Risk and Vulnerability of Agriculture Systems to Different Climate Change Scenarios in Malawi

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Agriculture in Malawi

- Agriculture in Malawi is:
  - One of the key priority in National Development strategies (i.e. MGDS II, National Vision 2020);
  - 80% population dependent on agriculture 33 % GDP;
  - Sectoral priority in Pillar 1 (Adaptation) of the National Climate Change Policy, mainstreamed into ASWAP and NAPA
  - One of the key priorities in the NAP Process underway
- Significant differences in rainfall and temperature variability across geographical regions in Malawi.

Climate Trends in Malawi

- Malawi particularly prone to adverse climate hazards: dry spells, seasonal droughts, intense rainfall, riverine floods, and flash floods;
- Droughts and floods have increased in frequency, intensity, and magnitude over the past 20 years;
- Significant increasing trends in the frequency of hot days and nights in all seasons;
- Mean annual temperature is projected to increase by 1.1 to 3.0°C by the 2060's, and by 1.5 to 5.0°C by the 2090s;
- All models consistently project increases in the proportion of rainfall that falls in heavy events in the annual average of up to 19% by the 2090s.

Climate is Key to Vulnerability in Malawi

- Consumption per capita is lower in areas with greater long term climate variability;
- Higher long term mean rainfall (proxy to climate change) is associated with higher per capita consumption and lower vulnerability;
- The greater the deviation from long term mean rainfall pattern experienced in the last season, the more consumption is reduced and vulnerability increased;
- Other significant variables for reducing vulnerability are higher household wealth, and access to institutions such as extension, credit, fertilizer subsidies and social safety nets.

Risk management for a typical Malawian

- Policies to address climate risk need to be tailored to different AEZs
- Information on climate variability available to farmers is an important element of policy performance;
- Policies do not seem to overly affect the incentive to diversify;
- Pro-active risk management critical in both agriculture and climate change policies

Responses towards Sustainable Agriculture

- ASWAp, National Climate Change Policy, Greenbelt Initiatives, etc, outlines sustainable agriculture as key focus areas but:
  - Uptake of sustainable agriculture practices remain low;
  - Fertilizer Uptake is extremely low (around 50kg/Ha arable land);
  - Fertilizer use efficiency average 17 kg maize/kg N_2;
  - Increased incidences of pests and diseases;

- Agricultural yield will remain far below potential;

Addressing Synergies Between Livelihood, Adaptation and Mitigation

- Sustainable Agriculture systems are a profitable in drier areas with greater rainfall variability. In such areas, communities may increase incomes than under conventional systems (food security and adaptation)
- In relatively humid areas, higher yields are coupled with higher Carbon sequestration coefficients (food security and mitigation)
- Initial production costs of sustainable agriculture systems require incentives at smallholders' level.

UNFCCC Processes and Agriculture

- Need for more on-the-ground evidence on the resilient practices with respect to the observed climate variability;
- Enhance the availability of information on climate variability generated from localized models (emphasizing gender);
- Actively engage the agriculture sector in the NAP Process;
- Support for means of implementation of agriculture an food security related projects in Climate Funds;
- Technological advances are critical for agriculture to become more resilient, e.g. improved cultivars, resource use efficiencies;
- Incentives are critical in the initial phases of implementation with long term programs.

Thank You