



## **NILE BASIN CAPACITY BUILDING NETWORK**

### **Research Theme: Water Scarcity**

#### **Research Project (WS1)**

### **Evaluation of Climate Variability and Change Impacts on Water Scarcity for Rain-fed Agriculture in the Lake Victoria Basin**

#### **The Case of Kagera River Sub-basin**

#### **PROJECT SUMMARY**

The overall goal of the NBCBN research project on Water Scarcity is to improve capacities, the governance and management of water resources in the Nile basin under water scarcity stresses and sharing the knowledge and practice needed to do so in different regions of the basin. As the bulk of the populations in Africa depend on rain-fed agriculture for food and their livelihoods, they are vulnerable to the climate effects. Changing rainfall patterns will in turn negatively affect cropping systems. Accordingly, a research on climate and water scarcity was proposed in the Kagera basin of the Lake Victoria Basin (LVB). The participating countries in this project are: Tanzania, Kenya, Burundi and Rwanda. The LVB is located in the upper reaches of the Nile basin, The lake is a valuable resource to several industries including water supply, fisheries, agro forestry, inland water transport, and hydropower. Kagera River is the largest river in the Lake Victoria Basin. The major economic activity in the Kagera basin is subsistence agriculture, However, these are threatened by impacts of climate variability and change leading to water scarcity. Accordingly, the study area will be classified based on climatology, which will inform about the areas' rainwater supply. Also, classified on the basis of water scarcity, which is important for agricultural water management in the basin. The integration of climate variability and change, and water scarcity is going to inform on agricultural water management and impacts on rain-fed agricultural production.



#### **OBJECTIVES**

- Linking water scarcity to food security issues in the basin under risks of climate variability and change.
- Developing solutions for water scarcity resilience in stressed areas of the basin.
- Capacity development of the Nile basin's water professionals on water scarcity for rain-fed agriculture.
- Analysis of the gender and equity issues in relation to water scarcity.
- Exchange of experiences and best management practices between the Nile basin countries and other regions with similar scarcity issues.

To be more specific, the following may be considered:

- (1) Characterization of historical and future climate in the study area
- (2) Characterization of rain-fed agriculture in the study area
- (3) Characterization of the current and future water scarcity of the rain-fed crops in the study area
- (4) Determination of impacts of climate variability and change on water scarcity in the study area
- (5) Develop a best water management framework that address rain-fed agriculture risks from climate change and water scarcity

## OUTPUTS

- Characteristics (seasonality, trends, statistical maps and projections) of historical and future climate in the study area.
- Rain-fed agriculture practices in the study area.
- Water scarcity levels or maps of the study area.
- The best agricultural water management framework that address rain-fed agriculture risks from climate change and water scarcity.
- Policy brief to the Ministries of Agriculture in Rwanda, Tanzania and Burundi; Meteorological Agency in Tanzania; Rwanda Natural Resources Authority and Department of Integrated Water Resources Management in Rwanda; and the Ministry of Water, Environment, Land and Urban Planning in Burundi.

## EXPECTED OUTCOMES

- Disseminate effective rain-fed agriculture management strategies, which will enable farmers in Kagera basin and the region as a whole to increase food production and adapt to the impacts of climate variability and change, and water scarcity.
- Contribute to socio-economic development in the region.



## GENDER AND EQUITY

The good practices obtained from the research will be shared with the local community institutions. In addition, this proposed research will do the following to ensure that general considerations are given due attention:

- By ensuring women and youth participate in conference workshops and meetings where research findings will be disseminated. They will be aware of consequences related to water scarcity since they are the ones who are most vulnerable in the Kagera basin. It is hoped that their life will be improved.
- Empower women, youth and elders participating in discussion with respect to increased participation in decision making. Furthermore, they will be part of data collection for the research.
- Ensure women views are shared with the community local councils or leaders or extension officers.
- Ensure that women and environmental consideration at the research implementation are addressed.
- Ensure strategies for rain-fed agricultural water management include equity issues.

## LEAD ORGANIZATION

**Department of Water Resources Engineering, University of Dar es Salaam, Tanzania**

## PROJECT PARTNERS

- University of Dar es Salaam, Department of Water Resources Engineering, Tanzania.
- Natural Resources Authority, Department of Integrated Water Resources Management (RNRA/IWRM) in Rwanda.
- University of Rwanda, Department of Civil and Environmental Engineering, Rwanda.
- University of Burundi, Department of Earth Sciences, Burundi.
- University of Burundi, Department of Chemistry, Burundi.
- University of Nairobi, Department of Civil Engineering, Kenya.

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