



CLIMATE CHANGE ADAPTATION IN THE PANGANI RIVER BASIN

Brief published by the Pangani River Basin Management Project

CLIMATE CHANGE IMPACTS

From a detailed climate change modeling study in the Pangani River Basin the climate change impacts are expected to include:

- Decrease in rainfall during May - October period;
- Reference evapo-transpiration projected to increase most in October by approximately 10 mm;
- Increase 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 periods (especially towards the end of the dry season), though the magnitude of this change will vary across the sub-catchments and its impact will depend on water extractions and the characteristics of each sub-catchment.

VULNERABILITY ASSESSMENT

Climate change vulnerability assessments were conducted to identify adaptation activities that can increase community resilience to climate change impacts predicted through the climate change modeling and community observations.

Communities were selected based on their type of livelihood and degree of exposure to the impacts of climate change.



Representatives of Olbil village discuss the effects of climate change in their area.

Assessments took place in five villages within Kikuletwa catchment and three villages in Pangani mainstream 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 Mainstream Catchment). Identified adaptation activities in both sub-catchments are being piloted through funding from UNDP (through the Pangani River Basin Management Project (PRBMP), Climate Change and Development Project (CCDP) and the Global Water Initiative (GWI).

COMMUNITY CONSULTATIONS

Facilitators used a combination of adaptation and participatory tools to gather information on the local livelihood and climate context. These included the Climate Vulnerability and Capacity Analysis Tool (CVCA) and Community-based Risk Screening Tool: Adaptation and Livelihood (CRISTAL).

Some of the participatory tools used to gather information in the field include the seasonal 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 enables greater community involvement and provides a visual representation of the

links between risks, hazard location and resources.

The vulnerability matrix is a process which determines the hazards that have the most serious impact on important livelihoods resources, livelihoods resources which are most vulnerable, and coping strategies currently used to address the impact identified. Community consultations also provided an opportunity to validate assessment results, rank the identified adaptation actions and raise awareness on the impacts of climate change and how communities could increase their resilience.

ANALYSIS

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 (e.g. droughts and floods). 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.

(Continued overleaf)

GOAL OF THE VULNERABILITY

ASSESSMENT 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.

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. All activities were subjected to the ten CCA (climate change adaptation) screening criteria outlined below.

- Activity responds to a specific climate change hazard in an area
- Ecosystem approach is clearly embedded
- 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
- Use of appropriate technology
- The impacts of the activities will positively contribute to, or at least do no harm to, ecological, financial, social assets

- Activities will add value to ongoing processes in the project area
- Measurability of results

FEEDBACK

The project team, IUCN, 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 PBWB with assistance from Water Sector Development programme (WSDP) and the Ministry of Water.

BEYOND THE PROJECTS

Implementing adaptation activities that can increase capacity of communities to deal with the predicted climate changes is just the beginning. The communities with help from institutions such as the PBWB must continue to monitor whether the interventions make

a difference, and be able to respond to future changes in climate by continued capacity building around the project interventions (e.g. gaining new knowledge on conservation farming as rainfall patterns change).



The Pangani Basin Water Board is implementing the **Pangani River Basin Management Project (PRBMP)** with technical assistance from IUCN (International Union for Conservation of Nature), SNV - Netherlands Development Organization 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.

The **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 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.

GWI is funded by the Howard G. Buffett 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 Mainstream sub-catchment.

ADAPTATION ACTIVITIES

Budgets and work plans for selected activities were drawn up and procurement where needed has taken place (e.g. contractors to drill boreholes).

The following activities have taken place through the three projects.

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



For more information: www.panganibasin.com and www.iucn.org/esaro
 Contacts: Pangani Basin Water Officer – info@panganibasin.com or IUCN ESARO - info.esaro@iucn.org