



# The Ruaha Water Programme

## **The Rufiji Catchment**

Tanzania is the largest East African country, and the catchment area of the River Rufiji, in the South and South-west of the country, accounts for nearly 20 per cent of the country's area. The Great Ruaha River supplies 22 per cent of the total flow of the Rufiji catchment system. And the catchment of the River Rufiji plays a role of great importance in the country as a whole.

The Rufiji River rises in various tributaries, principally from the South-western Kipengere and Livingstone Mountain Ranges. Of these, three tributaries provide more than 90 per cent of the total flow of the Rufiji, and the largest of these tributaries is the Kilombero river, contributing up to 62 per cent of the total flow. Along its length, the tributary receives additional waters from the southward-flowing streams falling from the forests on the Udzungwa mountains.

From its headwaters, also in the Kipengere Mountains, the Great Ruaha River descends to the Usangu plains, a critically important region in Tanzania for irrigated agriculture (mostly rice) and livestock. The wetland system of the plains is also important for the households around the area and for the adjacent Usangu Game Reserve. The river eventually reaches the Mtera reservoir and then flows south to the Kidatu dam. These two dams together generate about 50 per cent of the Tanzania's electricity. The Ruaha continues southwards and cuts across the Selous Game Reserve before feeding into the Rufiji. The mangrove forest on the Rufiji delta is the largest in Africa.

The catchment of the River Rufiji lies entirely within the borders of Tanzania and plays a role of great importance in the country as a whole. While just 10 per cent of the country's population lives within the catchment, significantly larger proportions rely on the resources produced by the river. These include:

**Hydroelectric power** Power generation from the Mtera regulating reservoir and the downstream Kidatu Dam - both on the Great Ruaha River - currently supplies nearly 50 per cent of Tanzania's electricity. Whilst these two facilities were designed to produce 80 and 204 MW of power respectively, a further hydroelectric power station has just been commissioned along the Kihansi river (a tributary of the Kilombero river), which currently produces 180 MWs.

**Irrigation** Early identification of the extent of wetlands in three main areas of the Rufiji catchment has led to extensive exploitation of the areas for irrigated agriculture to provide rice, sugar cane and other crops. The floodplain wetlands of Usangu, Kilombero and the lower Ruaha/Rufiji have all been extensively developed for irrigation.

**Livestock** Major livestock rearing in the floodplain areas of Usangu and the Rufiji/Ruaha floodplain provides animal protein for the major urban centres of Mbeya, Iringa and even Dar-es-salaam.

### **Observed changes in the flow of Great Ruaha River**

Recent years have witnessed marked decreases in dry season flows in the Great Ruaha River. Decreased flows in the Great Ruaha have been recorded since the early 1990s resulting in complete drying of sections of the river in 1993. Initially, these dry periods lasted for a few weeks, but they have been on the increase, with a recorded period of 111 days in 1999 without any flow.

It should be noted however, that research indicates that the drying of the Great Ruaha river is not due to climatic variation, but due to uncontrolled and poor water management with the large rice irrigation schemes playing a major role.

### **What is happening?**

The British government's Department for International Development (DFID) has supported a project in the Usangu floodplains looking specifically at these problems. The DFID project SMUWC (Sustainable Management of the Usangu Water Catchment) monitoring indicates that:

- neither rain quantity nor seasonality have changed in the Kipengere Mountains and that streams feeding the river from the highlands are also fairly constant; but
- water levels within the Usangu plains have shown dramatic decreases, as has the outflow from Usangu to the Ruaha National Park.

In short, it appears likely that the principal problems - and solutions - lie in and around Usangu. The chief suspect at this point is poor irrigation management, although some debate lingers as to the role of livestock. Also, whilst overall water supply to the area would appear to be constant, it is probable that the distribution of flow over the year may be altering due not only to irrigation practises, but also as a result of depleted water retention in the upland areas of the Kipengere Hills, where increased deforestation for farming is also being noted.

### **The proposed Ruaha Water Programme**

Undoubtedly, an improved integrated water management plan for the area is essential, not only to provide the necessary available water for the ecosystems within the catchment, but also to provide sufficient water for irrigation, livestock, domestic consumption and hydroelectric power production downstream.

### **How can WWF further develop its work within the region to contribute to effective integrated water management of the entire Ruaha water catchment?**

- a) Work with existing authorities and institutions operating in, and responsible for, the catchment management practices towards the development of integrated best management approaches. These include:
  - The Rufiji Basin Development Authority (RUBADA)

- Ministry of Natural Resources and Tourism, including wildlife authorities
  - Local governments which implement central government policies and operations
  - Ministry of Natural Resources and Tourism, and local governments implementing central government policy and operations
  - The Sustainable Management of the Usangu Wetlands Catchment project (SMUWC), currently supported by DFID
  - Tanzania National Parks Authority (TANAPA)
  - Commercial farming operations eg rice farmers in Usangu, Kilombero Sugar Plantation
  - Other environmental and development organisations working in the region, eg IUCN, WCST, WaterAid etc.
  - TANESCO, the Tanzanian Electricity Company
  - Smallholders of livestock and irrigated farming
  - Large government-owned irrigated farms
  - Ministries of Water, Agriculture, and local government.
- b) Monitoring of quantitative and qualitative aspects of Ruaha river system in order to clarify existing problems and record future changes. For example, as well as qualitative concerns with respect to the flow in the catchment, concerns are already being raised with respect to the levels of agro-chemicals being used in the upper regions of the catchment.
- Also, the imposed changes on aquatic and land-based fauna and flora have already been noted, with shortage of water available to large animal species in Ruaha national park at times of river drying. Long-term effects on such animal populations need to be considered. Equally, the changes in land use as a result of agricultural development are affecting the seasonal movement of large animal species across the floodplains, such as movements of elephants and antelopes in the Kilombero and Ruaha floodplains, thus leading to increased human-wildlife conflicts.
- c) Support and facilitate the process to develop an environmentally acceptable integrated water management plan for the Ruaha catchment with the above institutions and other stakeholders that will be adopted for implementation.
- d) Support implementation of strategies that lead to reducing bad catchment and water-use management practices at the earliest possible time, suggesting, where possible, suitable alternatives.