The Volta Basin in West Africa

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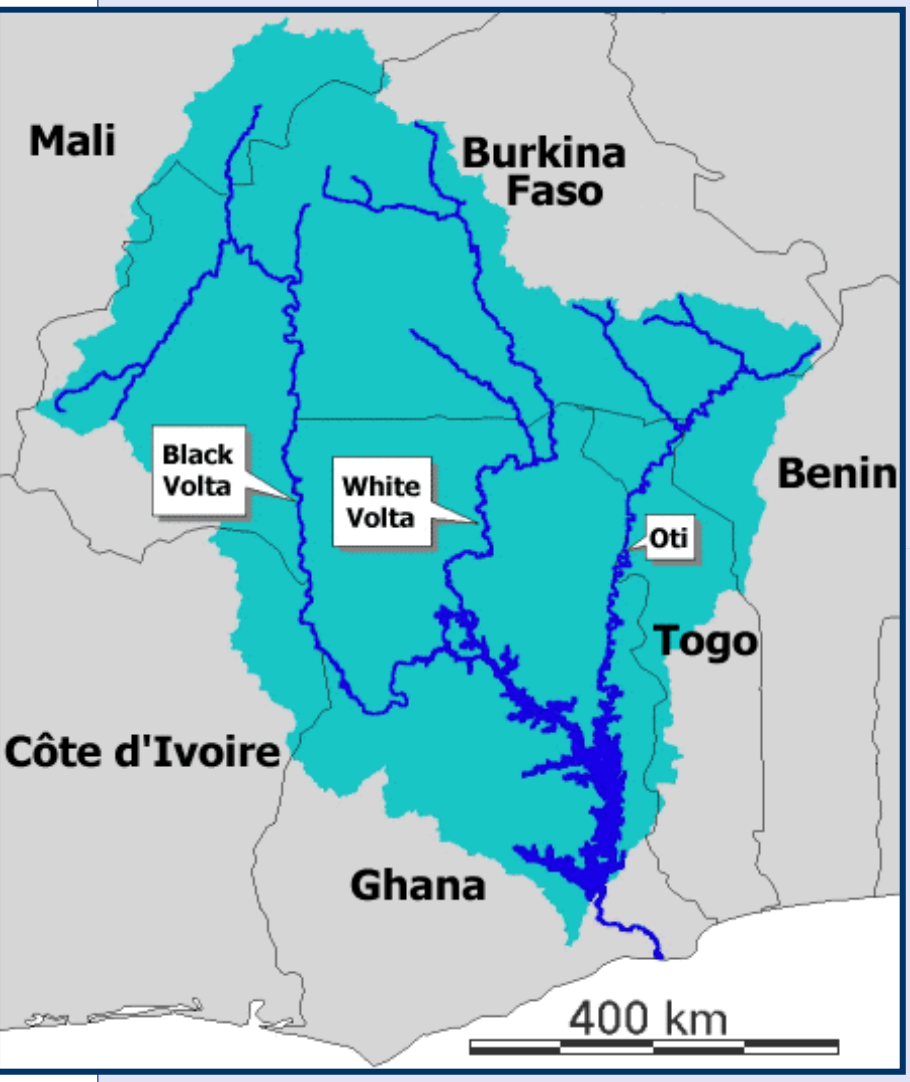
Global Water System Project (Global Catchment Initiative)

Overview

1. Introduction to the Volta basin
2. Answers to questions: Theme 1
3. Answers to questions: Theme 2
4. Answers to questions: Theme 3

2. The Volta Basin



- 400.000 km², 6 riparian states, culturally diverse area
- 15-20 Mio. inhabitants (+2,5%/year)
- 70-90% subsistence farmers
- investments in irrigation
- diverse land and water managem't
- average rainfall 1000 mm/ year, steep gradients
- Black and White Volta, Oti are main tributaries, Lake Volta (Akosombo Dam) largest hydrological structure
- manufacturing industries (Ghana)
- competition for water and natural resources

Theme 1: Magnitudes of anthropogenic and environmental changes

- How does global change manifest in particular catchments?

Climate changes, changing rainfall patterns, increasing environmental stresses, population growth, pre-colonial and colonial political and administrative impositions, recent institutional and legal reforms

- How do these changes affect the characteristics of the particular catchments?

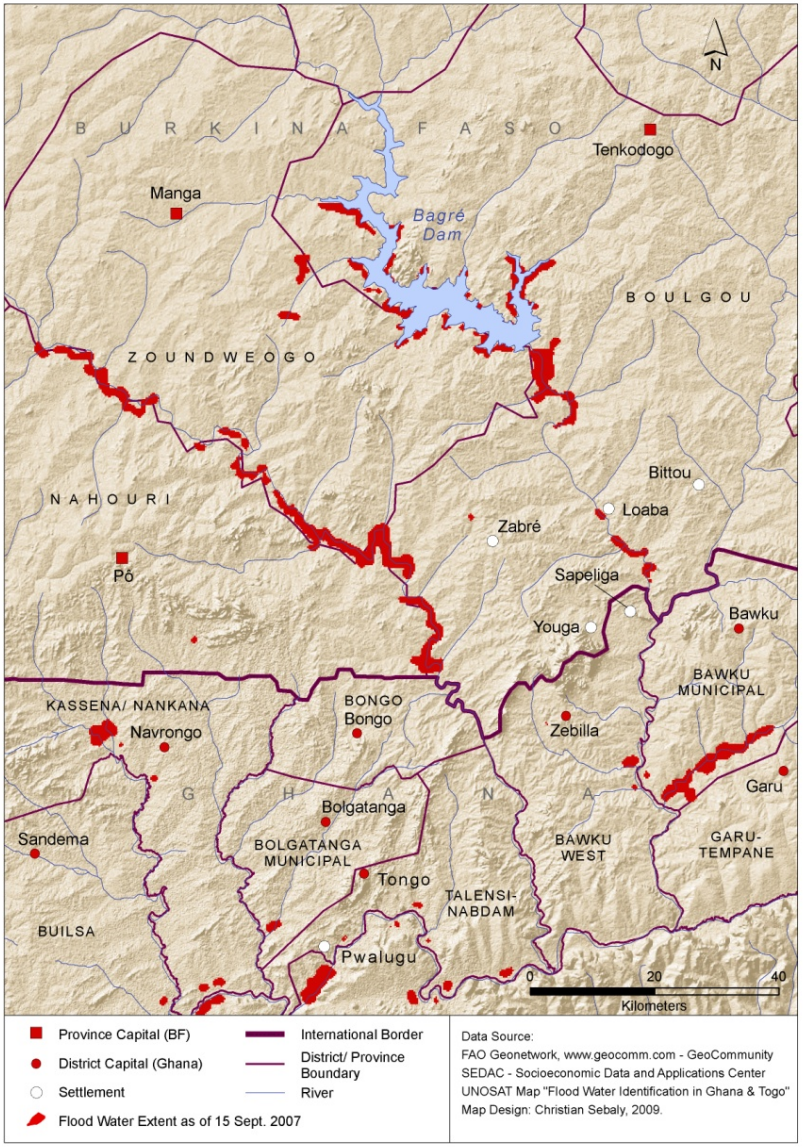
Pressure on water resources by increasing irrigation, hydropower demand, mining; floods and droughts with more frequency and intensity

- Impacts of these changes on society and ecosystems?

Ecosystems are overused and damaged; livelihoods are endangered, leading to poverty and migration ; high level of uncertainty

Theme 1: Magnitudes of anthropogenic and environmental changes (cont.)

Images of West African floods
Source: google images



Identification of flood extents in Northern Ghana and Togo after torrential rains in September 2007

Theme 2: Linkages and feedbacks with the earth system

- What are the meteorological, hydrological or biochemical connections from beyond the catchment?

Meteorological or atmospheric influences may cause droughts or sudden precipitation; transport of material from the Sahara Desert to the Atlantic ocean.

- What are the determining factors of virtual water trade? How does international trade in food , consumption patterns etc. affect the transfer of virtual water?

Predominantly rural economies; smallholders face challenges from industrial farming and external subsidized competitors.

- How does water availability effect trade and terms of trade?

Trade of Hydropower within the basin (Ghana to riparian countries), but sovereignty in electric power supply is favored

Theme 2: Linkages and feedbacks with the earth system (cont.)

- What are the institutional settings at different levels as driving forces?

Institutional settings are national and sectoral in character, water sector reforms pursuit decentralization and comprise all instituitioanl levels down to communitiy level. Transboundary water management is at its initial phase .

- What are the effects of virtual water flows on the exporting and importing side?

The construction of dams and reservoirs has increased the production of cash crops and virtual water trade. Local farmers face a high degree of regional competition and of competition from Europe and Asia

- What are relations between water and other resources?

Socio-economic development in the basin relies on hydropower, agriculture, mining, touriosm, timber among others

Theme 3: How resilient and adaptable is the global water system to change

- What are an appropriate framework to address vulnerability, resilience and adaptive capacity

Should involve all key entities that are impacted upon by global change, water governance, research and international institutions

- What is the influence of international institutions and global actors on the resilience of river basins?

All-embracing reform processes in the water sector starting in the 1990s are steered by international donors; diffusion of global norms and values, as precondition for developmental support

- Does sustainable water management improve the balancing of water needs for ecosystems and human activities?

Improvements are expected from consequent regulations for water and waste water management.