OPTIONS & CHALLENGES IN CLIMATE CHANGE ADAPTATION IN ZAMBIA

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What is Climate Change?

Climate change is a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods (UNFCCC).
Mitigation and Adaptation

Mitigation: An anthropogenic intervention to reduce the sources or enhance the sinks of greenhouse gases (IPCC, 2001).

Adaptation: Adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities (IPCC, 2001).
Effects of Climate Change

Ecosystems and biodiversity

- 20 to 30% of species of the earth could disappear
- Reducing biodiversity and ecosystem goods and services.

Sea level rise and exposure to meteorological disasters

- Global temperature rise of 3 to 4°C could cause the permanent or transitory displacement of people
- More intense floods due to melting glaciers, putting in risk water availability of one-sixth of the world’s population
Effects of Climate Change

Human health

- Health impacts felt mostly in developing countries due to poverty conditions and adequate public health systems.
- Increased prevalence of water-borne and vector-borne diseases

Agriculture and Food Security

- Precipitation, temperature and water availability for agricultural purposes will be affected by climate change.
Climate change is a threat to global food security, sustainable development and poverty eradication.

IPCC Summary of projected changes in crop yields (mostly wheat, maize, rice, and soy) due to climate change over the 21st century.
The agriculture sector is one of the most affected by climate change among the sectors vulnerable to climate change in Africa.

This is due to its high dependence on climatic factors such as precipitation and temperature.
Effects of Climate Change on Food Security

Agriculture's subsectors that include crops, livestock, forestry, fisheries and aquaculture, must adapt to a changing climate.
Adaption Options in Agriculture

- Altering inputs, varieties and species for increased resistance to heat and drought shocks, flooding and salinization
- Managing river basins for more efficient delivery of irrigation services and prevent water logging, erosion and nutrient leaching
- Wider use of technologies to “harvest” water and conserve soil moisture
Diversifying income through crop-livestock integrated systems (e.g. the integration fish and rice production).

Wider use of integrated pest and pathogen management, developing and using varieties and species resistant to pests and diseases.

Increasing use of climate forecasting to reduce production risk.
...Adaption Options in Agriculture

- Undertaking changes in forest management, including hardwood/softwood species mix, timber growth, non-timber forest products and harvesting patterns.
- Introducing forest conservation, agroforestry and forest-based enterprises for diversification of rural incomes.
- Sustainable fishing (altering catch size and effort and improving the environment where breeding occurs) so as to sustain yields of fish stocks.
Adaption Options in Agriculture - CSA

Climate Smart Agriculture

- Sustainably increasing agricultural productivity and incomes;
- Adapting and building resilience to climate change;
- Reducing and/or removing greenhouse gas emissions, where possible.

CSA is not a single specific agricultural technology or practice that can be universally applied. It is an approach that requires site-specific assessments to identify suitable agricultural production technologies and practices (FAO).

One of such approaches currently being implemented in Zambia is Conservation Agriculture (CA)
What is CA?

CA consists of a package of farming practices based on three main principles namely:

- Minimum mechanical soil disturbance
- Permanent organic soil cover and
- Crop rotation
CA Benefits

- Improves soil fertility
- Improves water retention
- Reduces soil erosion
- Improves yields and incomes with moderate input use
- Improves crop diversity
- Improves household dietary diversity
CA Adoption Rates in Zambia Remain Low

But adoption rates are higher for some specific CA practices

<table>
<thead>
<tr>
<th>Practice</th>
<th>National</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Households</td>
<td>1,472,886</td>
</tr>
<tr>
<td>Minimum Tillage (%)</td>
<td>10.6</td>
</tr>
<tr>
<td>Planting Basins/potholes (%)</td>
<td>3.8</td>
</tr>
<tr>
<td>Zero tillage (%)</td>
<td>4.1</td>
</tr>
<tr>
<td>Ripping (%)</td>
<td>3.4</td>
</tr>
<tr>
<td>Crop Rotation (%)</td>
<td>49.9</td>
</tr>
<tr>
<td>Crop Residue retention (%)</td>
<td>63.3</td>
</tr>
</tbody>
</table>

Source: RALS 2015
Some factors that affect CA adoption

- Lack of inputs: 26
- Problem of weeds: 22
- High cost of herbicides: 9
- Lack of training/lack of Knowledge: 8
- Attitude/ignorance/laziness: 7
- Traditional beliefs/cultural norms/witchcraft: 6
- Limited land availability for crop rotations: 1
Other challenges

- Limited awareness and extension
- Lack of technical capacity
- Limited financial resources
- Limited coordination across sectors
- Limited early warning weather systems
Conclusions

- Strengthening institutions at local, national, and regional levels to support agriculture
- Scaling-up financing mechanisms
- Information (improved early warning systems and seasonal weather predictions)
- Continued adaptive research at national & local level as well as extension.
- Skills and training
Thank You

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