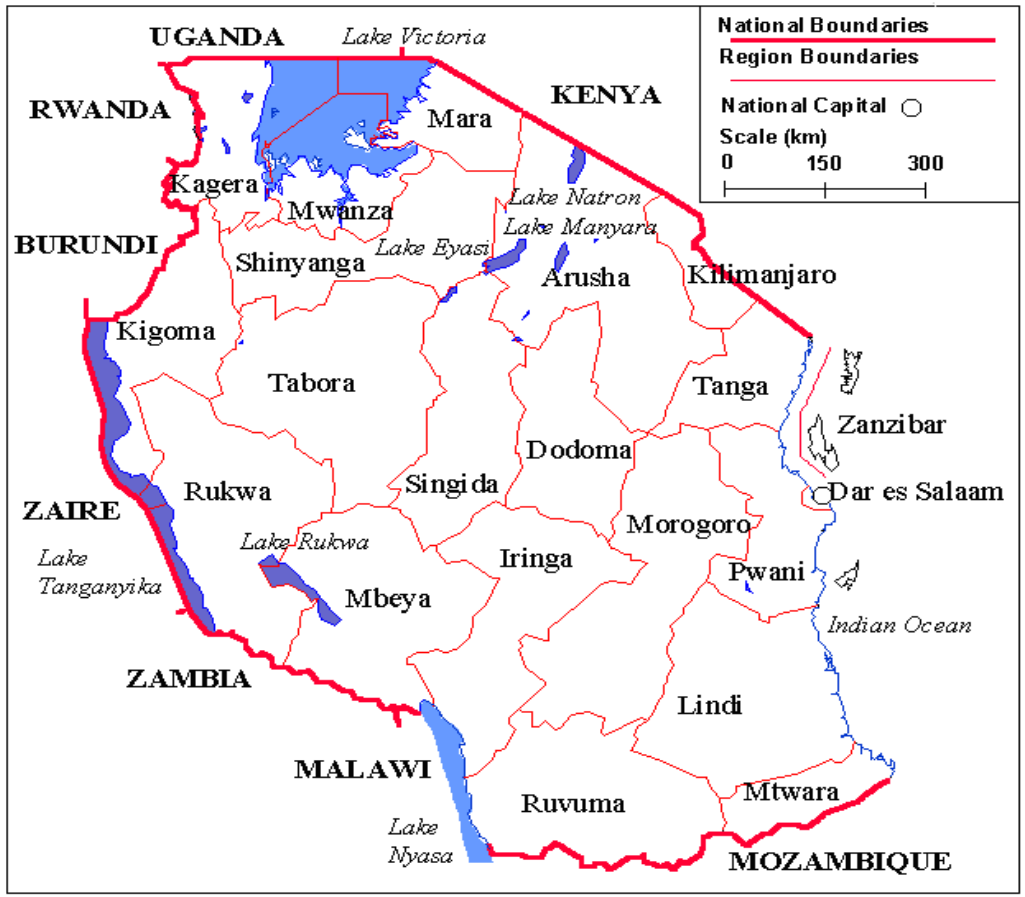
ADAPTATION PLANNING AND IMPLEMENTATION: AGRICULTURE AND FOOD SECURITY

By C.M. Shayo
Vice President's Office
Dar es Salaam
Tanzania

Tanzania

- Population : 36m
- Area:945000km^2
- Location: 1^{o}S to 12^{o}S and 30^{o}E to 40^{o}E.
- Coast: 800km
- Central plateau: 1000 – 3000m asl
- Kilimanjaro: 5896 m asl
- Southern Highlands + Eastern Arc mts.
- Rainfall & temp varies with altitude, relief, veg cover and location



Economy

- Agriculture (including livestock);
- Mining;
- Tourism;
- Industries;
- Energy; and
- Wildlife, forestry, marine and coastal resources.

AGRICULTURE = dominant sector in Tanzanian economy,

- Provides livelihood, income and employment to over 80% of the population which is around 36 million people
- Accounts for around 50 percent of GDP and about 60 percent of export earnings.

Impacts resulting from climate change

Effects of climate change have been experienced in the country.

- Receding glaciers of Mount Kilimanjaro,
- Frequent floods, droughts and poor harvests in recent years
- Frequency of extreme weather events such as El Nino floods

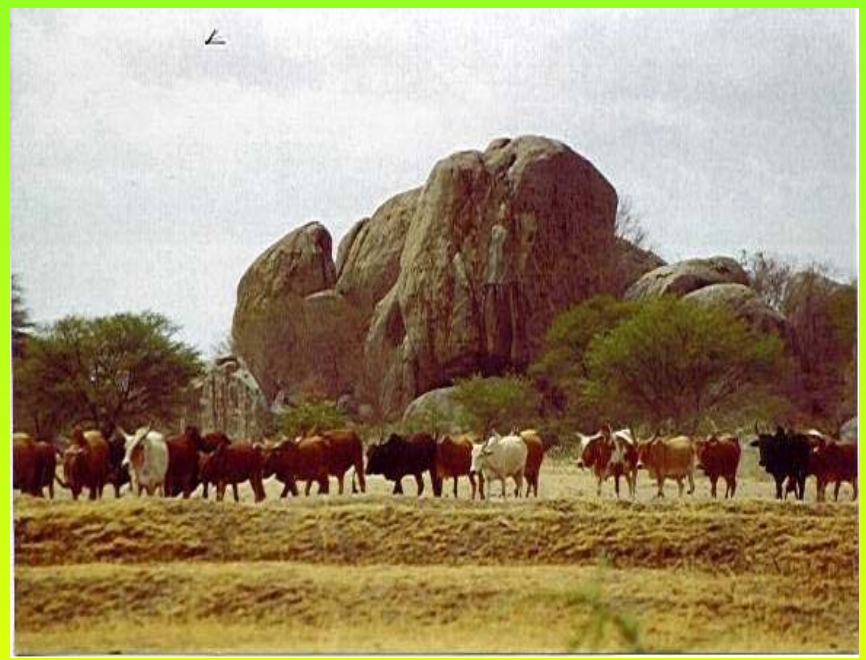
Vulnerability

The most vulnerable areas/sectors impacted by the effects of climate change include:-

- Agriculture
- Water
- Energy

Agriculture becomes particularly highly vulnerable to changes in climate since it depends mostly on rainfall.

Some outcomes include low food production, shrinking rangeland areas, overgrazing and land use conflicts



ENVIRONMENTAL CHALLENGES RESULTING IN CLIMATE CHANGE

- Tanzania has been faced with rapid and widespread environmental degradation particularly that of land and water catchments.
- The main factors resulting to land degradation are considered to be contributing to the climate change in the country, affecting agricultural production and food security.
- In order to ensure sustainable agriculture and food security in the country, these factors need to be addressed.
- Some of these factors/challenges include the following:-

Uncontrolled tree felling for charcoal

Agricultural activities on mountain tops and slopes

Overgrazing

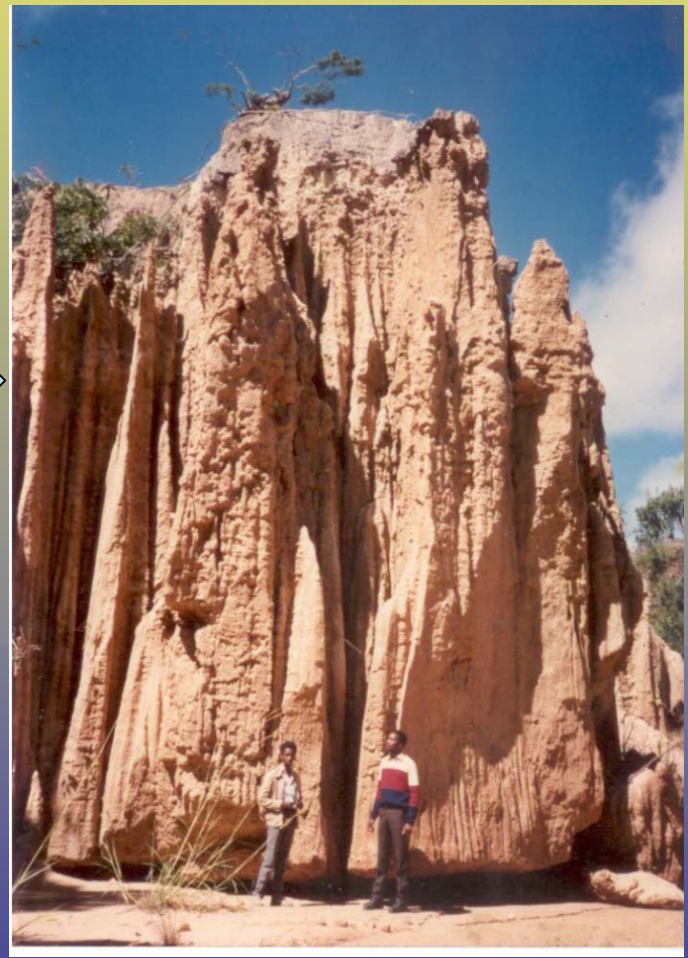
ENVIRONMENTAL CHALLENGES contd.

Uncontrolled tree felling for fire wood

Use of Indigenous trees for building purposes

ENVIRONMENTAL CHALLENGES contd.

- Loss of vegetation due to forest fires leading into floods, soil erosion and loss of fertile land for agriculture during the rainy seasons.
- Unsustainable irrigation resulting to loss of water resources;
- Unsustainable mining activities resulting in tree felling and loss of vegetation cover.
- Low education of the farmers on environmental mgt aspects



About 91,300 hectares of forest are lost every year resulting to severe land degradation and hence desertification

- Water levels at various important dams has been constantly decreasing,
- Considerable No. of wells, rivers, dams and other water sources have dried.
- The decrease of water in the dams, has reduced hydro power generation impairing economic activities and social development.

- The high human population growth rate, the low economic growth, deforestation rates, high incidences of forest fires, loss of vegetation due to overgrazing and high dependency of fossil fuels are some of the factors resulting in increasing rate of global warming and the consequent climate change.

MITIGATION STRATEGIES OF THE CAUSES OF CLIMATE CHANGE

- Tanzania has adopted a number of measures, including development of some policies, strategies and legislations that are aimed at reducing the vulnerability of natural systems, human population and promotion of equity and sustainable development
- Some of the policies/strategies/legislature geared towards mitigation of root causes of climate change include:-

(a) Environmental Policy

- The Government in 1997 put in place a National Environmental Policy seeking to provide the framework for making fundamental changes that are needed to bring environmental considerations into the mainstream of decision making in Tanzania.
- It seeks to provide policy guidelines, plans and give guidance to the determination of priority actions, and provides for monitoring and regular review of policies, plans and programmes.
- It further provides for sectoral and cross-sectoral policy analysis in order to achieve compatibility among sectors and interest groups and exploit synergies among them.

(b) Environmental Management Act

- The Environmental Management Act was enacted in October 2004 and became operational 1st July 2005.
- Enactment of EMA is an implementation of the National Environmental Policy (NEP), 1997 which provides for the need and necessity to have a framework environmental management legislation.
- EMA provides a solid legal basis and assign different institutions functions (mandates) for sustainable management of the environment and natural resources.
- EMA seeks to provide for and promote the management, enhancement, protection, conservation and management of the environment.

(c) National Strategy for Growth and Reduction of Poverty- NSGRP

- The government has recently adopted the National Strategy for Growth and Reduction of Poverty - NSGRP, which is a national organizing framework for putting the focus on poverty reduction high on the country's development agenda.

- The strategy makes explicit mention of sustainable development as a basic principle and it allows for environment concerns complying with the requirements under MDG 7.

(d) National Adaptation Programme of Action

- NAPA was recently prepared.
- Since Tanzania's economy is largely dependent on agriculture, it is deemed that sustainable development can be achieved when strategic actions, both short term and long term are put in place to address climate change impacts on agriculture and other key economic sectors.
- NAPA looks at the effects of climate change as a threat mainly to the agrarian population that still depends on subsistence agriculture for their daily livelihood.
- NAPA identifies priority areas in various sectors, and further prioritizes project activities in those sectors.
- These activities need immediate and urgent actions for the country to adapt to such climate change effects on a short term basis as well as putting in place mechanisms for addressing long-term adaptation initiatives.

ADAPTATION STRATEGIES

1. National/Gvt Level

(a) Good Governance and political stability

- In order to succeed in its endeavour towards poverty reduction in the country, political stability and good governance is essential.
- Realising this fact, the Government of Tanzania has established a Ministry responsible for Good Governance. Therefore, since poverty and environmental degradation are inseparable, it is expected that environmental degradation, including factors resulting to climate change will be reduced.

(b)Intensification of the early warning systems

- Currently, the government is implementing Famine Early Warning System Livestock Early Warning System.
- Networking among different actors in the implementation of the early warning systems is highly encouraged.
- Main actors include Ministries of Agric, Livestock, Water, Natural resources & Meteorology Dept.

(c) Mainstreaming Environment into NSGPR, sector and Local Government Plans and budgets

- Environmental concerns have been integrated into NSGPR and the sectoral and local Government's plans and budgets.

- Public participation regarding integration of environmental issues to the planning process ("Opportunity and Obstacles for Development (O&OD)“) is being implemented at all levels

(d) Agricultural research and extension

- As a requirement, agricultural research projects in the country are supposed to be demand driven in order to solve the problems encountered in the agricultural sector, including the effects of climate change.
- In recent years therefore, research projects have been directed towards development of drought resistant and short duration crop varieties; selection of suitable pasture species and livestock breeds to suit various agro-ecological zones; determination of types and appropriate levels of fertilizers; and development of suitable storage methods and efficient water use methods.

(e) A Strategy for Urgent Actions to combat degradation of Land and Water Catchments

- This Strategy was adopted in March 2006
- The Strategy identifies specific challenges on land and water catchments degradation in the country.
- It identifies areas affected, measures/strategic actions required to address the challenge, the timeframe for the actions and responsible institutions/actors.

Strategic actions (some)

- Identification, popularization, and use of traditional methods and indigenous knowledge for environmental protection.
  - Construction of chacos, and provision of alternative water sources to herdsmen.
  - Continuous education and creation of awareness on all aspects in environmental conservation including livestock keeping, sustainable agriculture & and tree planting.
  - Introduction of rewards and prizes for those exercising good environm. Mgt practices

Strategic actions (contd.)

- Maintenance of irrigation infrastructure and regular inspecting of the said.
- Irrigation canals such that excess water returns to the main water sources.
- Promote then use of kerosene, gas and coal as alternatives to wood fuel.
- Encourage research, development, and application of alternative energy sources and appropriate technologies
- Popularisation of rain water harvesting technologies and implementation of programmes and projects associated with rainwater harvesting

Strategic actions (contd.)

- Preparation of Environmental conservation and participatory land use plans for every district, (to avoid land use conflicts)
- Determination of livestock carrying capacities in villages and districts
- Surveying and mapping villages
- Preparation and implementation of a countrywide Environmental Educational and Public Awareness Programme.

Strategic actions (contd.)

- Sensitize villages and urban centres to establish forest farms for firewood and charcoal.
- Encourage research, development, and application of alternative energy sources and appropriate technologies.

(f) Participation in Regional and International Initiatives

- Tanzania participates and is implementing a number of regional and International environmental programmes. Some of these include the Nile Basin Initiative, Lake Victoria Environmental Management Programme, UNFCCC, UNCCD, etc.

2. Local Level

(Indigenous technologies, practices and knowledge)

(a) Use of local varieties and seed selection

- In many cases, the local varieties and breeds are more resistant to drought than the improved high yielding varieties. To avoid the risks of drought and a considerable number of farmers set aside a plot which is being planted with some selected seeds from the local varieties. Local varieties are also known to be having a longer shelf life.

(b) Inter-cropping and diversification

- The changing climate has made the farmers to avoid the risk of planting only a single crop as they were used before. In the most vulnerable areas, such as in the low-rainfall areas, many farmers plant different crop varieties in the same piece of land. It is very common to find a piece of land having more than 5 types of crops.

(c) Drought resistant varieties

- In many areas, farmers have either switched from planting their traditional crops or they have adopted some non-traditional and drought resistant crops in order to cope with the changing climatic conditions. Some farmers, who used to plant maize as their traditional crop for example, are now planting more drought resistant crops such as cassava, millets and sorghum.

(d) Early warning systems

- Realising the effects of climate change, some local methods for predicting short, medium and long term climatic changes are increasingly being used. The methods differ from place to place. In this case therefore, if drought is anticipated the farmers would plant more of sorghum and millet than maize. For livestock keepers, they would tend to take precautionary measures such as shifting their animals to other places or distribute them to avoid the risk.

(e) Pasture reserves

- To avoid the effects resulting from climate change, livestock keepers particularly in the low rainfall areas have adopted a system of reserving pasture areas for use by young, sick and lactating animals during the periods of feed shortages and in cases of drought.

(f) Disease control and grain storage and preservation

- Realising that price of inputs is high, there have been several local technologies that are used by various communities for disease treatment and grain storage and preservation

CONCLUSIONS

- Factors causing climate change should receive concerted mitigation efforts from each country.
- Governments should put in place some policies and strategies to address root causes of climate change and adaptation strategies.
- Adaptation measures undertaken by the local communities ought to be encouraged and promoted.

CONCLUSIONS (contd)

- High dependency on rain-fed agriculture and forest sectors, high population growth rates and poverty exacerbates the vulnerability of the local societies.
- Adaptation efforts towards climate change should be complemented by mitigation of the factors resulting to global warming and climate change.
- More research is required to better understand whether and how food production is threatened by potential climate change and the adaptation mechanisms.

THANK YOU FOR LISTENING