Data, Tools and Methods for Climate Risk, Vulnerability and Adaptation Assessments

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Context Specificity

- Climate drivers, risks, vulnerabilities and associated impacts are location specific
- Risk evolution is conditioned on exposure, sensitivity and associated vulnerabilities
- Adaptive capacity can moderate or avoid risks and reduce vulnerabilities
- Adaptation is driven by vulnerability and risk assessments
- Adaptation is context specific
- Components have time and space dimensions
Data and Information Requirement for Assessments

- **Climate data and information products**
  - Observed climate data time series
  - Value added derived climate variables
  - Agro-meteorological products and outlooks
  - Climate change scenarios and projections

- **Natural resources and ecosystems**
  - Availability of and access to quality water resources
  - Availability of and access to agricultural land and forests
  - Status of ecosystems and their functioning
  - Status of diversity of genetic resources

- **Agricultural production systems**
  - Agricultural production and productivity
  - Management of agricultural production systems
  - Impact of climate on agriculture sectors and livelihoods
  - Projected impact of climate change on crops, livestock, fisheries, and forestry

- **Socio-economics**
  - Food security and nutrition (vulnerability)
  - Access to basic services
  - Access to credit, insurance, social protection and formal/public safety nets
  - Agricultural value addition, income and livelihood diversification

- **Institutions, policy and enabling environments**
  - Institutional and technical support services
  - Institutional capacity and stakeholder awareness
  - Mainstreaming climate change adaptation priorities
  - Financing for adaptation and risk management
Tools for Assessments

Data and information flow in a generic climate change impact assessment framework

- Climate change scenarios
- Historical weather data
- Future weather data
- Crop data
- Soil data

Changes in extreme weather events
- Future climate scenarios downsampling
- Future technology trend
- Weather, crop pest/disease relationships

Agronomic Management
- Soil water balance
- Soil nutrient balance

Crop growth simulation (Baseline)
- Weather, crop pest/disease relationships

Crop growth simulation (Future)
- Response to CO₂ change

Future water availability
- Crop data
- Soil data

Difference in current and future yield distribution (Biophysical impacts)

National/regional crop production scenarios for adaptation planning, policy development and investment decisions

Future weather data

Approaches and Methods of Assessment

- **Quantitative data driven approaches**: Top-down and quantitative data driven assessments largely covers biophysical aspects (e.g. climate change impact assessments).
- **Integrated approaches**: Combination of top-down and bottom-up approaches with both quantitative and qualitative data sets, covers bio-physical and socioeconomic aspects.
- **Community centered assessments**: Bottom-up approaches, largely depend on qualitative data, objectivity is introduced to some extent, location specific, largely covers social contexts.
Some Challenges

- Availability of data and information
- Uncertainty associated with measurement, projections and assumptions
- Data overload – complex assessment with little inference to make
Thank You