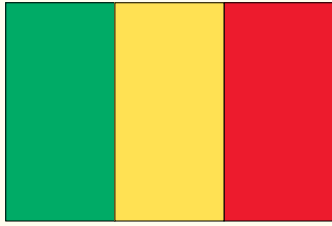




# Republic of Mali

**Total Surface Area: 1 240 192 km<sup>2</sup>**  
**Estimated Population in 2006: 13 918 000**



Mali is a large landlocked country stretching from the Sahara Desert in the north to the Niger and Senegal River Basins in the centre and south. Average rainfall is low, at only

280 mm per year, although there is a strong north-south gradient. As a result, the majority of economic activity, food production, and human settlement is concentrated in the more hospitable riverine areas of southern Mali. Between the cities of Tombouctou and Bamako, the Niger River forms a large inland delta, a unique geographical formation of streams, marshes, and lakes that provide important habitat for many plant and animal species.

## Important Environmental Issues

- Desertification and Drought
- Water Availability and Pollution
- Threats to Biodiversity



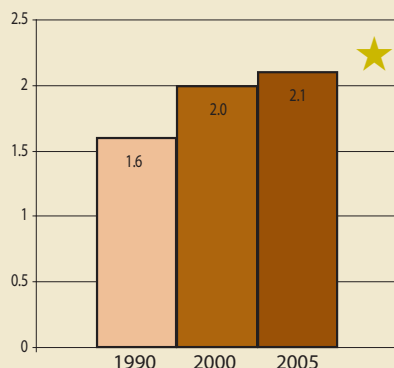
## Progress Towards Sustainability

As defined by the United Nations Millennium Development Goal 7 indicators

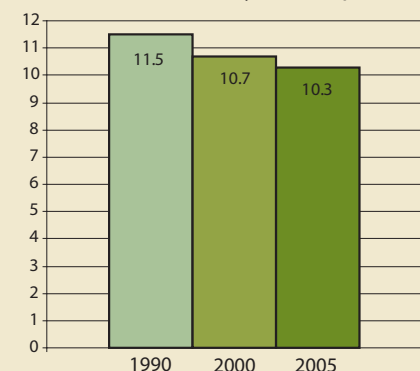
Wood is Mali's primary energy source. Overcutting for fuel is a serious problem that has resulted in the decline of forested area. The major environmental problem in Mali is increasing desertification. Mali—with one national park, four animal reserves, and six forest reserves—shows some improvement in the percentage of protected area to total surface area.

★ Indicates progress

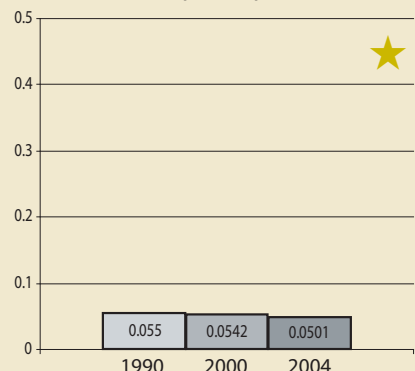
Protected Area to Total Surface Area in per cent



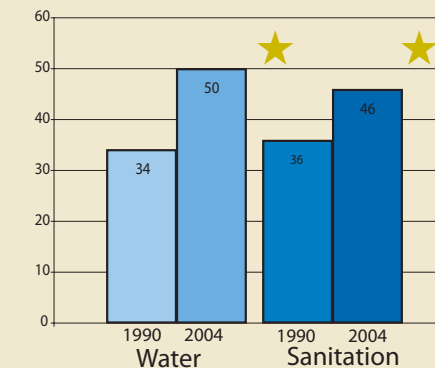
Land Area Covered by Forest, percentage



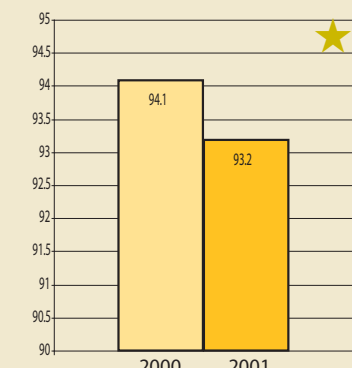
Carbon Dioxide Emissions (CO<sub>2</sub>), Metric Tonnes per Capita (CDIAC)



Access to Improved Water Source and Sanitation (per cent of total population)



Slum Population as per cent of Urban Population



**The Dogon people of Mali use an endemic plant (*Acridocarpus monodii*) as an effective remedy for malaria and various other illnesses.**

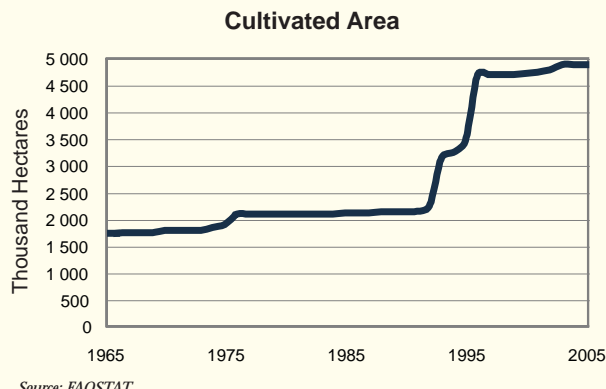


## Desertification and Drought

Prolonged drought is the greatest threat to livelihoods and ecosystems in Mali, and is a leading driver of desertification when combined with increasing human pressure on land resources. Mali is among the fastest growing countries in Africa with an annual population growth rate of nearly three per cent (UNESA 2005), resulting in the conversion of an estimated 100 000 hectares of land each year to cope with rising food needs (CBD 2001).

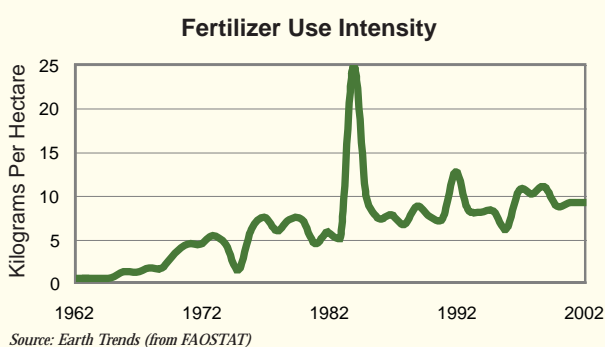
The use of fire to manage agricultural land is one of the leading causes of land degradation; an estimated 14.5 million hectares of pasture are burned each year, equivalent to 17 per cent of the country (CBD 2001). Overall, approximately 98 per cent of Mali's territory is at risk from desertification (FAO AGL 2003). The fertile areas

surrounding the Niger River are particularly vulnerable due to the high concentration of people and agriculture.



## Water Availability and Pollution

Mali's water supplies, like its population and agricultural areas, are unevenly distributed. The Sahara Desert covers over half of the country, but

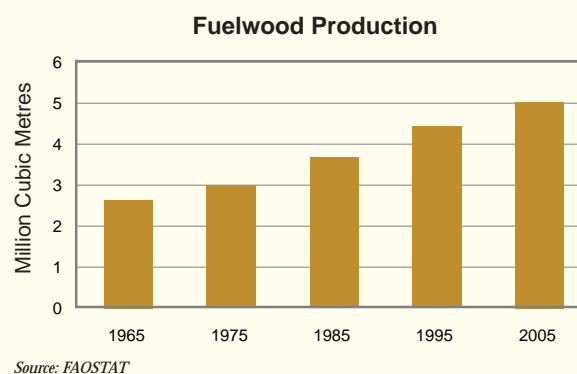


the Niger and Senegal River systems ensure that total water resources are relatively large. Only 50 per cent of the total population and 36 per cent of the rural population have access to an improved water source (UN 2007).

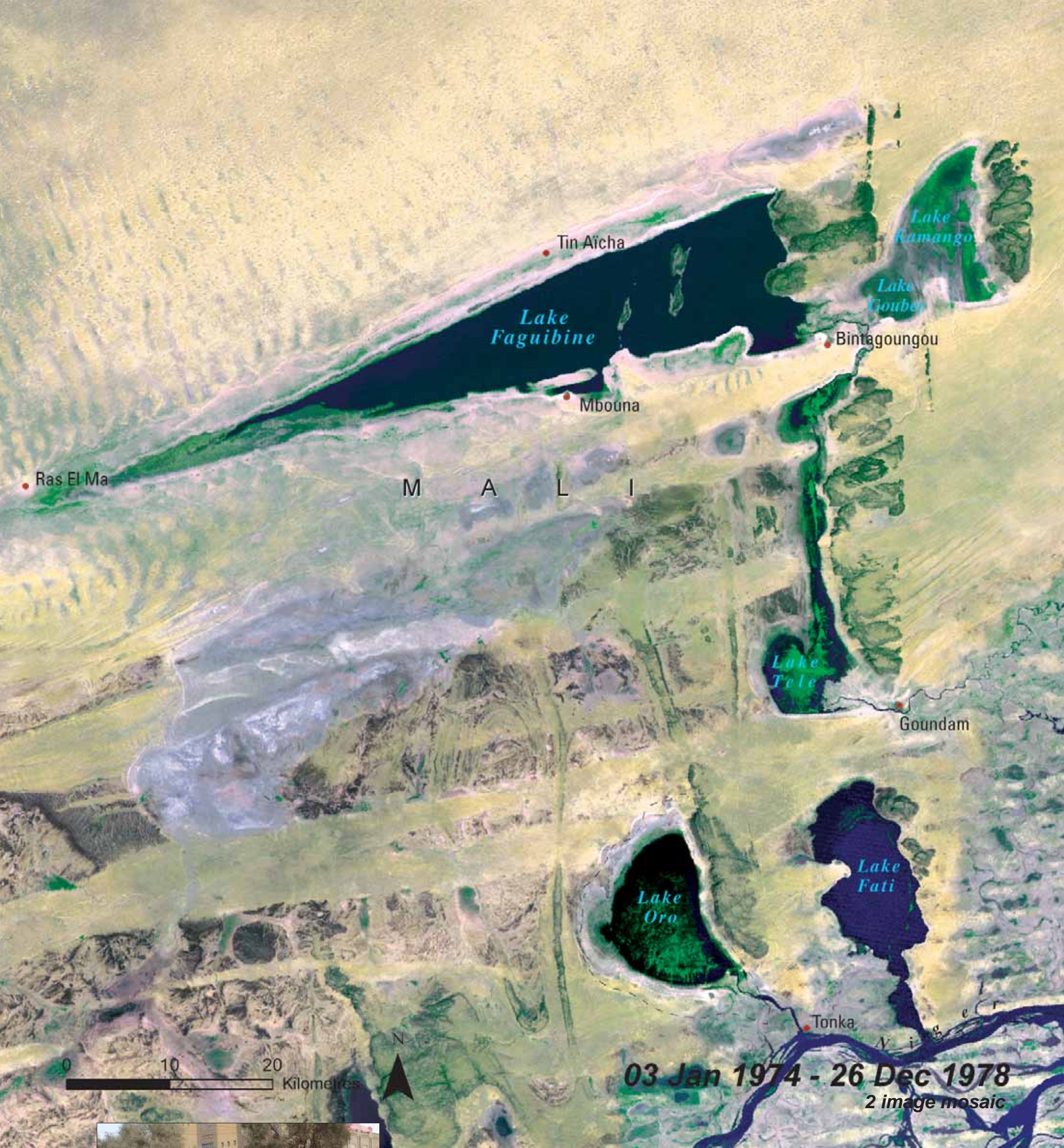
Pollution is another threat to Mali's water resources. Nearly all the commercial and residential effluent from the Malian capital of Bamako flows into the Niger River untreated (UN 2004). Other major sources of pollution include agricultural runoff of pesticides and fertilizer, and cyanide and sediment from gold mining activities.

## Threats to Biodiversity

Due to its varied ecosystems and climatic zones, Mali supports tremendous biodiversity including over 1 700 plant species and nearly 1 000 animal species. However, biological resources are over-exploited by the growing human population. Deforestation is a major problem, especially as demand for fuelwood and charcoal continues to rise. In 1997, deforestation caused economic damage amounting to an estimated 5.35 per cent of GDP (CBD 2001). In addition, fish species are threatened by over-harvesting, the use of chemicals and explosives for fishing, and water pollution.





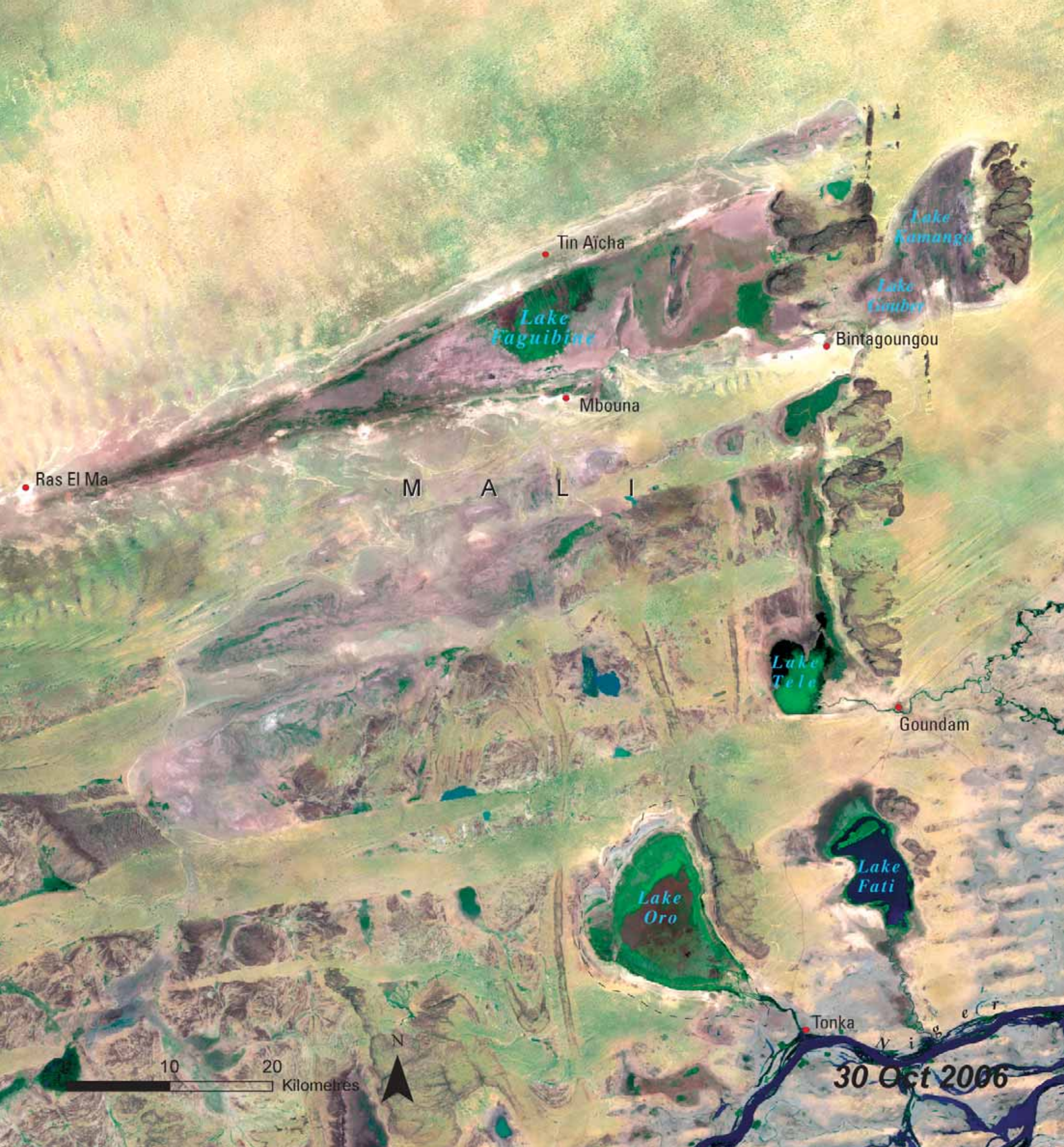


### The Drying Up of Lake Faguibine: Mali

When Mali's Lake Faguibine is full, it is among the largest lakes in West Africa—it covered an estimated 590 km<sup>2</sup> in 1974—and is an important source of water for the surrounding area. The lake is at the end of a series of basins that receive water from the Niger River when it floods. Thus, water levels in Lake Faguibine are closely tied to the flow of the Niger River. A lack of rainfall in the catchments of either the lake or the river can affect water levels in Lake Faguibine.

Water levels have fluctuated widely in Lake Faguibine since the beginning of the 20th century. However, in the late 1980s, an extended period of reduced precipitation led to a complete drying



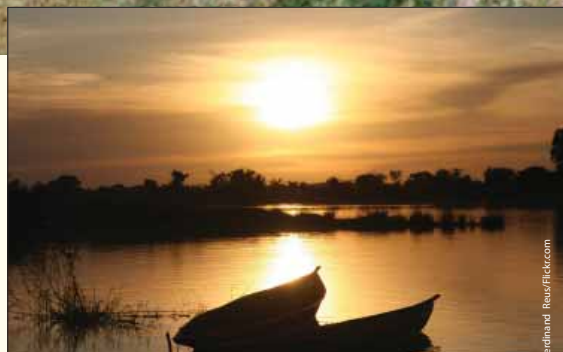


up of the lake in the 1990s, making the traditional livelihoods of fishing, agriculture, and pastoralism difficult if not impossible. Despite relatively normal rainfall in recent years, Lake Faguibine remains nearly dry.

A 2003 Columbia University study linked changes in sea surface temperature to drought in the Sahel during the 1970s and 1980s. More recent research has linked sea surface temperatures to human induced global warming. As global warming intensifies, there may be more change in store for West Africa and for the people who depend on water resources such as Lake Faguibine for their livelihoods.





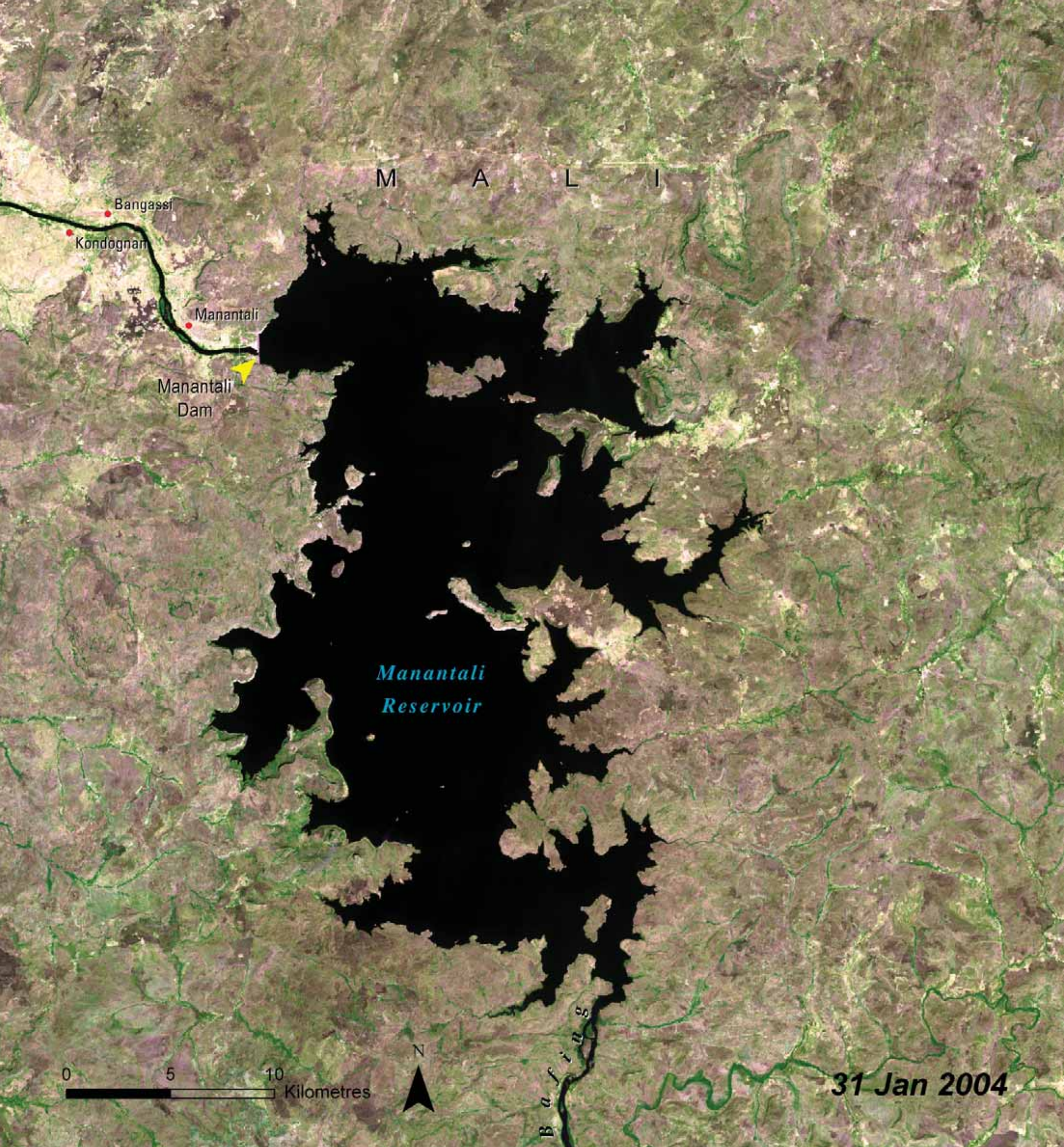


### Consequences of Manantali Dam: Mali

Seasonal rainfall at the source of the Bafing River in Guinea has historically led to seasonal flooding along the Senegal River, which receives over half of its flow from the Bafing. Prior to the 1970s, this pattern of inundation provided the basis for flood recession agriculture that supported hundreds of thousands of people.

Drought in the 1970s, however, spurred the formation of the multinational Organization for the Development of the Senegal River (OMVS) to develop irrigation, power generation, and navigation. The Manantali Dam in western Mali was one of two large dams built as part of the





OMVS project. These images show the vast extent of land inundated by the filling of the dam's reservoir. Roughly 10 000 to 11 000 thousand people were displaced above the dam.

Below the dam, loss of the normal annual cycle of flood and recession reduced traditional agriculture substantially. Village-scale irrigation schemes have had limited capital for equipment and have been constructed without adequate drainage, resulting in soil salinisation. Flood recession farming was shown to give small farmers a better return with less risk than irrigated rice. Reduced flooding may also be contributing to deforestation along the Senegal River. The Manantali Dam did not produce any hydroelectric power until 13 years after its completion, and only after additional money was provided by the World Bank and others.

