GUINEA

Source: esri

General

Guinea - officially the Republic of Guinea – was formerly known as French Guinea and is sometimes referred to as Guinea-Conakry. It is bordered by Guinea-Bissau, Senegal and Mali in the North, Ivory Coast in the East, Liberia and Sierra Leone in the South and the Atlantic Ocean in the West. Its area is 24.6 Mha (million hectares) with, in 2024, a population of 14.8 million, or 0.6 persons per ha (Wikipedia and United Nations, 2024).

Climate and geography

The coastal region and much of the inland area have a tropical climate with a rainy season of six months, a relatively high and uniform annual temperature, and high humidity (source: Wikipedia).

Guinea is divided into 4 regions: Maritime Guinea, also known as Lower Guinea, the cooler, more mountainous Fouta Djallon that run roughly North–South through the middle of the country, the Sahelian Haute-Guinea in the Northeast, and the forested jungle regions in the Southeast. Guinea's mountains are the source for the Niger, Gambia and Senegal Rivers, and rivers flowing to the sea in the west side of the range in Sierra Leone and Ivory Coast.

In West Africa, rice farming is the main mode of exploitation in the mangrove plains, which stretch over 3.5 million hectares, from Senegal to Sierra Leone. In some of the marshes the natural productivity declines as a result of drought or inadequate development. Despite favourable natural conditions, mangrove rice fields in Guinea provide only 16% of the country's production. The modest performance of the rice fields in the coastal plains is due to inadequate strategies of intensification of production and to the constraints of traditional developments.

The Office for Official Publications of the European Communities (CEC) (1992) and Sylla (1994) described that mangrove rice growing started in the middle of the 18th century in Guinea and Sierra Leone. Traditional systems are still the most widespread and they are applied, for example in Guinea, Gambia, Guinea-Bissau (*bolanha* system), Senegal (*diola* system) and Sierra Leone. The tidal rice cultivation system practiced in Guinea, Gambia and Sierra Leone consists of flooded rice cultivation during the seasonal period of fresh water flows in the major rivers. The traditional systems of rice cultivation have functioned well until the persisting droughts started in 1969. The most affected zones are mainly in the northern, and drier part of coastal West Africa, including Senegal, Gambia, Guinea-Bissau and to some extent Guinea.

The Institute de Recherche pour le Développement (IRD) (2000) described that over the last half century large-scale rice-growing projects have been undertaken in the coastal area for several thousand hectares. These developments were often not suited to the characteristics of the ecosystem (diversity of soil facies, instability of water and sediment conditions). The cultivation and maintenance of these areas also required substantial civil engineering work. In the more or less long-term, productivity dropped to yields similar to those of the traditional rice fields, *bougouni*. The *bougouni*, which belong to a secular tradition, require a large workforce, but their operating costs are low. However, their cultivation practices lead to soil acidification, causing nutrient deficiencies (especially nitrogen and phosphorus) necessary for plant growth. The fertility of the lands and the yields decreased. The rice farmers were finally forced to abandon them and to clear new mangroves.

A check on Google Earth shows that there should be various polders in the coastal zone. However, so far no documentation could be found on these polders.

Existing polders

Polder experimental Yangoha. The only polder for which documentation could be found is the experimental polder of Yangoha (IRD, 2000). Researchers from the Boussoura National Fisheries Science Centre (CNSHB) with scientific support from IRD carried out a rehabilitation trial in this polder

with promising results. As a modernized version of the traditional *bougouni* rice fields, this original 10 hectare development not far from Conakry is based on the principle of alternate management of sea water and fresh water. Simple and inexpensive, it allowed a significant improvement in production. Three years after its establishment, yields reached nearly three tons per hectare, five times that of the surrounding rice fields. In the dry season seawater enters the compartments by means of valves and is retained by means of a non-return valve in the inlet/outlet. The intrusion of seawater makes it possible to neutralize the excessive acidity of the soils. Moreover, thanks to the mud supplied by the tide and the mineral salts contained in the sea water, the fertility of the soils is naturally reconstituted without the addition of a mineral fertilizer. During the rainy season, when the rainfall is over four metres in six months, the rains leach the seawater and desalinate the soils, allowing a good growth of the rice. If the rainfall is excessive, the water is discharged through the valves. If, on the contrary, it is insufficient, a reservoir of water upstream of the polder and connected to the fields by canals can activate the desalination of the soils, or irrigate the rice fields.

This trial showed that well managed sea water is a determining factor for the rehabilitation and fertilization of rice fields. The development allowed a significant improvement in yields. In addition, the experimental polder induced other beneficial effects: development of fish farming in ponds, market gardening around the reservoir, restoration of canoe transport allowing a better disposal of agricultural products.

Beyond its agronomic repercussions, the polder has resulted in a change in farmers' practices. A new more lucrative production system, based on pluri-activity, has emerged in the region.

- inlet of the sea water entering the interior and at the edge of which the mangroves grow;
- plots cultivated and separated by small dikes that retain water.

Bos *et al*. (2006) mentioned two polder complexes, near Koba and Monchon.
General characteristics of the polders in Guinea are shown in Table I.

Proposed polders

No proposed polder could be identified.

Location of the polders in Guinea as shown on the World polder map

The location of the polders in Guinea is shown in Figure 1.

Figure 1. Location of the polders in Guinea (source: esri – Batavialand)

References

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Table I. General characteristics of existing polders in Guinea

Name	Reclamation	Area in ha	Type *)	Latitudes	Longitudes	Elevation in m+MSL	Land use
Existing polders							
Polder near Koba	1950-1990	>1,000	RLL	9º 55' N	13º 52' W	5	Agriculture
Polder experimental de Yangoha	1997	10	LGS				Nature and agriculture
Polder near Monchon			RLL	10º 26' N	14º 28' W	5	Agriculture
Proposed polders							
Polder near Tobor							
Total		>1,010					

*) RLL = reclaimed low-lying land; LGS = land gained on the sea; DL = drained lake