

How to Adapt to Climate Change in the Upper Thukela River Basin?

The world's climate is changing. World scientists are now in agreement that the world is getting warmer but it is still uncertain "how much?", "when?" and "how fast?" A group of farmers, inhabitants, government authorities, non-governmental organizations, water utilities and research organizations has looked at how people are vulnerable and agreed on how they can better adapt to future changes in water resources. Climate change scenarios show both higher occurrence of drier spells and of heavy rainfalls. The following points are likely, and in some cases even certain to occur more often in the future. They can have a significant or catastrophic impact on people and the environment if no adaptation measures are carried out.

- ❖ **Loss of yields due to increase of pests and diseases (all farmers)**
- ❖ **Reduced winter yields due to more hot days (commercial farmers)**
- ❖ **Loss of yields due to increased surface runoff and erosion (small-scale farmers)**
- ❖ **Insufficient household and livestock water in winter/dry periods (rural communities)**
- ❖ **Problems with human and livestock health, and house stability due to heavier rainfall and flooding (rural communities)**
- ❖ **Dams run dry more often due to prolonged periods with low rainfall (all inhabitants)**
- ❖ **More winter fires (all inhabitants)**
- ❖ **Change in biodiversity due to changed timing and frequency of flow peaks and drying of perennial rivers (all inhabitants)**
- ❖ **Spread of alien species due to inter-basin water transfers during dry years (all inhabitants)**

Key Messages Adaptation to Climate Change: Agriculture

What can farmers do?

- ❖ Follow conservation practices to promote good soil and water management and avoid overgrazing
- ❖ Use effective natural methods of pest control
- ❖ Maintain irrigation works properly so pipes and pumps do not leak
- ❖ Choose crops and crop varieties best suited to local conditions
- ❖ Cooperate together (small-scale and commercial farmers) to find good farming practices to meet future challenges

What can policy makers do?

- ❖ Increase the numbers and build the capacity of agricultural extension officers
- ❖ Increase cooperation and promote information sharing between commercial farmers, small-scale farmers and extension officers
- ❖ Adapt all agricultural programs and planning strategies to local conditions
- ❖ Strengthen law enforcement and education to ensure that conservation policies are followed
- ❖ Ensure that land distribution policies encourage sustainable farming
- ❖ Encourage soil-conservation practices and rainwater harvesting
- ❖ Facilitate more efficient handling of irrigation applications
- ❖ Increase communication and trust between farmers and government authorities
- ❖ Introduce targeted financial programs for new technology and practices, e.g. water harvesting

Key Messages Adaptation to Climate Change: **Water Resources and Infrastructure**

What can citizens do?

- ❖ Re-use water for several purposes (e.g. use water from washing to water gardens)
- ❖ Choose the most water-efficient fittings and appliances
- ❖ Purify non-potable drinking water, e.g. with household bleach (Jik) or by boiling
- ❖ Protect springs by building stone structures that prevent surface runoff contamination
- ❖ Ensure good water quality during storage in water tanks by preventing worms and insects from entering the tanks, e.g. by good coverage, filters and cleaning
- ❖ Ensure that rain gutters are efficient, collect rainwater in drums and dig furrows around houses to drain water away

What can policy makers do?

- ❖ Promote water use efficiency through educational programs
- ❖ Adapt bylaw reforms so they encourage water use efficiency
- ❖ Promote capacity building in water utilities and authorities to reconcile water demand and supply improvement
- ❖ Ensure that design flood and flood line calculations consider available climate change projections
- ❖ Ensure that climate change is factored into dam safety reviews and guidelines
- ❖ Promote educational programs to increase awareness of climate change for all citizens
- ❖ Provide subsidies for the building and maintenance of houses that can withstand heavy rainfall and flooding

Key Messages Adaptation to Climate Change: Wildlife, Livestock and Ecology

What can citizens do?

- ❖ Maintain riparian areas (land close to streams) to help indigenous plants and animals survive
- ❖ Establish wildlife corridors that connect wildlife populations separated by human activities to help animal migration
- ❖ Bale grass in autumn to ensure cattle feed in the dry season, make contour drains on grazing lands and around kraals to hinder flooding and erosion, burn firebreaks to stop the spread of wildfires and build dams to ensure water for cattle in the dry season
- ❖ Initiate farmer networks that include small-scale as well as commercial farmers to help reduce the spread and damage caused by fires

What can policy makers do?

- ❖ Ensure that small-scale farmers have economic resources to purchase equipment to prevent and control fires as well as access to knowledge of how to burn firebreaks in a responsible way
- ❖ Enable small-scale farmers to purchase equipment and materials to drain excess water and construct dams
- ❖ Add fish ladders to all reservoirs
- ❖ Set biodiversity targets and make realistic plans of how to reach them