

ETHIOPIA



Source: esri

General

Ethiopia - officially the Federal Democratic Republic of Ethiopia - is a landlocked country in the Horn of Africa. It shares borders with Eritrea in the North, Djibouti in the Northeast, Somalia in the East and Northeast, Kenya in the South, South Sudan in the West and Sudan in the Northwest. The country has an area of 110 Mha (million hectares) with, in 2024, a population of 114 million, or 1.0 persons per ha (Wikipedia and United Nations, 2024)

Climate and geography

The predominant climate type is tropical monsoon, with wide topographic induced variation. Ethiopia is vulnerable to many of the effects of climate change. These include increases in temperature and changes in precipitation (source: Wikipedia).

Within Ethiopia is a vast highland complex of mountains and plateaus divided by the Great Rift Valley, which runs generally from Southwest to Northeast. It is surrounded by lowlands, steppes, or semi-desert. There is a great diversity of terrain with wide variations in climate, soils, natural vegetation and settlement patterns (source: Wikipedia).

Existing polders

Woudeneh (1987a) described that the irrigated areas in the Middle Awash Valley at both sides of the river have to be protected against flooding with about 2 m high dikes (Figure 1). An area of 5,000 ha is also provided with drainage systems. This implies that they are polders. He gave information about the design criteria for the dikes and the drainage systems. At Google Earth it can be observed that there are indeed polders in this area. In addition he gave information on the Melka Sadi Pilot Drainage Scheme (Woubeneh, 1987b).

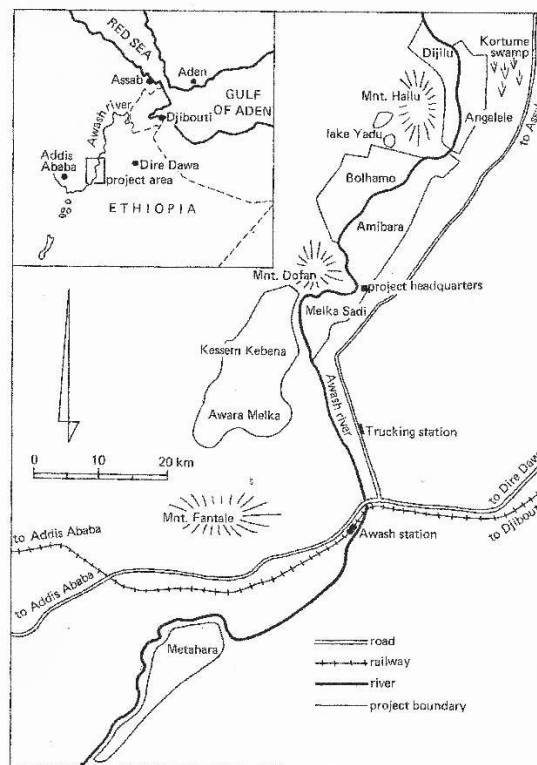


Figure 1. Middle Awash Valley where the polders are located (Woudeneh, 1987)

General characteristics of the polders in Ethiopia are shown in Table I. Characteristics of the water management and flood protection systems are shown in Table II.

Proposed polders

Woudeneh (1987a) shows a Table with an indicative drainage plan with a total of 39,650 ha surface drainage systems (Table III). Not all this drainage will imply polder development, but a certain part of it will.

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

The location of the polders in Ethiopia is shown in Figure 2.



Figure 2. Location of the polders in Ethiopia (source: esri – Batavialand)

References

- Sir William Halcrow and Partners, 1985. *Master drainage plan for Melka Said and Amibara areas*. Government of Ethiopia. Water Resources Development Authority.
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- Woudeneh, T., 1987a. *Development of drainage in the Middle Awash Valley in Ethiopia*. In: J. Vos (ed.). Twenty-five years of drainage experience. Proceedings, Symposium 25th International Course on Land Drainage, 24-28 November 1986. International Institute for Land Reclamation and Improvement (ILRI) and International Agricultural Centre (IAC). Wageningen, the Netherlands.
- Woudeneh, T., 1987b. *The Melka Sadi Pilot Drainage Scheme*. . In: J. Vos (ed.). Twenty-five years of drainage experience. Proceedings, Symposium 25th International Course on Land Drainage, 24-28 November 1986. International Institute for Land Reclamation and Improvement (ILRI) and International Agricultural Centre (IAC). Wageningen, the Netherlands.

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Table I. General characteristics of existing polders in Ethiopia

Name	Reclamation	Area in ha	Type *)	Latitudes	Longitudes	Elevation in m+MSL	Land use
Polders in the Middle Awash River Valley		5,000	RLL	9° 24' N	40° 12' E	745 m+MSL	Agriculture
Total		5,000					

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

Table II. Characteristics of the water management and flood protection system of existing polders in Ethiopia

Name	Design criteria in chance of occurrence/year						
	Water management					Flood protection in chance/year	
	Type	Design criterion	Percentage of open water	Drainage		Irrigation	Rural
				Discharge capacity			
			m ³ /s	mm/day			
Polders in the Middle Awash River Valley	RLL	Surface drains 0.15 l/s/ha			1.3	1/20 - 2 m high dikes	
		Subsurface drains, 2 m-surface			2.5		

Table III. Indicative drainage implementation plan in ha (Wubeneh, 1987a)

	1985			1990			1995			2000			Total		
	Irr*)	Sur dr	Sub dr	Irr	Sur dr	Sub dr	Irr	Sur dr	Sub dr	Irr	Sur dr	Sub dr	Irr	Sur dr	Sub dr
Kesem and Kebena	1,200			4,000	5,200	1,000	6,800	6,800				6,000	12,000	12,000	7,000
Bolhamo	1,400			5,600	7,000				1,050			3,550	7,000	7,000	4,600
Melka Sadi and Amibara	12,400	7,200	30	1,800	7,000	4,720			5,500			3,900	14,200	14,200	14,200
Angelele Digilu				3,000	3,000		1,500	1,500		1,950	1,950	3,000	6,450	6,450	3,000
Total	15,000	7,200	30	14,400	22,200	5,720	8,300	8,300	6,600	1,950	1,950	16,450	39,650	39,650	28,800

*) Irr = irrigation, Sur dr = surface drainage, Sub dr = subsurface drainage