Project Preparation for the Implementation of Integrated Flood Management with a focus on Benin, Burkina Faso, Cote d'Ivoire, Ghana, Mali, Togo and the Volta River Basin

Country Needs Assessment REPORT - Ghana

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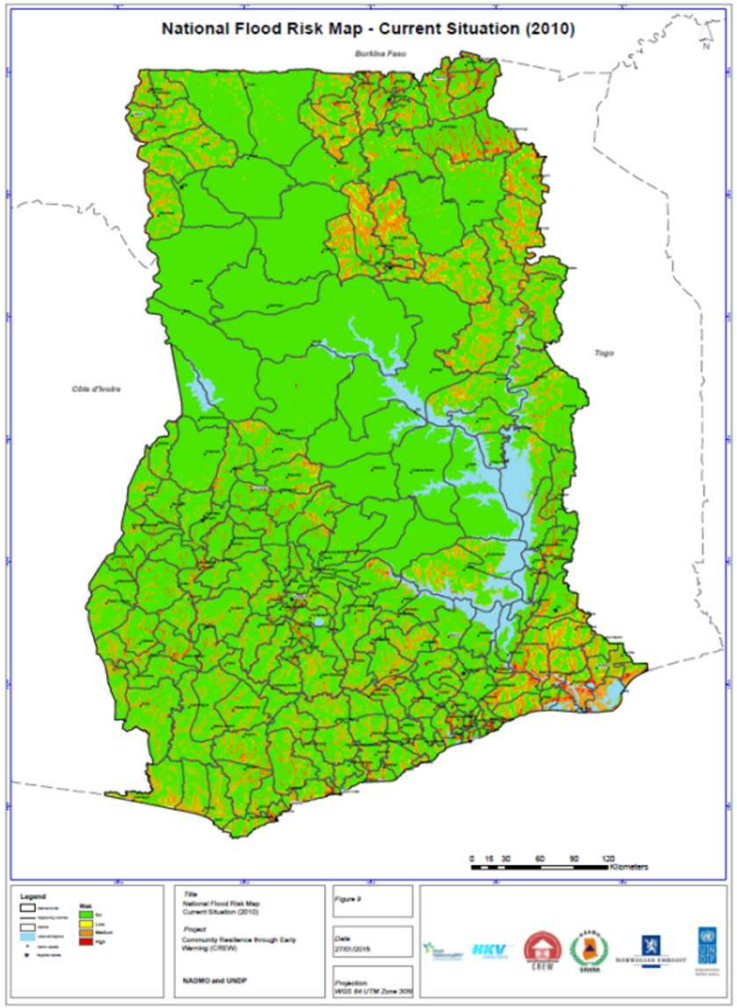
Presentation Outline

- Geographical overview and socio-economic characteristics of the basin in Ghana
- Impacts of floods in the country and the national part of the basin
- Institutional framework for flood management
- Flood risk management - Hazard assessment
- Flood risk management - Vulnerability assessment
- Main capacity development activities for the country and the transboundary basin
- Main recommendations

Geographical overview and socio-economic characteristics of the basin in Ghana



Ghana's profile:

- Land area - 238,530 km^2.
- About 70% of land area lies in the Volta Basin.
- Population - 25 Million people (PHC, 2010) with annual growth rate of 2.5%.
- 10 regional administrations, 216 MMDAs and plans are underway to further divide some regions and districts, elevating districts to Municipal status.
- 3 key hydro-electric schemes (Akosombo, Bui and Kpong)
- Largely agrarian economy - 50% of economically active populations involved in agric. and agri-businesses

Impacts of floods in the country and the national part of the basin

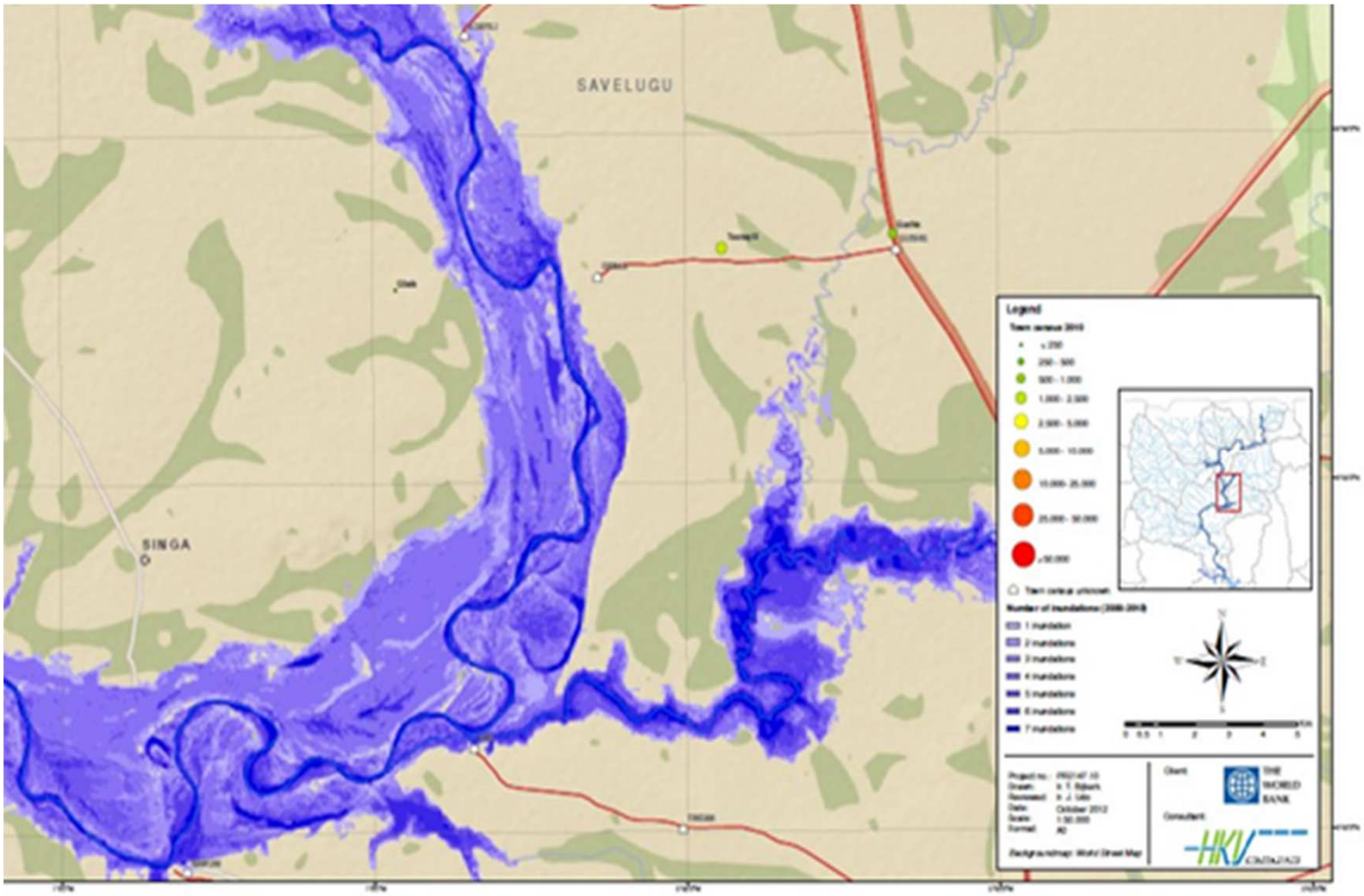
In 2015 – 150 people died => combination of flood & fire (leakage from a fuel station)
In 2016 – Accra experienced floods but no death was recorded.

Impact / Year	No. of victims of flood	No. of deaths	No. of people injured	No. of houses damaged	Area of farmland flooded (ha)	No. of livestock perished (head / cattle, goats, poultry, etc.)	No. of dams destroyed	Distance of road destroyed (km)	No. of bridges destroyed	No. of schools damaged
Sept 2010	25,112	17	-	3,234	10,000	1109	-	-	-	-
Sept 2009	200,000	25	-		NA		NA	NA	1	-
2007	300,000	-	-	-	-	-	-	-	-	-

NA - No information available on quantification of the impacts as it relates to sectors of the economy

Impacts of floods in the country and the national part of the basin

A section of the White Volta Basin in Ghana where flooding is prevalent in the Upper East and Northern regions.



Other social/economic impacts

- Decreased economic and social activities
- Mass migration
- Psychological and health related effects
- Hindrance to economic growth and development
- Political implications

Institutional framework for floods management

Supervisory Ministry	National institution in charge	Collaborating institutions	The Private sector	Existing of national platform
Ministry of Interior	National Disaster Management Organisation (NADMO)	Water Resources Commission; Ghana Meteorological Agency; Hydrological Services Department; Environmental Protection Agency; Regional Coordinating Councils and related MMDAs	NGOs	National Platform for Disaster Risk Reduction and Climate Change Adaptation

Flood Management Interventions

Intervention	Period	DPs
WRC FEWS-Volta. Prepared flood hazard maps for 15 key districts in the White Volta basin. The phase II of the project is underway	2012-2015	The World Bank
GFDRR funded Hyogo Framework for Action for disaster reduction i) **strengthening flood forecasting** in the White Volta Basin; ii) strengthening **institutional capacities** for disaster preparedness	2012– 2014	The World Bank
Drought Management Tools Project to support IWRM and Water Safety Plans. Executed by DHI & IWA	2014– 2018	UNEP/GEF
Community Resilience through Early Warning (CREW) project - Mapped flood hotspots in 1 pilot district in all 10 Regions of Ghana	2013-2016	Norwegian Gov't /UNDP

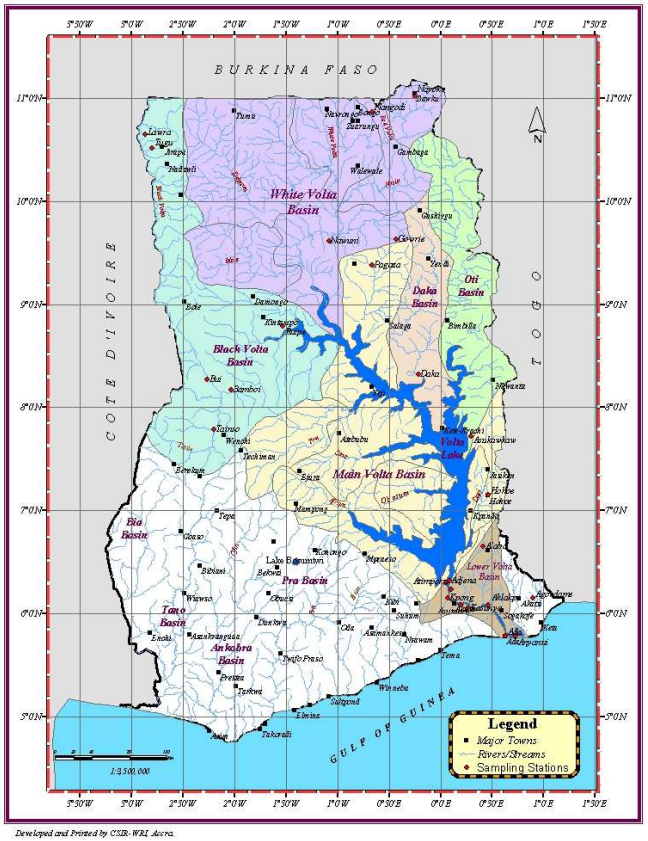
Lessons learned from floods management interventions

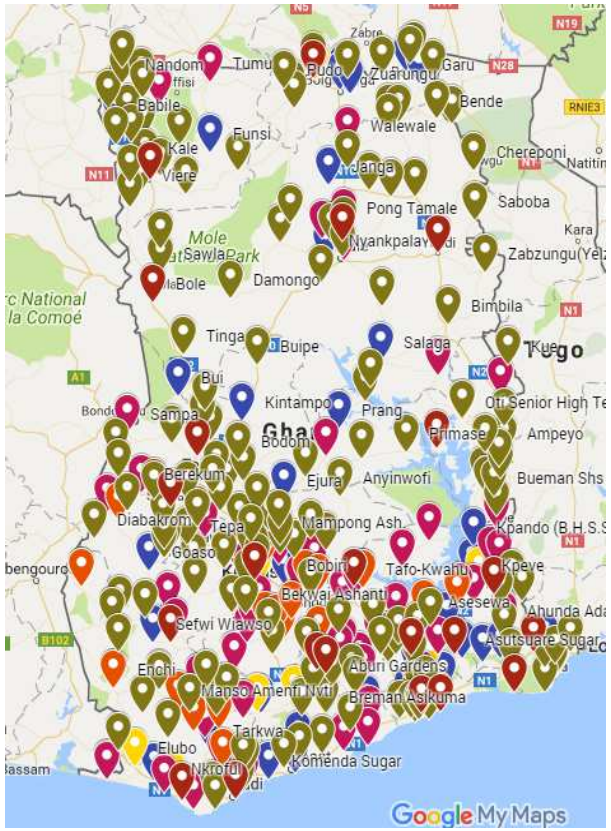
Some key messages on floods gleaned from the urban platform are summarised below:

i. **Improper land use** or land management aggravates natural hazards and increases disaster risk;
ii. Increased understanding of **flood vulnerability assessments** leads to the development of appropriate **early warning systems** as well as detailed flood hazard maps for an **integrated flood management plan**;
iii. Investments in **hydraulic infrastructure** such as reservoirs, dams etc. to **attenuate flood peaks** is required;
iv. Increased **public education and awareness creation** on flood management for enhanced and effective citizenry engagement in integrated flood management;
v. Effective engagement of researchers with policy makers and the **use of valuable research findings; and accountable governance with enhanced enforcement of regulations is required.**

Flood risk management - Hazard assessment

No. of Synoptic Stations	No. of Climatological Stations	No. of rainfall stations	No. of Agro-meteorological Stations	Total	Total within the Volta basin	% in the Volta basin	No. of river gauging station
22	61	173	79	334	157	47%	20





GMET-TAHMO Stations in Ghana

Styled by Category

- Rainfall Station (173)
- Climate Station (60)
- Agro-Station (51)
- TAHMO Gen II Station (31)
- TAHMO Gen III Station (23)
- Synoptic Station (22)
- Other (1)

Insert a Map of the gauging stations on this side

Hydro-meteorological data is generated by HSD and Gmet and available. However, the payment or not for the data is dependent on the purpose for which it is demanded.

Flood risk management - Vulnerability assessment

Economic vulnerability: Essentially, how are people affected economically in the basin in the event of floods? To what extent are economic activities in the Volta basin exposed to floods and what is the degree of sensitivity and/or resilience?
Prescribes 2 mutually reinforcing solutions:

- **Application of Buffer Zone Policy (2013) to strengthen natural infrastructure**
- **Construction of hydraulic structures, ensuring stringent application of regulations**

Social vulnerability: To what extent are human sufferings reduced in the event of floods through access to social services? **The resilience of socio-economic infrastructure – schools, health facilities, electricity, roads, community support, NGOs, etc**. on the one hand, and the ability to access them on the other hand. **Timely delivery of relief items to victims?**

Environmental vulnerability: To what extent are environmental systems in the basin able to provide the services required following flood events? **The degradation of the environment and the pollution levels need to be monitored via site inspection and water quality tests in order to maximise ecosystem services for the well-being of populations**.

Main capacity development activities for the country and the transboundary basin

- While projects like CREW and FEWS-Volta had some capacity building components for Early Warning Systems and Flood Management, attention should focus the following areas:
  - ✓ Data Integration from different telemetry systems (for Meteo. stations)
  - ✓ Data Assimilation
  - ✓ Running numerical weather predictions
  - ✓ Interpretation of early warning information into actionable messages that citizens and farmers can trust and use
- Weak enforcement of laws and regulations (on landuse planning + catchment management + waste management)
- Lack of calibrated distributed hydrological models
- Lack of incentives & motivation to participate in DRR activities (citizens + public servants)

Main recommendations

1. Build capacities by partnering with local and international institutions especially universities.
2. Build public private partnerships for data analysis, cloud computing for weather and climate services.
3. Develop innovative approaches to generate funds for operational hydro-meteorology including central government where political will is translated into cash flows.
4. Invest in new technologies to transmit locally relevant information in easily usable formats via mobile platforms.
5. Provide a platform for effective collaboration of state agencies in charge of disaster risk preparedness and flood management.
6. Incorporate Integrated Flood Management Plans into the IWRM basin plans.

Thank you for your attention!