

Climate Change Effects on Food Production in Namibia

Mr. Johannes Niipale
Directorate of Forestry;
Ministry of Environment, Forestry and
Tourism

5-6 December 2024



Presentation outline

- ❖ Introduction and Background
- ❖ Impacts of Climate Change (Rainfall, Temperature, Biodiversity, Food production)
- ❖ Economic and Social Effects on Communities
- ❖ Causes of Climate Change in Namibia
- ❖ Climate-Resilient Practices and Solutions
- ❖ Future Prospects and Recommendations
- ❖ Conclusion

Introduction



Climate change - refers to “**long-term shifts in temperatures and weather patterns**”



Global concern due to its impacts on ecosystems, livelihoods, economies, food and nutrients.



It threaten the livelihoods of millions, particularly those dependent on agriculture, fisheries, and natural resources, by reducing food security and access to clean water



Namibia's heavy reliance on agriculture and natural resources makes building resilience to climate change crucial for ensuring sustainable livelihoods, food security, and economic stability.

Impacts of climate change on food security

A. Change in Rainfall Patterns

- ❖ Decreased rainfall: Effects on water sources, irrigation, and crop yields.
 - ❖ Change in rainfall patterns - more often low rainfall is received
 - ❖ Reduces run off into the water system and low recharge
 - ❖ Dried water source/ water system -e.g. Kwando river & Lake liyambezi in Zambezi region
 - ❖ AS A RESULT- life of the fishermen is affected leading to decrease in fish stock and other aquatic life in the riverine and wetlands
 - ❖ Wildlife and biodiversity are affected in the wildlife corrido
 - ❖ Lake Oponona has dried up in Oshana - livestock & the surrounded community are affected
 - ❖ River streams in Oshana also dried up - fishermen whom were camping next to those rivers have packed and left
 - ❖ Water in Etaka wetland in Omusati is subside- irrigation of the small scale vegetable producers is affected

Effects of climate change

B. Low rainfall combined with rising Temperatures

- ❖ High evaporation, lakes and rivers drying up.
- ❖ Loss of fish and other aquatic life.
- ❖ Heat stress on crops, livestock, and wildlife.
- ❖ Increased evapo-transpiration rates and soil degradation.
- ❖ Shortened growing seasons affecting planting and harvesting cycles.
- ❖ Low water table - drying up of the aquifers/boreholes - less irrigation
- ❖ Loss of food and income.



Impacts of climate change on food security

A. Rainfall Patterns

❖ Increased rainfall

- ❖ High rainfall: Flooding, crop destruction, and reduced market access.
 - ❖ Lakes and rivers are flooding - cutting off road network & access to markets
 - ❖ Flooding of crop fields in low lying areas of Zambezi, Oshana and Omusati
 - ❖ Fishermen will wait for water to subside to access/start fishing
 - ❖ Pest and water borne diseases - High costs to health facilities (Hospitals)
 - ❖ Likely to experience forest and veld fires due to accumulation of more biomass



Impacts of climate change on food security

A. Rainfall Patterns

- ❖ Change in Temperature
 - ❖ Increased temperature - more forest fires and destruction of vegetation's - loss of forages
 - ❖ Rangeland degradation (Overgrazing, Bush encroachment) - low productivity in agricultural sector
 - ❖ Heat waves - wilting of crops and droughts

Effects of droughts due to Climate change

C. Biodiversity Loss

- ❖ Dried Vegetation - loss of forage, habitats and biodiversity.
- ❖ Loss of pollinators and its impact on crop yields.
- ❖ Degradation of habitats for livestock and wildlife.



Effect of climate change on fodder



- ❖ Lack of fodder - lead to elephants browse on Baobab trees (Picture taken at the Bushman land).

Effects on Different Food Systems

A. Crop Production:

- ❖ Reduced yields of staple crops (e.g., maize, millet).
- ❖ Crop failures due to droughts or flooding.

B. Livestock Farming:

- ❖ Loss of fodder and water sources.
- ❖ Increased livestock mortality due to heat stress.

C. Aquatic Resources:

- ❖ Drying of rivers and wetlands leading to a decline in fish stocks.
- ❖ Disruption of livelihoods for fishing communities.



What have been affected so far?



Food for human, livestock, wildlife and the entire value chain is affected



Subsistence and wildlife farmers pay the highest price(rural farmers)



Biodiversity



Livelihood



Habitats

Causes of climate change

Factor causing climate change:

1. Human Processes

- ▶ Heat trapping Greenhouse gases
- ▶ Emission of excessive greenhouse gases due to production and manufacturing
- ▶ Other anthropogenic activities - e.g. cutting down of trees

2. Natural Processes

- ▶ Catastrophic such as fires and volcanos
- ▶ Reflectivity or Absorption of the sun energy
- ▶ Natural occurring CO₂ concentration
- ▶ Changes in earth's orbit & rotation



Causes of climate change in Namibia

CAUSE

- ❖ Deforestation & illegal logging
- ❖ Cutting of trees for multiple purposes (domestic use and commercial drives)



SOLUTION

- ❖ Diversification of incomes
- ❖ Development for the commercialization and processing of the NTFP, i.e. Devils claws & fruits



Other causes of climate change in Namibia

CAUSE

- ❖ Forests and veld fires

SOLUTION

- ❖ Education and create awareness
- ❖ Creation of firebreaks (fire cutline)



Nature catastrophe

- ❖ Fires destroy habitat for wild life e.g. reptiles
- ❖ Grass and biomass is burned
- ❖ Animals left with no food to eat
- ❖ Small creatures will succumb by fire
- ❖ Ultimately, CO₂ is back into the atmosphere



Causes of climate change in Namibia

PROBLEM

- ❖ Cutting down of trees for economic prospect
- ❖ Cutting down bigger trees to increase the commercial yield or income

SOLUTION

- ❖ Conduct forest inventory for sustainable use
- ❖ Determine the allowable harvests
- ❖ Invest in carbon credit scheme



Climate-resilient practices: ways to manage changes; adapt to climate risks & ensure food security.

- ❖ **Climate-resilient crops:** Plant breeding techniques have created crops that can withstand extreme weather, resist pests and diseases, and maintain high yields. *E.g. blue berries plantation in Mashare green scheme in Kavango East region and also planting of climate resilient maize and wheat.*
- ❖ **Agroforestry:** provides environmental and socio-economic benefits to rural people (Afforestation and reforestation).
- ❖ **Sustainable farming practices:** crop diversification and use of organic farming to achieve higher productivity/yields and farm incomes.
- ❖ **Conservation tillage:** Minimally tillage of the soil to increase soil organic matter.





Climate-resilient practices are ways to manage changes; adapt to climate risks & ensure food security.

- ❖ **Water reservoirs:** To harvest water and use it in dire times for irrigation purposes.
- ❖ **Heat-tolerant breeds:** Planting of draught resistance crops/plants.
- ❖ **Rotational grazing:** reduce land degradation and enhance rangeland management.
- ❖ **Reducing overgrazing:** practicing of feeding rots and production of forage.
- ❖ **Reducing polluted groundwater:** This practice can help with climate resilience
- ❖ **Spatial planning methodologies** - cities and towns (Backyards gardens)

Future prospects

- ❖ Increase and access to climate financing schemes - carbon credits scheme
- ❖ Promotion of agro-forestry practices
- ❖ Promotion of eco-tourism
- ❖ Development of commercialization of the NTFP
- ❖ Trees planting - Nature's carbon capture machine and orchard development.
- ❖ Smallholders farming with organic solution
- ❖ Application of technologies i.e. bio char for carbon sequestration and to maintain moisture in crop fields.



Future prospects

- ❖ Community education
- ❖ Engage in research and development (Institutes of high learning)
- ❖ User-rights & sustainable use of forestry resource
- ❖ Adherence and commitment to the UN-NDC policy
- ❖ Review of conflicting policies & legislatives
 - ❖ Too much bushes - Bush encroachment
 - ❖ Rangeland management - Deforestation
 - ❖ Agricultural Green schemes - Deforestation



Conclusion



- ❖ Climate change is disrupting food production in Namibia, with unpredictable rainfall, rising temperatures and biodiversity loss threatening crops, livestock, and livelihoods.
- ❖ Adopting sustainable practices like climate-resilient crops, water management, and agroforestry is essential to mitigate these risks.
- ❖ Stakeholders need to invest in climate resilience and sustainable solutions to protect Namibia's food systems and ensure a secure future for its people and ecosystems.

Thank you

LET US ADOPT INNOVATIVE WAYS AND RESTORE OUR FORESTS AND ENVIRONMENTS

