

PILOT BASINS IN FLOOD AND DROUGHT MANAGEMENT TOOLS PROJECT: VOLTA BASIN

The Volta Basin covers approximately 400,000 km² of the sub-humid to semi-arid West-African savannah zone. It is the ninth largest basin in Sub-Saharan Africa, and is shared by six riparian countries: Benin, Burkina Faso, Côte d'Ivoire, Ghana, Mali and Togo.

The Volta Basin is one of the 3 pilot basins in the Flood and Drought Management Tools Project (FDMT) which will be developing and testing the decision support system (DSS) which provides information to integrate flood and drought information into planning.

The Volta Basin was selected as a pilot basin as it represents a basin where there is irregular flooding and drought, in a drought prone region. The catchment is developing with increased urbanization, expansion of agriculture and investment in infrastructure such as hydropower.

Agriculture generates about 40% of the economic output. Ghana uses water to generate hydropower, including the Akosombo and Kpong dams, which support major industries, such as mining, aluminum etc. In Burkina Faso the development of water resources in rural areas for household use, livestock and irrigation is most important.

Some of the key issues impacting social and economic development and environmental sustainability include:

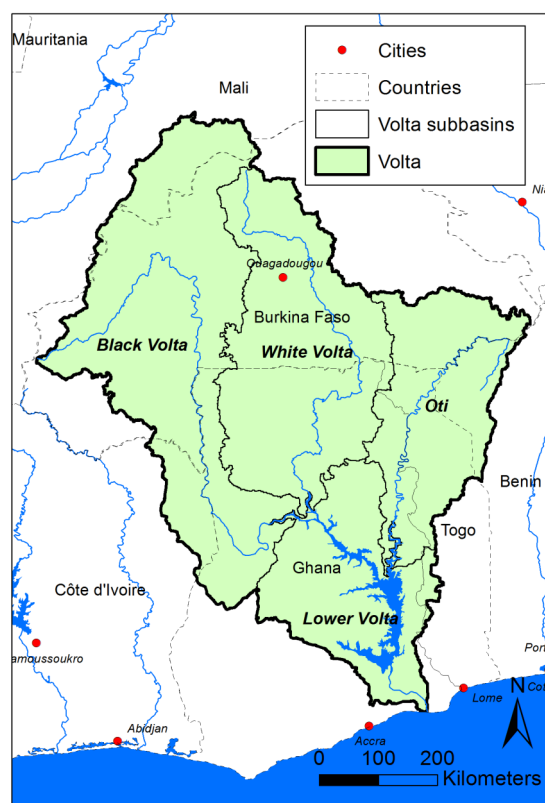
- ⇒ Decrease in water availability
- ⇒ Irregular flood and drought events
- ⇒ Reduced hydropower generation
- ⇒ Ecosystem degradation
- ⇒ Poor management of water infrastructure
- ⇒ Poor socio-economic infrastructure
- ⇒ Transboundary tension
- ⇒ Limited human and institutional capacities
- ⇒ Widespread poverty
- ⇒ Growing population

Catchment area: 407,093 km²

Population: 23,000,000

Urban population: 30%

Major urban areas (>80,000 people): Ouagadougou, Bobo-Dioulasso, Ouahigouy, Tamale, Wa, Kara



The **Flood and Drought Management Tools (FDMT) project** is funded by the Global Environment Facility (GEF) International Waters (IW) and implemented by UNEP, with the International Water Association (IWA) and DHI as the executing agencies. The project is developing a computer software-based decision support system (DSS) which has tools to support planning from the transboundary basin to water utility level by including better information on floods and droughts. The project is being implemented from 2014 - 2018, and 3 pilot basins (Volta, Lake Victoria and Chao Phraya) have been identified for development and testing of the DSS.

Projects and initiatives of key relevance for the FDMT project

The Volta Basin Observatory project, funded by the French Development Agency (AFD), aims to promote the creation of the Centre of Water Resources and Associated Communities, and to support the Volta Basin Authority (VBA) in making a diagnosis on water needs and available resources.

The Volta-HYCOS Project, funded by the French Global Environment Facility (FFEM) and the French Development Agency (AFD), aims to develop the necessary regional framework, and underlying technical infrastructure of data collection and management, for exchange of information on the status of water resources, to assist national and regional development.

The Volta River Basin Strategic Action Program Implementation Project, funded by the Global Environment Facility (GEF), improves the capacity of the Volta Basin Authority for transboundary water resources management.

The project accomplishes this through development activities that address institutional weaknesses and implementation of priority actions of the Strategic Action Programme (SAP). This will result in direct environmental and livelihoods benefits.

The West African Science Service Center on Climate Change and Adapted Land Use (WASCAL), funded by the German Federal Ministry of Education and Research (BMBF), is a large-scale, research-focused Climate Service Center designed to help tackle this challenge and enhance the resilience of human and environmental systems to climate change and increased variability.

The Integrated Drought Management Programme (IDMP) is a joint initiative of the World Meteorological Organization (WMO) and the Global Water Partnership (GWP). The IDMP supports stakeholders at all levels by providing policy and management guidance and by sharing scientific information and best practices for Integrated Drought Management. The programme aims to build climate resilience, reduce economic and social losses and alleviate poverty in drought-affected regions worldwide.

Impacts of Flood and Drought

Ghana has a high risk of weather related hazards, including landslides, coastal erosion, urban floods, farmland flooding and dry spells. Floods and droughts are of concern especially in the northern part of the country. There was a serious drought in 1982 which caused vast wild fires throughout the country, while thousands of hectares of farmlands were destroyed by several major floods between 1991 and 2008.

Flooding often has a transboundary element, as it results from extreme rainfall events and uncontrolled dam releases from the upper part of the basin. In 2007 and 2009, severe floods in Burkina Faso forced officials to open the main gate of the Bagré dam, located near the Ghana border, threatening local populations in both countries with additional flooding.



Future changes

Water resources in the basin depend mostly on rain water. For this reason the Volta Basin is particularly threatened by changes in precipitation patterns due to climate change. Overall the predicted negative impacts of climate change include increasing temperature, reduced rainfall / reduced availability of water, water quality deterioration, reduced hydropower generation, spread of water-related diseases and increased poverty.

Deforestation and growing populations are expected to place additional pressure on the basin. Population is predicted to increase at a rate of about 3%, reaching 34 million people by 2025.

Key stakeholders

ORGANISATION

Volta Basin Authority (VBA)

WATER UTILITIES

Ghana Water Company Limited (GW), National Office for Water and Sanitation (ONEA).

FDMT project in the basin

The project will focus on Burkina Faso and Ghana, which occupy around 85 % of the basin, while the remaining countries in the basin will be indirectly engaged through VBA. At the national level, the project is engaging with water management institutions in Ghana including the Water Resource Commission of Ghana and Environment Protection Agency; and the Permanent Secretariat for the IWRM Plan of Action in Burkina Faso. The DSS development and testing in the Volta Basin will focus on data management and visualisation including the operation use of remote sensing data and seasonal forecasting. There will also be integration of water balance tools on different scales as this is key for planning on the basin and sub-basin level.

At the regional level, the project will work closely with the Economic Community of West African States (ECOWAS) for dissemination and collection of information. Since data is often lacking or not validated, a big challenge for the project will be to promote collaboration and knowledge sharing between institutions and across scales (from catchment to water utility).

Project website: <http://fdmt.iwlearn.org/>

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