



# Climate Change Adaptation - Pangani River Basin, Tanzania

## GOALS OF THE PROCESS:

- Understand the links between local livelihoods and climate in Pangani Basin, Tanzania
- Assess the impact on livelihood resources important for climate change adaptation
- Identify adaptation actions to improve resilience to climate change impacts

## OBJECTIVES FOR PANGANI BASIN:

- Create awareness and share knowledge on climate change
- Stakeholders carry out vulnerability assessment process
- Stakeholders understand vulnerability and adaptation to climate change
- Identify and implement adaptation options

**PROJECT OVERVIEW:** The **Pangani River Basin Management Project (PRBMP)** is generating technical information and developing participatory forums to strengthen Integrated Water Resources Management in the Pangani Basin, including mainstreaming climate change, to support the equitable provision and wise governance of freshwater for livelihoods and environment for current and future generations. The climate change component of the project focuses on understanding climate change impacts in the water sector, promoting collaboration between the water and climate change sectors, piloting adaptation actions and exchanging experiences and lessons.

The project is collaborating with the **Climate Change and Development Project (CCDP)** and the **Global Water Initiative (GWI)** to identify and implement adaptation strategies in the Pangani Basin.

CCDP is a Pan-African project funded by the Ministry of Foreign Affairs of Finland and implemented by IUCN. The project aims to ensure that Climate Change related policies and strategies lead to adaptation activities that emphasize the role of forests and water resources in supporting people's livelihoods and associated farming systems. This will be done by providing the knowledge, tools, and capacity required to reduce vulnerability and enhance adaptive capacity to climate variability and change at the local and national levels.

GWI is funded by the Howard G. Buffet Foundation and is promoting the provision of water supply, hygiene and sanitation as well as watershed management (within the framework of integrated water resources management) among rural communities living in arid and semi arid areas of the Pangani Mainstem sub-catchment. The initiative focuses on developing partnership amongst key organizations in Eastern Africa (Ethiopia, Kenya, Tanzania, and Uganda), Central America and Western Africa. In Tanzania, IUCN, Catholic Relief Services (CRS) and CARE, are implementing the GWI project in the Pangani Basin.



**PANGANI RIVER BASIN:** The Pangani River Basin covers an area of 43,650 km<sup>2</sup> out of which 3,914 km<sup>2</sup> lies in Kenya. In Tanzania the basin is distributed through Kilimanjaro, Arusha, Manyara and Tanga administrative regions. The Kenyan portion of the basin falls almost entirely within the district of Taita-Taveta. Main livelihoods in the basin include farming, pastoralism, fishing, tourism and agricultural related businesses (i.e. petty trading of vegetables).

**CLIMATE CHANGE IMPACTS:** From a detailed climate change modeling study in the basin the climate change impacts in the basin are expected to include:

- a decrease in rainfall during the dry June – October period and adjoining months;
- Increases in November – March rainfall
- Minimum temperatures increase by approximately 2°C (range of 1-3°C) during all months;
- Maximum temperatures increase in July-November
- The seasonality of stream flows in the Pangani is likely to be changed due to hotter and drier winters although its impact will depend on water extractions and the characteristics of each sub-catchment.



Identified adaptation activities in both sub-catchments are being piloted through funding from UNDP (through the PRBMP), CCDP and GWI.

**VULNERABILITY ASSESSMENT PROCESS:** Climate change vulnerability assessments were conducted to identify adaptation activities that can increase community resilience to climate change impacts, and which enhance traditional coping mechanisms that deal with climate hazards. Communities were selected based on their type of livelihood and degree of exposure to the impacts of climate change. Assessments took place in five villages within Kikuletwa catchment and three villages in Pangani Mainstem Catchment. These are; Manyata, Lekitatu, Mbuguni, Shambarai Burka and Olbil Villages (Kikuletwa Catchment) and Ruvu Mferejini, Ruvu Jiungeni (Chambogo sub village), and Makanya villages (Pangani Mainstem Catchment).

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## VULNERABILITY ASSESSMENT PROCESS CONTINUED



**COMMUNITY CONSULTATIONS:** Assessments have been conducted through the PRBMP (focusing on Kikuletwa) and GWI (focusing in the Pangani Mainstem Catchment). Using a combination of adaptation and participatory tools from Climate Vulnerability and Capacity Analysis (CVCA) facilitators carried out community consultations to gather information on the local livelihood and climate context. Some of the participatory tools used to gather information in the field include the rain calendar, hazard map and vulnerability matrix. The rain calendar helps users to gather rainfall and temperature information for specific local areas from the communities. Hazard mapping provides a visual representation of the links between risks, hazard location and resources, and enables greater community involvement and identifies. The vulnerability matrix is a process which determines the hazards that have the most serious impact on important livelihoods resources, livelihoods resources are most vulnerable, and coping strategies currently used to address the hazards identified. The community consultations also provided an opportunity to raise awareness on the impacts of climate change and how communities could increase their resilience.

**ANALYSIS:** The Community-based Risk Screening Tool: Adaptation and Livelihoods (CRiSTAL) was used as a decision-support tool by technical staff to analyse the vulnerability assessment information gathered during community consultations. The process integrates climate change adaptation into community-level projects, as well as identifies adaptation actions that can improve resilience to climate related hazards (i.e. droughts and floods). For more information visit [www.cristaltool.org](http://www.cristaltool.org). Participants in the analysis process also plotted out a way forward beyond the assessment which identified how each adaptation activity would be implemented, when will the activity take place, who will be involved, where it will take place and the type of resources required.

**SCREENING PROCESS:** A mid-term review of CCDP project recommended the results of the vulnerability assessment to be revisited with regards to ensuring the relevance of activities so that they support the ecosystem approach. Therefore, all activities were subjected to the ten CCA screening criteria outlined below.

Activity responds to a specific climate change hazard in an area	Ecosystem approach is clearly embedded in the activity	Implementation feasibility	Opportunities for new lessons learning for improving practices, enhancing adaptation and/or influencing policy	Sustainability in relation to the exit strategy (i.e. capacity building, involving government)
Emphasis on improved resilience of most vulnerable groups, including consideration of gender	Appropriate technology	The impacts of the activities will positively contribute to, or at least do no harm to, ecological, financial, social assets	Measurability of results	Activities will add value to ongoing processes in the project area

**FEEDBACK:** The project team, basin and district staff facilitated validation and ranking of the adaptation activities identified from the community consultations (and modified to be more sustainable during analysis). A beneficiary committee was elected to guide the process at the community level. After the screening process (described above), the community was consulted again to share the changes that had occurred. Activities that were beyond the scope of the project are to be taken up by the Ministry of Water and Irrigation and local governments.

**ADAPTATION ACTIVITIES:** Budgets and workplans for selected activities were drawn up and procurement where needed has taken place (i.e. drilling contractors to drill boreholes). The following activities are taking place through the three projects. Some of the activities under GWI are still to be determined.

Activity	Project/who involved	Activity	Project/who involved
Training workshop on research, practice and policy linkages	CCDP/ PBWB, District staff	Training and facilitation of local poultry keeping and access to market as an alternative income generating activity	CCDP/ Communities (Mbuguni)
Training on CC awareness, CRiSTAL and other tools used for vulnerability assessment	CCDP/ PBWB, District staff	Improving water supply for domestic use, irrigation and livestock (includes drilling of borehole, pump and electricity, management training)	PRBMP and CCDP/ Communities (Shambarai Burka, Olbil, Ruvu)
Training on conservation farming	CCDP/ District, communities (Shambarai Burka and Mbuguni)	Supporting rain water harvesting	CCDP/ Meru District Council
Irrigation, water use efficiency training and water resources management	CCDP and PRBMP/ District, communities (Shambarai Burka and Mbuguni)	Conservation of water sources through provision of cattle trough with water supply	PRBMP and GWI/ Communities (Soko and Ruvu Jiungeni)

**ABOUT PRBMP:** The Pangani Basin Water Board is implementing the project with technical assistance from IUCN (International Union for Conservation of Nature), the Netherlands Development Organization (SNV) and the local NGO PAMOJA. The project is financially supported by the IUCN Water & Nature Initiative, the Government of Tanzania, the European Commission through a grant from the EU-ACP Water Facility, and the Global Environment Facility through UNDP.

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