GHANA

Source: esri

General

Ghana - officially the Republic of Ghana - is bordered by Ivory Coast in the West, Burkina Faso in the North, Togo in the East and the Gulf of Guinea and the Atlantic Ocean in the South. Its area is 23.9 Mha (million hectares) with in 2020 a population of 31.1 million, or 1.30 persons per ha (Wikipedia and United Nations, 2019).

Climate and geography

Ghana is geographically closer to the *centre* of the Earth geographical coordinates than any other country. The climate of Ghana is tropical, with a wet season and a dry season. Climate change is expected to have wide reaching impacts on the country. Because it is at the intersection of three hydro-climatic zones, the climate of Ghana is expected to become incredibly variable. Changes in rainfall, other extreme weather and sea level rise and salinity of coastal waters, is expected to negatively affect food security, in both farming and in fisheries (source: Wikipedia).

Grasslands mixed with south coastal shrublands and forests dominate Ghana, with forest extending northward from the south-west coast of Ghana on the Gulf of Guinea in the Atlantic Ocean 320 km and eastward for a maximum of about 270 km. Ghana encompasses plains, waterfalls, low hills, rivers, Lake Volta, the world's largest reservoir (source: Wikipedia). Codjoe *et al*. (2019) mention that the completion of the Akosombo Dam in 1965 and of the Kpong Dam in 1982 in the Volta River have had quite some impact on the flow of the river downstream. In addition the sediment flow has been drastically reduced.

Existing polders

Komenda Sugar Project (Group Polder Development, 1982). It looks like this project was abandoned, but that in 2014 reactivation started (General News, 2014). Although the debate in this paper is on the required finances, it also contains a brief historic overview of the development of the Sugarcane factory and estates. Based on the Google Earth map it could be determined that some of these estates are in polders.

Polders along Volta River. At Google Earth it can be observed that there are several polders in the Volta River basin. Their area still has to be determined.

The general characteristics of the polders in Ghana are shown in Table I.

Proposed polders

Angaw Basin Project. It has been proposed to close the mouth of the Angaw Creek by a dam with a discharge sluice. This would prevent inflow of sea water and allow lowering of the water level in the Angaw Creek. In addition a dike was projected along the Volta river to prevent inundation at high discharges (Group Polder Development, 1982). Check on Google Earth showed that this proposal has most probably not been implemented.

Note:
Keta Sea Defence (Wikipedia; Nairn *et al.*, 1998, 2003; Tsikata, 2016). The Keta Sea Defense Program was performed to protect and stabilize the shoreline from Keta to Hlorve in Ghana. The company Great Lakes Dredge and Docks (GLDD) completed this design and construct project. The main goals for this project entailed preventing chronic and periodic coastal erosion and flooding, reclaiming land from the Keta Lagoon to expand town and village territories, and building a road/causeway linking the villages from Keta to Hlorve. Based on the video by Rkrikari (2017) it can be concluded that this is not a polder.

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Lelystad, 19 october 2020
Bart Schultz

Table I. General characteristics of existing polders in Ghana

Name	Reclamation	Area in ha	Type *)	Latitudes	Longitudes	Elevation in m+MSL	Land use
Existing polders							
Komenda Sugar Project				5^o 04’ N	1^o 30’ W		Under reactivation
Polders in Volta River Basin				5^o 53’ N	0^o 35’ O		
Total							

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