

Hope through Action

In western Tanzania, the health and well-being of people is closely tied to the health of the natural systems they depend on for survival. Future climate forecasts indicate that the region's forests, woodlands, rivers, and Lake Tanganyika will be impacted by increasing temperatures and more sporadic, intense and unpredictable rainstorms. **Local communities are starting to take action that will help them adapt to changing climatic conditions now that relevant climate change information is available.** Most of these actions do not involve radical departures from actions people are already taking to improve their livelihoods and economies and to protect the ecosystems they depend on – completing and implementing village land-use plans, improving existing fishing practices, limiting further habitat destruction, finding new, sustainable and less expensive ways to generate energy, and linking on-the-ground action with strong governance to protect precious natural resources.

The ability of people and natural systems to respond to a changing climate is clear. With the wide range of adaptation strategies available, there is hope that our natural resilience will provide us with the ability and flexibility to prepare for this greatest of challenges – our rapidly changing future.

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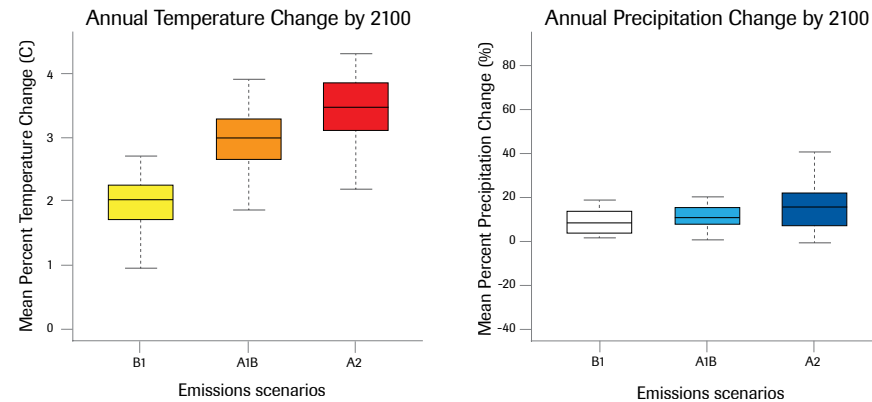
Climate Change in Western Tanzania: *Helping People and Nature Adapt to Climate Change*

Africa has the planet's fewest extinctions and has more intact landscapes, seascapes and free-flowing rivers than any other continent. But **Africa's vast and diverse ecosystems are under severe threat from a rapidly changing climate.** In the last century, global surface temperatures have warmed at an unprecedented rate. According to the Intergovernmental Panel on Climate Change (IPCC), **over the next 50-100 years temperatures across tropical Africa are likely to continue to rise as much as 2-5°C.** This warming climate will be accompanied by **changes in the timing, intensity and seasonality of rainfall and an increase in the frequency of severe storms.**

In East Africa, temperature and precipitation changes are already affecting snowpack levels, hydrology and extreme weather events such as an increased frequency of drought. People are reporting decreased rainfall, changing rainfall patterns, increased flooding and warmer lake waters. **These changes are creating hardships for large populations of agriculturalists, fishermen and pastoralists who rely on the natural environment for their subsistence and income.** Continued climate change will magnify these impacts, creating cascading effects on ecological systems that will further alter many of the natural resources of the region and affect people's livelihoods and economies.

Forecasted Changes in Climate for Western Tanzania

In western Tanzania, temperatures have been rising steadily at a rate of 0.12°C per decade since the 1950s. Annual temperatures are projected to continue to increase 1-2°C over the next 50 years and up to 4°C by 2100. In addition, although annual precipitation may not vary, changes in the frequency, intensity and predictability of rainfall are expected, leading to wet seasons becoming wetter and dry seasons becoming drier. Despite some seasonal increases in precipitation, western Tanzania will become more arid, due to increased evapotranspiration.



What are the Impacts of Climate Change?

Increased temperature, changing seasonal rainfall patterns, and increased aridity are expected to have many impacts including:

- more frequent and severe droughts and floods,
- higher water temperatures and lower flows in the dry season,
- increased erosion of topsoil,
- changes in vegetation,
- changes in groundwater and runoff, and
- increased spread of invasive species and destructive fires.

We anticipate these changes will have a direct effect on the forests, woodlands and freshwater systems of the region and the people who rely on these natural systems for their livelihoods and survival. **As temperatures in this region continue to increase, population pressures also will intensify, resulting in the accelerated loss of forests as habitat is converted for agriculture, tobacco production, and other uses.** To make matters worse, we anticipate that due to higher temperatures and increased deforestation, **entire watersheds will be negatively affected, reducing water availability and leading to severe water shortages.**

Higher temperatures already are severely impacting the productivity of **Lake Tanganyika, which provides 40% of the protein in lake shore villages.** Approximately

10 million people rely on this ecosystem for their livelihoods. However, lake temperatures have been warming since the early 1900s, at a rate not seen for at least 1500 years. Water temperatures at the surface of the lake have increased much more quickly than deeper waters, resulting in less mixing of lake waters and fewer nutrients reaching fish and other aquatic life. **Fish catches are declining, which has led to declines in income and protein that feed local families.** Based on future climate projections, these current trends are likely to continue, with effects extending far beyond the shoreline as people increasingly turn to the forests to replace lost income and nutrition from the lake.

Because the majority of farmers in this region depend on rain-fed agriculture to grow their crops, **some of the most profound and direct impacts of climate change over the next few decades will likely be on agricultural and food production systems.** Farmers will have to contend with

- less productive soils,
- a loss of natural cues for when to plant and harvest, and
- a shorter growing season.

Predictions are that decreased water availability will lead to a 10-20% decline in agricultural productivity, with small scale farmers disproportionately affected.

Working with Nature to Adapt to Change

The ability of people and natural systems to respond to a changing climate is great and local communities can begin taking immediate action to start adapting to changing climatic conditions. There is good reason to hope that our natural systems are still resilient enough and our human communities motivated enough to prepare for this changing future.

To begin this work, The Nature Conservancy convened a local participatory process involving the Jane Goodall Institute, the Frankfurt Zoological Society, the Tanzania National Parks (TANAPA), and Kigoma and Mpanda District officials to establish effective climate adaptation strategies and actions. This process was based on the premise that **the most effective way to combat climate impacts is to empower local communities to sustainably manage their own natural resources.**

The group identified the following

CLIMATE ADAPTATION STRATEGIES:

- **Support village land-use planning including the design of smart agricultural growth plans** so critical forest resources are protected and conserved to secure essential water, food and fuel supplies;
- **Improve fisheries management** to increase fish production using more sustainable fishing practices;
- **Maintain and restore the connectivity of key areas** to increase resilience of natural systems to climate impacts;
- **Reduce incompatible wildfire** to decrease deforestation and protect at-risk freshwater resources;
- **Introduce energy saving and affordable technologies** that reduce the use of charcoal and fuelwood to limit further deforestation;
- **Improve the knowledge and understanding of climate change in local communities** to build support for implementation of climate adaptation strategies and actions;
- **Advocate for the development of national climate change policies** that support implementation of adaptation strategies.

