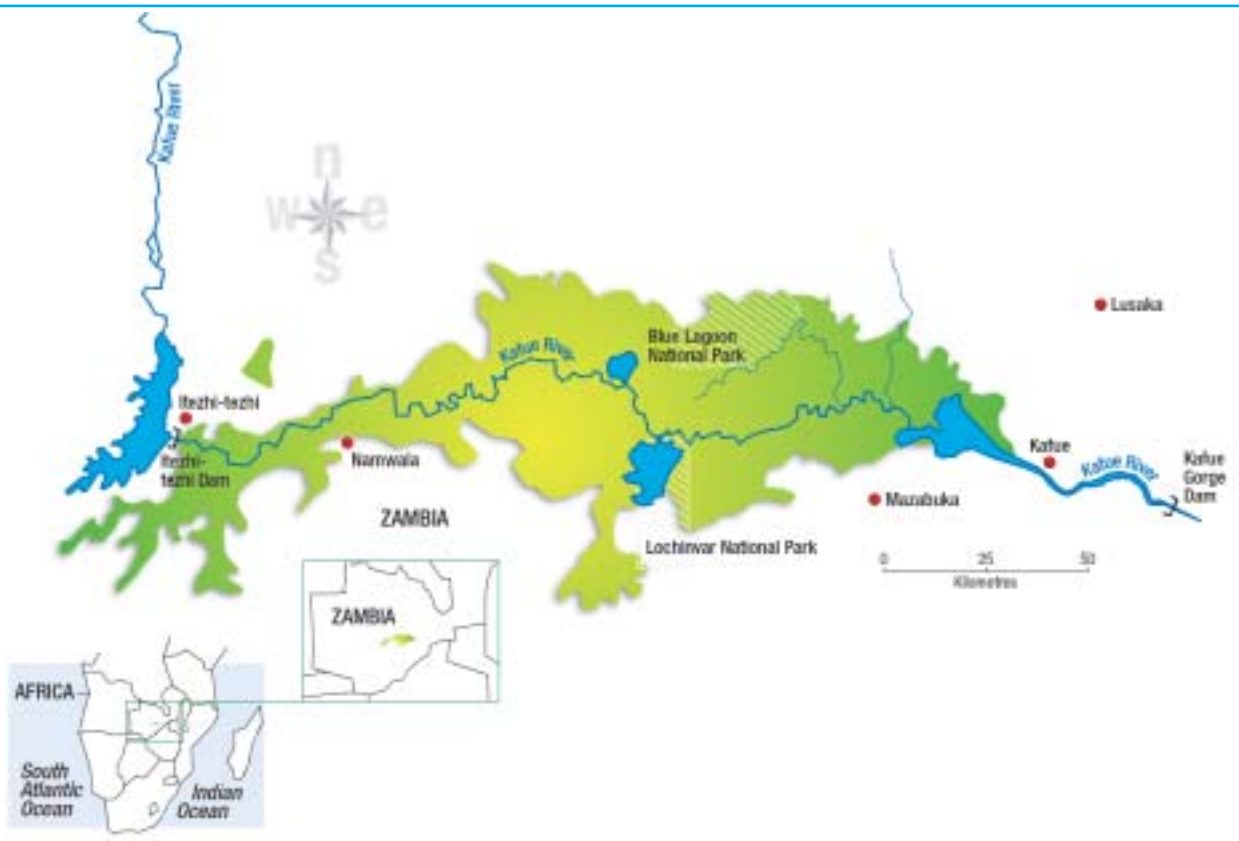
Kafue Flats



Basin countries

Kafue Flats lie in the Zambezi River Basin, Zambia. The shaded area represents the Kafue Flats floodplain between the Kafue Gorge and Itezhi-tezhi Dams, not the entire river basin

Summary of basin characteristics

Kafue Flats are the vast, open floodplain of the Kafue River, covering some 6,500km^2 within the wider basin of the Zambezi River.

Socio-economic importance

The area is important for fishing, cattle grazing, sugar-cane farming, and production of hydroelectric power.

Zambia's water and hydroelectric power potential are of great importance to the national economy and to the regional economy of southern Africa. The Kafue Gorge hydroelectric power plant, situated at the eastern end of the Kafue Flats, is the country's largest power station, providing more than 50 per cent of Zambia's electricity needs. A surplus of 431MW is exported to neighbouring countries, such as Zimbabwe and South Africa. To keep pace with demand, the Kafue Gorge power plant has needed

more water than was available from the Kafue Gorge Dam. Consequently, a second storage reservoir (the Itezhi-tezhi Dam) was constructed at the western end of Kafue Flats. This allows for the release of sufficient water to maintain maximum power generation throughout the year.

On the south-eastern side of Kafue Flats, near the town of Mazabuka, there are several sugarcane farms, each of which cultivates huge areas of land. These farms produce the majority of Zambia's sugar for local use and export. Each farm relies heavily on water from the Kafue River for irrigation, while nutrient-rich effluent is discharged back into the river, contributing to the proliferation of many aquatic plants, including the problematic water hyacinth *Eichornia crassipes* (see below).

Traditionally, the people of Kafue Flats have made a living by fishing and grazing livestock. Until recently, the area was sparsely populated but this is changing as many people arrive in search of work, for example on sugarcane estates. This has promoted illegal hunting and overfishing. As a result, certain parts of the Flats are suffering from increasing human pressure.

Biodiversity values

Kafue Flats support large numbers of grazing mammals, including zebra *Equus burchelli*, sitatunga *Tragelaphus spekii* and buffalo *Bubalus* sp, and predators such as cheetah *Acinonyx jubatus* and wild dog *Lycaon pictus*. The Kafue lechwe *Kobus leche kafuensis* is the region's most famous animal and is endemic to the Flats; it is one of three different races of lechwe, or marsh antelope, adapted specifically to living in wetlands.

Construction of the Kafue Gorge and Itezhi-tezhi Dams in the 1970s and the consequent regulation of water flow in the Kafue River has altered flow regimes and caused loss of periodically flooded land, removing the habitats of many animal, bird and plant species. As a result, the populations of many species that occur in the Flats have declined. The number of Kafue lechwe has fallen by more than half, from approximately 100,000 to fewer than 40,000 in 2001. Poaching, which has been particularly severe in recent decades, is another major factor in the declines experienced by most mammal species.

More than 450 bird species occur regularly in Kafue Flats, some throughout the year and others

Water flowing from Itezhi-tezhi Dam into the Kafue River. WWF-Canon / Sarah Black

passing through on migration. Kafue is one of the most important sites in Africa for wattled crane *Grus carunculatus,* ranked as Vulnerable by IUCN–The World Conservation Union.

Priority issues for river basin management

Since the construction of the two major dams at strategic points along the Kafue River, both upstream and downstream of the Flats, the natural hydrological system has been disrupted, with adverse impacts on the habitat and breeding cycles of many species. Alongside the effects of poaching, this has led to a drastic reduction in the biological productivity of the area. Lower fishery yields and reduced availability of grazing land as a result of the altered flooding regime have also affected human communities.

The invasive and exotic water hyacinth – infamous the world over for its ability to grow extremely quickly and clog up waterways – has been a major problem in the Flats over the last decade. Local people have been finding transportation and fishing – using dugout canoes – increasingly difficult, while the turbines of the Kafue Gorge power plant are sometimes blocked with water hyacinth, disrupting power generation.

Key objectives for integrated river basin management that are reflected in different components of WWF's work on Kafue Flats are:

- Increasing the productivity of the wetland by restoring the natural pattern of flooding through changes to the operating procedures of the Kafue Gorge and Itezhi-tezhi Dams
- Establishment of modern water management processes
- Restoration of the original composition, population size and range of most of the typical wetland species, in particular the Kafue lechwe.

A wider objective is to use Kafue Flats as a model for restoring and managing other areas in the Zambezi River basin and further afield.

Role of WWF and its partners

In general, WWF's main goal in Kafue Flats is to persuade traditionally non-conservation oriented stakeholders to integrate the concept of 'wise use' of wetlands, including nature conservation, into their own business/livelihood activities. This is achieved through adopting an intermediary and catalytic role, creating partnerships, bringing in expertise and developing projects on the ground. Having established partnerships and shown a willingness to commit resources to projects that have both socio-economic and conservation benefits, WWF has been able to move into wider activities with a more overt river basin management approach.

In Zambia, formal partnerships have been established with stakeholders that are key to achieving integrated water management for Kafue Flats. These involve the sugar industry (Zambia Sugar, Nanga and Ceres Farms), the Zambian Electricity Supply Company (ZESCO), the Ministry of Energy and Water Development (MEWD), the Zambian Wildlife Authority (ZAWA), Chiefdom of the Tonga people (Chief Mwanachingwala) and two private tourism companies (Star of Africa and Real Africa Safaris).

With the sugar industry, WWF is working to restore 50,000ha of the Kafue Flats – the Mwanachingwala Conservation Area. This is being achieved through a combination of measures including raising awareness among local communities, the introduction of wise use practices, translocation of animals, and ecotourism. WWF is also encouraging sugar farms to pre-treat their effluent through bio-filters (small artificially created wetlands and reedbeds) to lower nutrient levels and therefore reduce the growth and spread of water hyacinth. The plants grown as bio-filters can also be used to make a modest income – for example, basket-making from reeds.

With ZESCO and MEWD, WWF is working to improve the management of water resources in the Flats by improving the operating procedures of the Kafue Gorge and Itezhi-tezhi Dams. The aim is to mimic natural water flows as closely as possible in order to restore wetland functions and values. The first phase of this partnership produced an Integrated Water Resources Management Strategy, which has since been accepted by all stakeholders. Computer models were also developed to simulate potential water management scenarios and to study their likely impacts. The second phase began in July 2003 and, over nine months, will focus on imple-

Kafue Lechwe, Kafue Flats. Francois d'Elbee

mentation of the new water management system for Kafue Flats. Re-establishment of the hydro-meteorological monitoring network, further refinement of computer models, dam operation, and legal and institutional frameworks are the main components of this phase. Testing of the new dam operating procedures is expected by early 2004, with the hope that the Zambian government will take a positive decision to commence the new system during 2004. All key stakeholders and water users are part of this process.

The Integrated Water Resource Management project is part of the Kafue pilot project being implemented by the Ministry of Energy and Water Development through the Water Resources Action Programme (WRAP). WRAP is trying to develop a national strategy that will improve the management of water resources (surface and groundwater) throughout Zambia. It is hoped that this groundbreaking project will act as an example and catalyst for sustainable water resources management in the whole region, notably the wider Zambezi River basin.

Conservation method demonstrated

The following are the principal means by which WWF has been pursuing conservation and restoration of the Kafue Flats:

- Pursuit of 'win-win' scenarios – providing both socio-economic and biodiversity benefits – for seemingly conflicting stakeholders.
- Establishment of partnerships with key stakeholders, including traditionally non-conservation oriented sectors (e.g. electricity supply company, the sugar industry).
- Development of model sites (geared to concrete results on the ground) where 'ownership' of activities lies clearly with the partners, enabling WWF to play an initial catalytic role, but with a strategy for phased withdrawal leaving the partners to take forward the work themselves.
- Promotion of ecotourism as a means of diversifying economic opportunities within protected areas.

- Magnification – working in a sub-basin (Kafue Flats) as a potential launch pad for extending the conservation model to the whole (Zambezi) river basin.

Resources devoted

Phase I (1998-2002): EUR410,000 was used to develop the strategy for Kafue Flats.

Phase II (2002 onwards): WWF is contributing EUR622,941, with EUR186,000 being invested by other project partners (primarily as 'in kind' contributions), giving a total of EUR826,441.

Chronology

1998

- 'Partners for Wetlands – Kafue Flats, Zambia' initiated.

2000

- WWF, the Zambian Wildlife Authority and the tourism company Real Africa Safaris sign an agreement to work together to rehabilitate facilities and develop ecotourism in 50,000ha of Blue Lagoon National Park.

2001

- WWF, a local community chief and representatives of five commercial sugar farms sign an agreement to work together on establishing the 50,000ha Mwanachingwala Conservation Area.

2002

- February: launch of the Kafue Flats integrated water resources management project.
- June: development of an integrated water resources management strategy.
- June: launch of Phase II of Partners for Wetlands – Kafue Flats, Zambia and signing of a memorandum of understanding with the government of the Republic of Zambia.

2003

- Tripartite agreement signed by WWF, the Ministry of Energy and Water Development and the Zambian Electricity Supply Company.
- WWF, the Zambian Wildlife Authority and the tourism company Star of Africa sign an agreement to work together to rehabilitate facilities and develop ecotourism in 60,000ha of Lochinvar National Park.
- July: implementation of the new water management system for Kafue Flats begins.

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Lessons learnt

1. From the outset, the programme should be designed to allow it to be taken over and run by local stakeholders who have a lasting presence and interest in the area

2. The partnership approach is highly challenging, but once established can work very well
Key challenges are how to identify and contact partners, how to build relationships with them, how to overcome cultural differences with non-conservation oriented parties, and how to reach agreement.

3. It is difficult to find a balance between an opportunistic and a strategic approach
This requires a flexible set-up for the programme, for which a modular approach is recommended.

4. Start small and scale up
For Kafue Flats, it was decided not to initiate a complex, fully integrated process from the beginning, but to start with simple, small-scale activities. From this 'ground level' approach, a more integrated programme was gradually built up.

5. Good project design is rewarded during the course of project implementation

6. Keep explaining the strategic role of an organization like WWF
To avoid misunderstandings that may hamper securing programme goals, the role of an organization like WWF (as a catalyst and intermediary, not as an owner or long-term donor) must be explained continually to the project partners and other stakeholders.