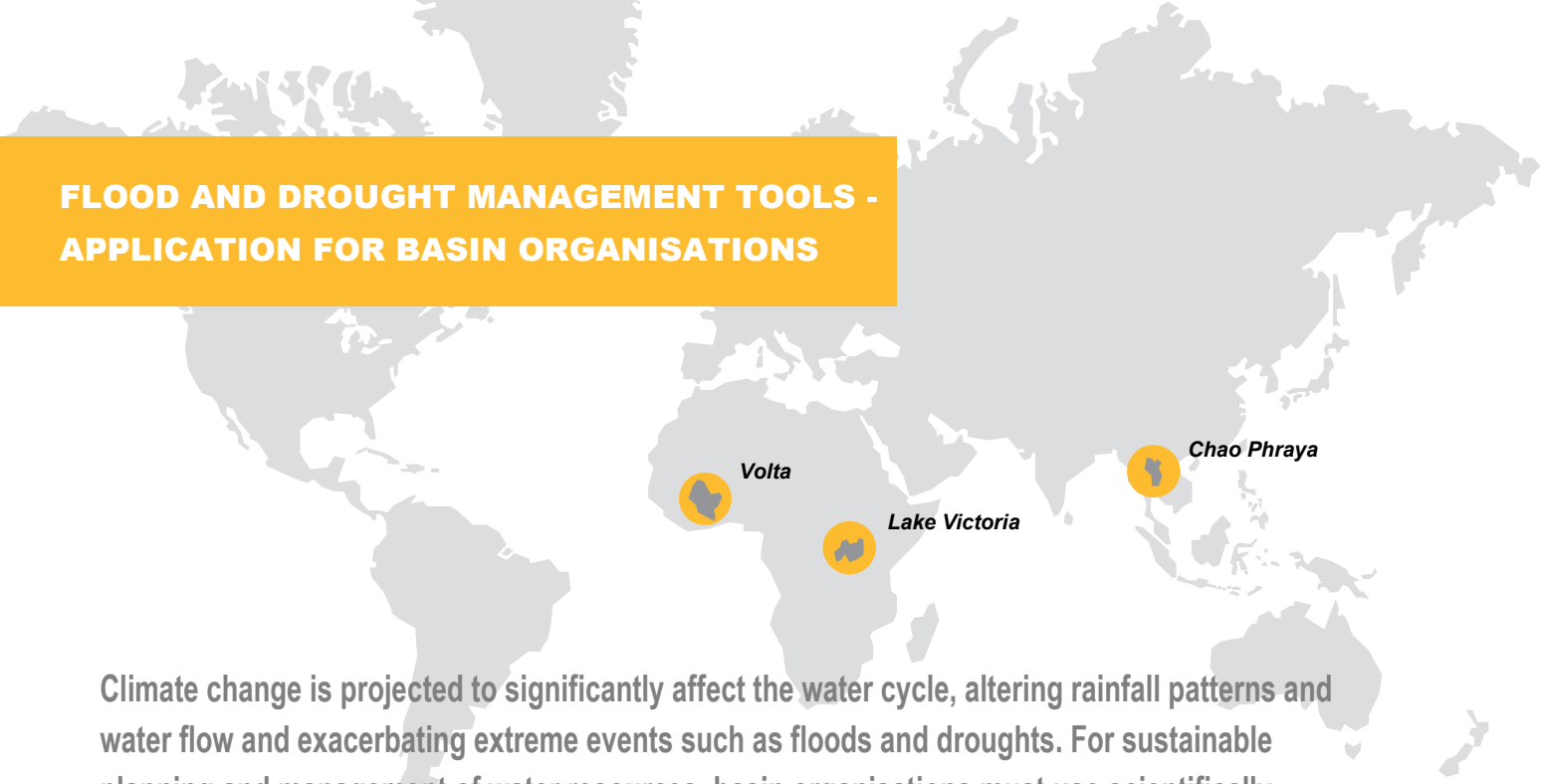
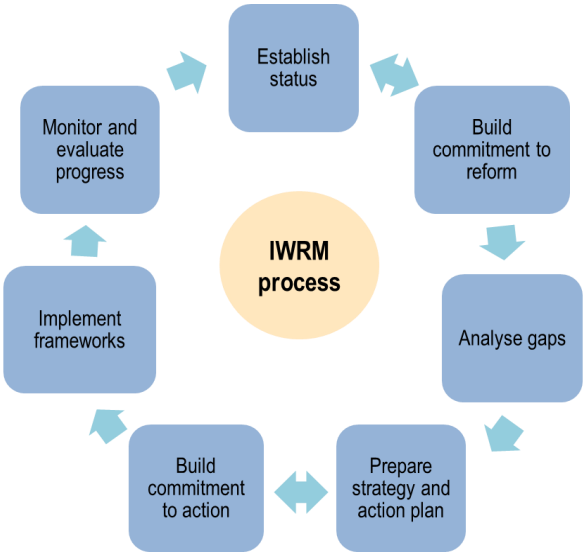
FLOOD AND DROUGHT MANAGEMENT TOOLS - APPLICATION FOR BASIN ORGANISATIONS



Climate change is projected to significantly affect the water cycle, altering rainfall patterns and water flow and exacerbating extreme events such as floods and droughts. For sustainable planning and management of water resources, basin organisations must use scientifically sound information in their decision making processes.



IWRM implementation process

Improved planning in a changing climate

River basins worldwide are already experiencing the negative impacts of climate change with more frequent, uncertain and severe flood and drought events, intensified erosion and sedimentation, increased water scarcity, reductions in glaciers and snow cover, sea level rise, and damage to water quality and ecosystems. Transboundary river basins have the additional challenge of sectors and countries competing for water resources. Decision making and planning is often unilateral, jeopardising the sustainability of the basin population and the environment.

Processes such as Integrated Water Resources Management (IWRM) and the Global Environment Facility's (GEF) Transboundary Diagnostic Analysis/Strategic Action Programme (TDA/SAP), have been introduced to help basin organisations carry out more coordinated and integrated strategies aimed at a sustainable water resource management.

A TDA provides an analysis of the state of the basin's environment as well as the root causes for its degradation using the best available verified scientific information. The SAP outlines the actions needed to resolve priority threats to international waters identified in the TDA. These planning process are used by GEF to identify priorities for investment in a basin.

IWRM is a planning process which coordinates the development and management of water, land and related resources, while ensuring economic, social and environmental sustainability.

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.

Basin level partners

The Volta Basin Authority (VBA) is a transboundary basin management organisation promoting the implementation of integrated water resources management. VBA authorises the development of infrastructure and projects proposed by its stakeholders, which contribute to poverty alleviation and the sustainable development of countries within the basin.

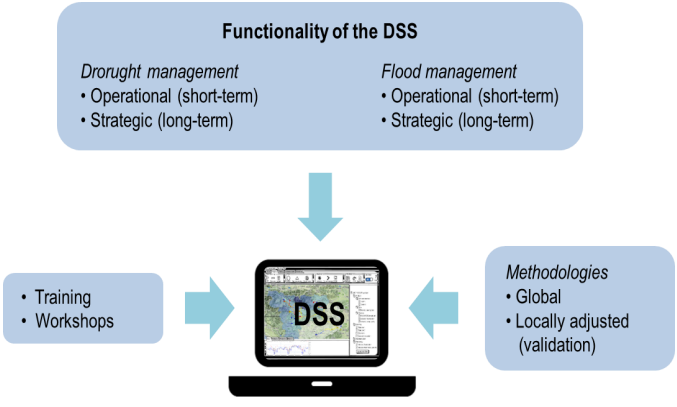
The Lake Victoria Basin Commission (LVBC), established by the East African Community in 2001 to coordinate interventions in and around the lake and its basin. LVBC serves as a centre to promote investment and information sharing among various stakeholders.

The Hydro and Agro Informatics Institute (HAII) operates under the umbrella of the Ministry of Science and Technology, with the responsibility of developing and applying science and technology to support better agricultural and water resource management practices.

Integrating floods and droughts into planning

With the frequency and severity of flood and drought events increasing, there is a growing need for basin managers to recognise and better plan for the impacts on human welfare, ecosystems and economic development. The planning process of the GEF's TDA/SAP and the more general IWRM are highly collaborative involving consultations with water users across a basin to identify sustainable measures for managing water resources.

The planning process provides a portfolio of actions to be adopted by the relevant authorities and stakeholders for a more coordinated approach to the development and management of resources (e.g. protecting a water source, ensuring sustainable water infrastructure etc.). The FDMT project is supporting operational and strategic planning processes by providing scientifically sound information on floods and droughts.. Operational planning is short term planning (weeks to a few years) with the objective of reducing impacts without investing in new infrastructure. Strategic planning is planning based on a vision or objective covering a longer time period. This will typically include investments in infrastructure to cope with future changes.



DSS development scheme

Planning supported by a Decision Support System

The FDMT project is developing a computer software-based Decision Support System (DSS), which contains tools to support improved planning from the transboundary basin to water utility level by including better information on flood and drought events. The tools are used to gather and analyse information which can be used in decision making.

The DSS and accompanying tools will be developed, tested and validated with basin and utility stakeholders using their data and planning approaches. The DSS will offer valuable support in choosing management options at a basin level e.g. zoning, early warning systems and infrastructure. It will also help stakeholders develop a forward-looking approach through strategies aimed at long-term planning.

Basin level engagement in the project

The FDMT project will test and validate the developed methodology with stakeholders across three pilot basins. For transboundary planning, the key stakeholders are basin organisations, with other institutions, e.g. electricity companies, catchment organisations, irrigation and environmental agencies, collaborating to provide key links between basin and local level planning.

As the umbrella institution for basin-wide water resource management, basin organisations are well positioned to influence decision making, to regulate the use of resources and promote more coordinated initiatives. Their engagement in the project is therefore crucial in ensuring high level buy-in, and their knowledge on the basin is invaluable for the sustainable development and implementation of the DSS.

The project also provides an opportunity for improved basin and local level collaboration, providing an important link between operational and strategic planning of water resources.

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