been carried out. Refer to Table 1.

Based on the bibliography consulted, the studies conducted by Castanheira Diniz (1973 & 1991), and those by Quintela Góis (1973), provide a better clarification of the flora of the Cubango (Okavango) Basin.

According to Barbosa's classification (1970), Angola's vegetation is grouped into 32 phytogeographic units (Map 5), corresponding to the Cubango (Okavango) Basin from north to south, the units 15MS, 22gM, 29g and 23Wg. Diniz (1991) categorised the vegetation into 39 phytogeographic zones, of which zones 3, 4 and 5 relate to the Cubango (Okavango) Basin area (Map 6).

2.1.1 Region 3

The Central Zone of Angola (High Cubango) covers an area of 33 600 km². The climate is humid to sub-humid, with prolonged rains for 6 to 7 months of the year during the hot, dry season. The soil is a ferric-clay type. The predominant vegetation is open forest of *Julbernadia*, *Brachystegia* and *Isoberlinia*.

2.1.2 Region 4

The Middle Cubango Zone covering an area of 79 900 km², makes up most of the Basin. The climate is humid to sub-humid, and in the transitional strip it is sub-humid to dry, with 5 to 6 months of rain a year. The soil is influenced by the sandy coverage of the Kalahari. The vegetation is varied, open forest prevailing to the north and savanna forest to the south, both essentially of *Brachystegia sp*, *Julbernadia paniculata*, *Guibourtia coleosperma* and *Pterocarpus angolensis*.

2.1.3 Region 5

This region corresponds to the Cubango Lowland, and covers an area of 36 200 km². It has a semi-arid climate, with a short rainy season and an uneven distribution of rainfall. The soil is mainly sandy, and alluvial in the river lowlands. The vegetation is dependent on soil characteristics.

Alluvial Plain Areas

In these areas which are submerged during flooding periods, the vegetation typically consists of *Vetiveria nigriflora*. During the dry season, graminoid plants such as *Phragmites mauritanus* are found around the edges of small lakes and depressions.

Lowland Terraces (lombos)

These zones consist of rarely flooded areas alternating with small depressions which are usually ancient or fossil river beds. The vegetation consists of trees such as *Acacia tristis*, *A. giraffae*, *A. mellifera*, *Peltophorum africanum*, *Terminalia sericea* and *Combretum* spp. After major floods, these areas become inundated with grass cover such as *Themeda*, *Aristida*, *Tricholaena*, *Heteropogon*, *Loudetia* and *Tristachya*.

High Terraces

As flat elevated terraces these areas are free from flooding. In these flat areas, the vegetation is that of savanna consisting of *Combretum imberbe*, *Acacia sieberana* var. *woodii*, *Peltophorum africanum* and *Ficus gnaphalocarpa*.

Riverside Slopes

A transition from alluvial plain to the Kalahari platform occurs along these areas. The vegetation consists of *Acacia giraffae*, *Peltophorum africanum*, *Combretum imberbe* and *Strychnos*.

Kalahari Platform

The highest elevations follow the valleys of Cubango and Cuito. The vegetation is that of tree savanna, consisting of *Baikia plurijuga*, *Guibourtia coleosperma*, *Pterocarpus angolensis*, *Burkea africana*, *Erythrophleum africanum*, *Dialium englerianum*, *Pseudolachnostylis maprouneifolia*, *Terminalia sericea*, *Combretum zeyheri* and *C. psidioides*.

In the depressions shrubby communities of *Diplorhynchus condylocarpon*, *Swartzia madagascariensis* and *Strychnos* spp are to be found.

In the drier areas, there are communities of closed or thick forests of *Croton*, *Grewia*, *Terminalia* and *Combretum*.

2.2 Fauna

Like the flora, the documents on studies carried out on the fauna of the Cubango (Okavango) Basin were not located. For this reason, the information on the different studies has been presented by making reference only to the author of the document. Access to the publications was not possible.

The study “ANGOLA – Avaliação do estado actual do Meio Ambiente” (*Assessment of the current status of the environment*), by IUCN, October 1992, mentions the cataloguing of Angola’s avifauna, carried out by Taylor (1963). Dean et al (1988) mentions the most complete study, that of Pinto (1993). With regard to pisciculture, the IUCN (1992) study refers to the study of Max Pohl on “Os peixes dos abundantes rios de Angola” (*The fishes of Angola’s abundant rivers*). However, the content of these publications was not accessible.

The data obtained refer to the following Orders in the region:

Class: Mammalia

Order : Proboscidea

Species : *Loxodonta africana* (African Elephant)

Order : Artiodactyla

Species : *Hippotragus niger* (Southeast Black Antelope)

Giraffa camelopardalis (Giraffe)

Damaliscus lunatus (Kaku)

Aepyceros melampus (Vulgar Impala)

Kobus lechwe (Songue)

Order : Perissodactyla

Species : *Diceros bicornis* (Black Rhinoceros)

3. WATER-BORNE DISEASES

Statistical data on water-borne diseases are confined to the town of Menongue, the capital of Cuando Cubango Province, and the population on the outskirts of the town. It is emphasised that in those localities situated next to slow flowing water courses, the presence of Schistosomiasis, Hepatitis A and Diarrheal diseases of non-referenced aetiology is prevalent.

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Note : The bibliography has not been consulted, because it was not in the archives on Angolan territory. However, it could be made available for more detailed studies in future.