

MADAGASCAR



General

Madagascar - officially the Republic of Madagascar - is an island country in the Indian Ocean, off the coast of Southeast Africa. The country comprises the island of Madagascar - the fourth-largest island in the world - and numerous smaller peripheral islands. Its area is 58.7 Mha (million hectares) with in 2022 a population of 29.6 million, or 0.50 persons per ha (Wikipedia and United Nations, 2022).

Climate and geography

Source: esri

The combination of southeastern trade winds and northwestern monsoons produces a hot rainy season (November - April) with frequently destructive cyclones, and a relatively cooler dry season (May - October). Rain originating from the Indian Ocean mainly falls at the eastern coastal area. The Central Highlands are drier and cooler, while the West is drier. A semi-arid climate prevails in the southwest and southern interior of the island. Tropical cyclones annually cause damage to infrastructure and local economies as well as loss of life. In 2004 Cyclone Gafilo was the strongest cyclone ever recorded to hit Madagascar (source: Wikipedia).

Along the length of the eastern coast runs a narrow and steep ridge containing much of the island's remaining tropical lowland forest. To the West of this ridge lies a plateau in the centre of the island ranging from 750 to 1,500 m+MSL (mean sea level). To the West of the highlands, the increasingly arid terrain gradually slopes down to the Mozambique Channel and mangrove swamps along the coast. To the East, the Canal des Pangalanes is a chain of man-made and natural lakes connected by canals built by the French just inland from the east coast and running parallel to it for some 600 km. The western coast features many harbours, where silting is a major problem caused by sediment from the high levels of inland erosion carried by rivers crossing the broad western plains (source: Wikipedia).

Existing polders

Lake Alaorta is situated about 750 m+MSL. Mainly along the south-western border of Lake Alaorta some polders exist (Group Polder Development, 1982). The lake suffers from a declining water level and heavy sedimentation. The World Bank has been involved in the Lake Alaotra Irrigation Project. Although not specifically mentioned in the report, this project also included polder development with drainage at 12,000 ha at the locations as shown in Figure 1 (World Bank, 1992).

In the Mahajanga Area some semi-impoldered forelands exist (Group Polder Development, 1982). However, it is difficult to identify where they exactly are.

Although not specifically mentioned the Soavina Scheme is also a polder, while there is a dike, a drainage system and a drainage outlet (Figure 2) (World Bank, 1995).

General characteristics of existing polders in Madagascar are shown in Table I.



*Landscape in Lake Alaotra area
(picture Alluring World)*



*Rice cultivation in the Lake Alaotra area
(picture Madagascar Wildlife Conservation)*

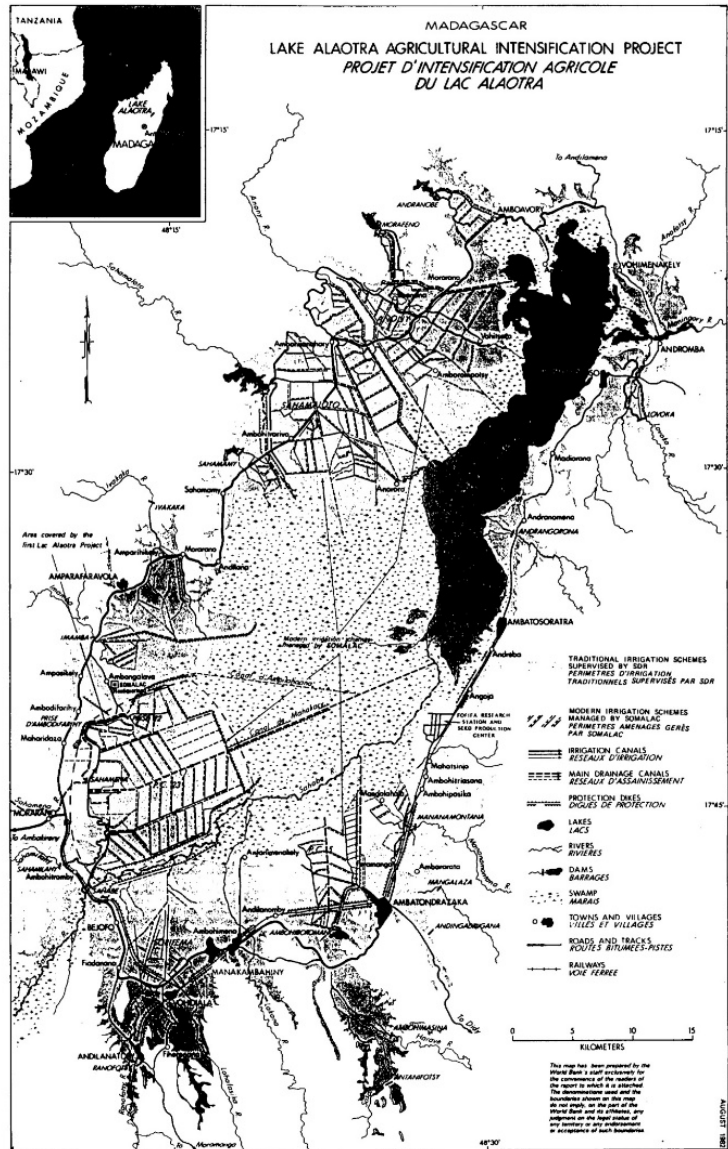


Figure 1. Lake Alaotra Agricultural Intensification Project (World Bank, 1992)

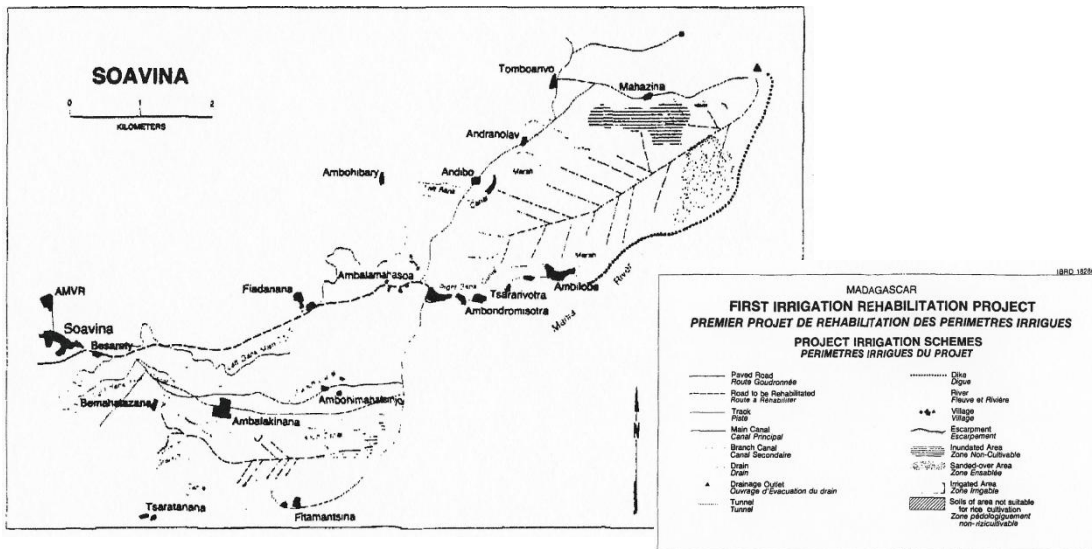


Figure 2. Soavine Scheme (World Bank, 1995)

Proposed polders

Plans and designs have been made for the extension of the polder area mainly along the south-western border of Lake Alaotra. The potential polder area is estimated at some 20,000 ha (Group Polder Development, 1982).

In the Maroantsetra Region the construction of three polders was under consideration (Group Polder Development, 1982):

- polder for coconut cultivation 302 ha;
- polder for bananas cultivation 1,210 ha;
- polder for general agricultural cultivation 7,800 ha.



*Rice cultivation in Lake Alaotra area
(source Google)*



*Ploughing in the Lake Alaotra area
(source Britannica)*

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

The location of the polders in Madagascar is shown in Figure 3.



Figure 3. Location of the polders in Madagascar (source: esri – Batavialand)

The pictures by Prof. Adriaan Volker are shown in Table II.

References

- Group Polder Development, Department of Civil Engineering, Delft University of Technology, 1982. *Polders of the World. Compendium of polder projects*. Delft, the Netherlands.
- United Nations, Department of Economic and Social Affairs, Population Division. 2022. *World population prospects, medium prognosis*. The 2022 revision. New York, USA.
- World Bank, 1992. *Lac Alaotra rice intensification project*. Project completion report. Washington DC, USA.
- World Bank, 1995. *Irrigation rehabilitation project*. Project completion report. Washington DC, USA.

Bart Schultz





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Table I. General characteristics of the polders in Madagascar

| Name | Reclamation | Area in ha | Type *) | Latitudes | Longitudes | Elevation in m+MSL | Land use |
|---|-------------|-----------------------|---------|-----------|------------|--------------------|-------------|
| <i>Existing polders</i> | | | | | | | |
| South-western bank of Lake Alaorta | | 12,000 | RLL | 17° 31' S | 48° 24' E | 756 | Agriculture |
| Mahajanga Area | | | LGS | 15° 43' S | 46° 20' E | 5 | Urban |
| Soavina Scheme | | 1,200 | RLL | 20° 23' S | 46° 55' E | 1079 | Agriculture |
| Sub-total | | 13,200 | | | | | |
| <i>Proposed polders</i> | | | | | | | |
| South-western bank of Lake Alaorta | | | | | | | |
| Maroantsetra Region: | | | | | | | |
| <ul style="list-style-type: none"> • Polder for coconut cultivation; • Polder for bananas cultivation; • Polder for general agricultural cultivation | | 302 1,210 7,800 | | | | | |
| Sub-total | | 9,312 | | | | | |

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

Table III. Pictures by Prof. Adriaan Volker

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|---|--|---|---|
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| <p>A6 001/II.6.1 Prof. Adriaan Volker on board in the helicopter. Presumably May 1980</p> | <p>A6 002/II.6.2 Prof. Adriaan Volker in speed boat. Presumably May 1980</p> | <p>A6 002A/II.6.2A Prof. Adriaan Volker on the quay side. Presumably May 1980</p> | <p>A6 003/II.6.3 Prof. Adriaan Volker with probably local director. Presumably May 1980</p> |