

3.2 BURKINA FASO

Introduction

Burkina Faso has an area of 274 122 km², a population of 7 285 000, and a mean population density of 26.6 persons/km². The country is land-locked, being bounded by Benin, Togo, Ghana and Cote d'Ivoire in the south, Mali in the west and north, and Niger in the east. The country covers 5°41' of latitude from 9°24'-15°05'N and spans 7°51' of longitude from 2°22'E to 5°29'W.

Most of the country is occupied by a plateau, 200-500 m asl, with a general declination to the south. Lowlands, less than 200 m asl, penetrate Burkina Faso in the southwest as a narrow strip 225 km long in the valley of the Volta Noire River, and also in the central southern part of the country in the valleys of the Volta Rouge and Volta Blanche Rivers. The largest and lowest expanse of lowland however, is in the southeast along the valley of the Pendjari, while at the eastern extremity, another lowland tongue reaches into Burkina Faso along the valley of the Mekrou River. There are three highland blocks, which rise above 500 m. One, the Plateau of Tagouara, is in the southwest, where the highest point in Burkina Faso (749 m) is reached (10°46'N/5°25'W) close to the border with Mali. The other highland blocks are in the centre of the country to northwest and northeast of Ouagadougou (12°20'N/1°40'W).

Drainage is by a number of river systems. The Komoe River and its tributaries drain the southeastern slopes of the Tagouara Plateau, while the western slopes drain to the inland delta of the Niger River in Mali via affluents of the Bani River. The northwestern slopes of the Tagouara Plateau drain to the Volta Noire which also receives drainage from Mali in the north via the Sourou River. The central highland blocks drain west to the Volta Noire, or to the Volta Rouge which bisects them, or east to the Volta Blanche. A watershed lies to the east of this last river, oriented NNW-SSE. From this, short and comparatively steep streams flow west to the Volta Blanche, while long rivers, with a very gentle slope flow east to the Niger, but towards the southern end of this humpback, several streams flow southeast to the Pendjari.

Climate

Burkina Faso is a comparatively dry country, with mean annual rainfall decreasing from about 1100 mm in the south to 500 mm in the north, and the dry season increasing in length from 6-7 months in this direction. The wettest part is the Tagouara Plateau in the southwest where falls may exceed 1250 mm/yr. The city of Bobo-Dioulasso (11°11'N/4°18'W), at the interior end of the plateau, has a mean annual rainfall close to 1100 mm which falls over 88 days each year, and the dry season lasts 6 months from November-April. Farther north, in the centre, Ouagadougou (12°20'N/1°40'W) receives an average of 864 mm/yr over 70 rainy days, with 7 dry months, October-April. In the northeast, Dori (14°03'N/0°02'W) receives 520 mm/yr over 50 rainy days and has 7 dry months. The

southeast receives significantly less rain than the southwest, although the rainy season is just as long. However, the average number of rainy days is less than 80 and mean annual falls are in the vicinity of 900 mm.

The mean temperature of the coolest month at Bobo-Dioulasso is 24°C and that of the warmest month 30°C. Corresponding figures for the other centres mentioned are Ouagadougou, 26°C and 32°C; Dori, 24°C and 33°C. The warm rainy season lasts from June until September, with a cool dry season from early October until mid February, It is then hot and dry until June when the rains begin. Temperatures may fall as low as 10°C at night over almost any part of the country in the cool dry season, and frequently exceed 40°C during the day during the hot dry season.

Vegetation

Soudanian savanna predominates in the south, with extensive *Isoberlinia* woodlands, while the perennial rivers carry well developed gallery forests. The northern half of the country is however, less well wooded, and the vegetation grades into thorn-bush savanna in the Sahelian zone.

Wetlands

The principal wetlands of Burkina Faso are riverine floodplains, inundated seasonally. No floodplain is very large by comparison with those of neighbouring countries, but most rivers have them. Many intermittent streams have moist sandy beds during the dry season and often retain open water in pools. There are permanent lakes and ponds on some of the larger floodplains, a few small lakes away from the rivers, and a great many small impoundments. Generally the floodplain lakes are swamp fringed, and all watercourses carry galleries of forest or woodland. The open water surfaces are very important to wildlife.

List of Wetlands Described

1. Riverine Wetlands
 - (a) Floodplains of the Komoe River System
 - (b) Floodplains of the Niger River System
 - (c) Wetlands of the Volta River System
 - (d) Wetlands of the Pendjari Drainage Basin
2. Natural Lakes
3. Artificial Impoundments.

1. Riverine Wetlands

Wetland Name: Floodplains of the Komoe River System

Country: Burkina Faso

General: The Komoe River has sources in Burkina Faso on the Banfora Plateau in the

extreme southwest. Floodplains occur on four headwater tributaries west of the town of Banfora (10°38'N/4°46'W). These are the Komoe at Banfora, where a floodplain 1-1.5 km wide stretches 26 km along the river on either side of the town between 10°30' and 10°44'N and comprises 3350 ha of wetland. West of here a floodplain occurs on the Mou River (10°37'N/4°55'W), 14 km long and up to 1.5 km wide, with 1500 ha of floodplain. Farther west still there were small floodplains on the Lórabá Orientale (10°36'N/5°05'W) and Lórabá Occidentale (10°33'N/5°22'W) Rivers, both affluents of the Komoè, but these have recently been converted for rice cultivation in their entirety.

Human Impact & Utilisation: About 50% of the total wetland area on this river system in Burkina Faso has been utilised for growing rice. The remaining area is exploited locally, for the recession cultivation and the grazing of cattle. The rivers are fished.

Conservation Status: Unprotected.

Wetland Name: Floodplains of the Niger River System

Country: Burkina Faso

General: In the southwest of Burkina Faso a number of rivers drain westwards to the Bani River which enters the internal delta of the Niger. Some of these rivers carry floodplains in Burkina Faso. Floodplains occur on the Longo River and its affluent the Sèledogo, in an area (11°30'-11°37' N/4°50' -5°10'W). There is 55 km of floodplain, locally 5 km wide, covering 14 000 ha. Another floodplain occurs on the Groumbo River, for 30 km along the border with Mali (11°32'-11°40'N/5°15'W), with some 2800 ha of inundated land in Burkina Faso. The Groumbo joins the Longo, which then flows into the Ngorolaka River. This latter stream is an affluent of the Bani River. Above its confluence with the Longo, it also forms the border between Burkina Faso and Mali for an 80 km stretch running SW-NE (11°50'-12°13' N/4°35' -5°24'W). Over this distance it carries a floodplain reaching 3.5 km in width covering some 8000 ha in Burkina Faso.

In the east of Burkina Faso other rivers flow to the middle Niger, in Niger, and many of these, although intermittent streams, have floodplains. In the northeast the Gorouol River is intermittent, flowing due east at 14°23'N, but both it and its tributaries lie in humid beds with narrow floodplains in the rainy season, and a string of waterholes in the dry season. South of this there are extensive, but narrow floodplains along the Sirba River and its tributaries, particularly the Yali River. There is a barrage on the Yali below Sebba (13°27'N/0°31'E). A discontinuous floodplain, up to 1 km wide, occurs along the Sirba for over 230 km above its confluence with the Niger, providing something like 14 000 ha of seasonal wetland in Burkina Faso. All these rivers carry galleries of forest.

Yet farther south floodplains occur on the Boapendi, Bonsoaga, Dyamongou and Tapoa Rivers. All are intermittent rivers and all carry gallery woodlands. At the extreme eastern point of Burkina Faso, the Mèkrou River flows east to the Niger and has a swampy and seasonally flooded headwater valley.

Human Impact & Utilisation: Rice is grown in these wetlands, but as yet not intensively. Fishing and cattle grazing are locally important, together with the small scale

recession cultivation of assorted crops.

Conservation Status: Unprotected.

Wetland Name: Wetlands of the Volta River System

Country: Burkina Faso

General: The Volta Noire rises in the far west of Burkina Faso (11°12'N/5°17'W) close to the border with Mali near the town of Sintasso. The river is at first called the Plandi and it flows northeastwards, first developing a floodplain (11°19'-11°25'N/4°43'-4°48'W) near Koutseni. Here, up to 2400 ha can be flooded each year in a strip 12 km long. The river then meanders, still northeastwards, to a confluence with the Kou (or Baoule) River, after which it is known as the Volta Noire. It continues northeastwards with a floodplain which begins just above this confluence, past Dedougou (12°29'N/3°28'W), for 187 km to a confluence with the Sourou River (12°29'N/3°28'W) which flows due south from Mali. The floodplain reaches widths of 10 km, e.g. at Bossora (11°43'N/4°06'W), and covers more than 50 000 ha (11°26'-12°45'N/3°28'-4°25'W). In its upper section, just after the confluence of the Plandi and Kou Rivers, there is a permanently swampy region with numerous ponds and a lake known as the Mare aux Hippopotames. The lake and ponds are separate from the river but in continuity with it during floods. Floodplains also occur on streams flowing southeastwards from the highlands along the Mali/Burkina Faso border to join the west bank of the Volta Noire in this sector. The tributaries concerned are the Kile, Deb&e, Laye, Baflabe and Manmba Rivers and are to be found in the area 12°00'-13°00'N/4°00'-5°00'W.

There is a floodplain 28 km long on the upper Sourou River, reaching 4 km in width, with herb swamps and many permanent pools. This is situated from 13°00'-13°15'N on a longitude of 3°27'W. It comprises some 9600 ha of wetland and tapers out 4 km above the confluence of the Sourou and Volta Noire Rivers. From the junction with the Sourou, the Volta Noire bends sharply round to flow southeastwards to the border with Ghana. In this last sector of 200 km the river meanders so that its course is 338 km long, but only locally, and then narrowly, does it overflow its banks.

The Volta Blanche rises (14°03'N/2°03'W) in the north of Burkina Faso, close to the border with Mali. It is an intermittent stream in its upper course and flows due south for 125 km through hilly country, and then, at a confluence with the Kourougui River, another intermittent stream, it flows east for a further 125 km. Here, hard under the hills at Kaya (13°05'N/1°06'W), it swings southeastwards for 200 km. Midway down this sector it receives the waters of the Massili River on its west bank. The banks of the Massili are liable to inundation from 12°44'N/1°45'W to its confluence with the Volta Blanche at 12°16'N/1°05'W. In this sector also, the Volta Blanche receives numerous tributaries from the hills to the east and becomes perennial in a permanently swampy area (11°58'N/0°54'W) at an altitude of 230 m asl.

The river continues to flow southeastwards until it crosses the border into Ghana, and swamps and floodplain areas become more prominent along its course and those of several affluents. A discontinuous floodplain occurs downstream for 45 km to the con-

fluence of the Dougoula Mondri River, which drains the highlands to the east. This latter stream descends a valley to the Volta Blanche, into which a dozen small affluents flow, all having swampy floodplains on their banks, providing some 7000 ha of wetland. To the south and in parallel with the Dougoula Mondri, several small streams have flood-plains above confluences with the Volta Blanche e.g. (11°43'-11°48'N/0°28'-0°38'W), (11°34'N/0°14'-0°20'W) and (11°28'N/0°28'W), and there is another floodplain on the Volta Blanche (11°29'-11°34'N/0°34'-0°46'W). East of this another floodplain (5700 ha) is situated in the hills on the Nouhao River (11°29'-11°43'N/0°02'-0°13'W) which joins the Volta Blanche on the southern border of Burkina Faso.

The Volta Rouge rises in central Burkina Faso (12°40'N/1°55'W) and flows southeastwards in parallel with the Volta Blanche. It carries no important wetlands until just above the border with Ghana, where floodplains totalling 7650 ha occur on four intermittent tributaries in the area (11°03' -11°17'N/0°41' - 0°58' W).

Human Impact & Utilisation: Some rice is grown on the floodplains of the Kou and Volta Noire Rivers. In general the floodplains are fished, grazed by domestic cattle and utilised for small scale recession agriculture. Apart from these traditional activities they are as yet little disturbed.

Conservation Status: The Volta Noire flows along the eastern boundary of the Deux Bales Classified Forest (approximately 11°30'-11°50' N/2°11' -3°10'W), and over a stretch of some 100 km, the gallery forest along its banks is protected. *Crocodylus niloticus*, *Loxodonta africana*, *Hippopotamus amphibius* and *Syncerus caffer* are found in the reserve. Farther downstream the river forms the eastern boundary of the Bontioli Partial Faunal Reserve, and here again small numbers of big game animals are encountered.

The Volta Rouge flows through the middle of the PO National Park (approximately 11°10'-11°50'N/0°50'-1°50'W) which covers 149 400 ha and extends along the river for over 100 km, but apart from the river channel itself, little wetland is conserved here. There are narrow floodplains in places and the park itself is largely covered by alluvium deposited in more pluvial times. During the dry season the river contracts in its bed and is reduced to a trickle with many pools. *Cephalophus rufilatus*, *Kobus ellipsiprymnus*, *Loxodonta africana*, *Phacochoerus aethiopicus*, *Redunca redunca*, *Sylvicapra grimmia*, *Syncerus caffer* and *Tragelaphus scriptus* are protected here. The course of the Volta Blanche is entirely unprotected.

Wetland Name: Wetlands of the Pendjari Drainage System

Country: Burkina Faso

General: The Pendjari River rises in Benin and meanders southwestwards along the Benin/Burkina Faso border to the point where Benin, Togo and Burkina Faso meet. Several rivers tributary to the Pendjari flow southeastwards out of the hills of SE Burkina Faso to join the Pendjari and many of these carry wetlands. In the east there are three small floodplains, of 3000 ha (11°37'N/1°50'E), 1500 ha (11°38'N/1°58'E) and 750 ha (11°29'N/1°53'E) on the Kouriagou River and its affluents, above the confluence of this stream and the Pendjari. To the west there are 6000 ha of seasonally inundated land on the Arli River and its affluents (11°40'-11°50'N/1°30'-1°42'E) and a

further 16 500 ha on the Doubodo River and its affluents. On this latter system the floodplains accompany 102 km of river channel (11°40'-12°00'N/1°01'-1°23'E). The Doubodo and Arli merge and discharge into a system of floodplains, lakes and permanent swamps which extend along the border on the Pendjari for 80 km (1°18'-1°50'E) in a second Mare aux Hippopotames. Much of this swamp is in Benin, but there are some 7000 ha in Burkina Faso.

To the west of the Mare aux Hippopotames, there is an extensive lake, swamp and floodplain system on the Singou River and its affluents. Coming downstream there is a floodplain along 70 km of the Singou and its headwater tributaries covering 12 000 ha (11°25'-11°46'N/0°39'-0°56'E). To the west, on the Kogotiari River, a tributary of the Singou, a permanent swamp system with a chain of central lakes, known as the Mare de Bopieni, is fringed by a narrow floodplain and occupies 13 500 ha. This wetland extends for 60 km along the Kogotiari and up some of its minor affluents. The Kogotiari joins the Singou in another lake/swamp system known as the Mare de Tinouri (11°17'-11°24'N/0°52'-1°03'E). Here there are about 3000 ha of wetland, and downstream a narrow floodplain accompanies the Singou for 24 km to its confluence with the Pendjari, providing another 2300 ha of wetland.

Farther west there are small areas of floodplain and swamp on the Pendjari, which extend into Burkina Faso, and an extensive floodplain on the Oualé River. On this system the floodplain (11°03'41"30"N/0°22'0"45"E) extends for 65 km, attains widths of 5 km, and provides a wetland area of 16 500 ha. Farther north, on headwater tributaries of this river there are two other floodplains. One covers 2400 ha (11°52'N/0°27'E) on the Otabango River, and the other covers 5000 ha (11°50'N/0°07'E) on the Koul Peolgo River.

Human Impact & Utilisation: Traditional uses predominate. The wetlands are not as yet seriously disturbed, although large mammals have been intensively hunted in most areas.

Conservation Status: The faunal reserves of Arly, Singou, Pama and Kourtiagou are situated in the Burkina Faso part of the Pendjari catchment, but they protect little wetland. The Arly Reserve has frontage along the Pendjari River and protects some of the large gallery forests which are liable to flooding. The Singou Reserve has a northern boundary on the seasonally flooded banks of the Tonouarbougou River, while the SW boundary is on the Singou River which floods 1-2 km into the reserve. The Singou River also forms the boundary of the Pama Reserve to the west. Several seasonally flooded tributaries of the Singou flow through this reserve, but notably the Bigou River.

Hunting is permitted in many of the reserves, but poaching and the illicit extraction of timber is a problem in all of them.

2. Natural Lakes

General: There are four small natural lakes in Burkina Faso. Lake Tengrèla (10°39'N/4°51'W) is situated in the southwest, just west of Banfora, at an altitude close to 290 m asl. It is 2 km long and 1.5 km wide.

Lakes Bam (13°22'N/1°30'W) and Dem (13°11'N/1°09'W) are both situated in northern Burkina Faso in the headwater catchments of the Volta Blanche River to which they drain. Lake Dem measures some 5 km x 2 km and has a capacity of 4 million m³, while Lake Barn is nothing more than a widening of the channel of one of the affluents, some 12 km long and 0.5 km wide. However, it qualifies for description as a lake since the river which both feeds and drains it, is intermittent, and dries up completely for at least 6 months each year. While the river is dry, the lake persists, with a storage capacity of 31 million m³.

The Mare d'Oursi is a small, reed fringed, shallow lake covering 160 320 ha (14°38'N/0°30'W). It is fed by an intermittent stream and may have an effluent stream after heavy rain; its surface shrinks between rains, but it is a permanent lake.

Lake Higa (13°38'N/0°43'E) has a surface area of 288 ha and is surrounded by permanent swamps. It is fed by a small stream and drains to a wooded tributary of the Babangou River and thence to the Niger.

Human Impact & Utilisation: Water from Lake Barn is used for small scale irrigation purposes, for domestic consumption and to water domestic cattle. The lake is also fished. Water from Lake Dem is used for domestic consumption. Water from the Mare d'Oursi is also used for domestic purposes and by wildlife. Tengraa lake is fished, but on a very small scale.

Conservation Status: Unprotected.

3. Artificial Impoundments

General: There is a reservoir 90 km northeast of Djibo (14°09'N/1°38'W) in the far north of Burkina Faso, storing 2.2 million m³ of water. To the south a barrage on an intermittent headwater tributary of the Volta Blanche near Ouahigouya (13°35'N/2°23'W) in north Burkina Faso stores another 2 million m³ of water. These impoundments principally supply water for domestic use. To the east of this there are two barrages on ephemeral affluents of the Sirba River, itself an intermittent tributary of the middle Niger River. The Tougouri Barrage (approximately 13°19'N/0°32'W) stores 6 million m³ of water and the Yalogo Barrage (approximately 13°25'N/0°55'E) stores 10 million m³. Both these latter impoundments supply fish as well as water for agriculture and domestic use. In addition there are over 300 small farm and community dams.

Hydroelectric projects are planned on the Kompienga River in the east, and at Bagro on the Volta Blanche