Mainstreaming Disaster Risk Reduction in Agriculture

Among the various sectors of development, agriculture is at higher risk because of the inherent vulnerability
Who pays for disaster losses?

Poor pays the most when disasters strike.

One of the key factors is the vulnerability of agriculture sector that supports the livelihood of a large cross-section of the people in agrarian economies.
On average, agriculture absorbs about 22% of the Total economic impact caused due to disasters.

**Damage and loss to agriculture (%)**

**Analysis of 78 PDNA reports - total of USD 140 billion in damage and losses by disasters on all sectors, of which USD 30 billion was on the agriculture sector and subsectors.**

<table>
<thead>
<tr>
<th>Sector</th>
<th>Damage and Loss (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crops</td>
<td>42.4</td>
</tr>
<tr>
<td>Livestock</td>
<td>35.8</td>
</tr>
<tr>
<td>Fisheries</td>
<td>5.5</td>
</tr>
<tr>
<td>Forestry</td>
<td>2.4</td>
</tr>
<tr>
<td>Irrigation</td>
<td>3.5</td>
</tr>
<tr>
<td>Other</td>
<td>10.3</td>
</tr>
</tbody>
</table>

*Source: FAO based on data from post-disaster needs assessments, 2003–2013*
For floods, droughts and tropical storms, 25 percent of all damage and losses is on the agriculture sector.

- Climate Risk Management Approach

Agriculture is the single most affected sector by droughts, absorbing on average about 84 percent of all the economic impact.

Source: FAO based on data from post-disaster needs assessments, 2003–2013
#5 Key Priorities for Mainstreaming Disaster Risk Reduction in Agriculture

- Translation of the Sendai Framework of Disaster Risk Reduction in Agriculture
#1 Priority
Understanding the complexity of risk in agriculture
Climate risk management approach for mainstreaming disaster risk reduction
High Impacts from Floods in Asia-Pacific

According to the World Resources Institute (2015), nearly 80% of the global population exposed to flood risk lives in 15 countries. Of these, 10 countries are in the Asia-Pacific region.
Addressing flood risks in cross-border rivers require deepening regional cooperation.

Transboundary floods are more frequent with increasingly devastating impacts.

Brahmaputra, Indus and Ganga - maximum loss of lives, damages, flood occurrences.

Around 40% of world’s poor live in major transboundary river-basins of South Asia.

Source: Asia-Pacific Disaster Report 2015 and Flood Risk, OCHA, 2014
impact data (2000-2010) from G.R.Brakenridge, "Global Active Archive of Large Flood Events", Dartmouth Flood Observatory, University of Colorado
Transboundary tropical cyclones: of the 86 tropical cyclones globally every year, 50 to 60 occur in the three Asia-Pacific ocean basins

Bay of Bengal and the Arabian Sea

India’s experience of managing cyclone Phailin (2013) and Hudhud (2014) demonstrates its leadership in end-to-end cyclone early warning systems
Unlike other regions in the world, drought manifests differently in Asia-Pacific and is often forgotten - irregularities in the monsoon season, reduced snowfall or glacial runoff, or winter droughts like the dzud.

Drought exacerbates poverty - more than 1.6 billion people affected by drought since 1970s.

Land and water constraints and changing climate patterns will increase the risk.
Drought risk compounded by extreme vulnerability

Income loss due to a drought year in eastern India

Due to drought, decreased income from agriculture is sharper than regular income

Risk Sensitive Agriculture Development Planning

Climate Risk Management Approach

Policy, Planning & Interventions

Integration of climate outlook and seasonal forecast with in-season monitoring for early warning and adaptation

Source: RIMES
#2 Priority

Strengthen institutional and technical capacities for disaster risk reduction and climate change adaptation in agriculture and enhance the coordination across the sectors.
Objectives:
Ensure efficient institutional mechanisms and processes to strengthen agriculture and sustainable land management and integrate them into development priorities.

Gaps to be addressed:
Limited knowledge and capacities at both national and decentralized levels to program from the sectoral perspectives, and implement projects and actions; resource constraints; bottlenecks in inter-institutional coordination and collaboration.

Strategy:
Strengthening institutional and technical capacities within agriculture related policies, strategies and plans.
Disaster Risk Reduction, Climate Change Adaptation, and Sustainable land management integrated into planning and activities of all relevant departments, institutions, and stations within the General Directorate of Agriculture (GDA) of the Ministry of Agriculture, Forestry, and Fisheries

Plan of Action for Disaster Risk Reduction in Agriculture 2014-2018

DECEMBER 2013
#3 Priority
Promote and enhance early warning systems for ‘actionable’ disaster risk reduction and climate change adaptation
Objectives:
Improve EWS and weather and climate information products customized to the needs of farmers and related institutions.

Gaps to be addressed:
Timely access to accurate Early Warning information including weather and climate information for agriculture application; weak outreach of risk communication to the key stakeholders

Strategies:
Establish and improve agriculture specific early warning systems and improve, in coordination with other relevant stakeholders
Integrating weather and climate risk in Agriculture

Climate risk information

<table>
<thead>
<tr>
<th>Outlook</th>
<th>Seasonal Forecast</th>
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</table>

Translation of climate risk information

<table>
<thead>
<tr>
<th>Impact Outlook</th>
<th>Agriculture</th>
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Conversion of impact outlook into CCA/DRR strategies

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<tr>
<th>Risk Communication</th>
<th>Multi-stakeholders Platform</th>
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Step 1. Understanding the weather/climate risk (climate outlook/seasonal forecast)

Step 2. Sector-wise risk assessment
- Agriculture in particular

Step 3. Mitigation measures for responding to risk

Step 4. Multi-stakeholder risk communication
SRI LANKA: Water Management for Agriculture Department of Irrigation (2014-2015)

Seasonal/Monthly Outlook from DOM

- below normal rainfall for 1st inter-monsoon

DOI convened joint meeting with DOA

- improving productivity in the wet zone
- water saving techniques in the Dry Zone

Provided advisory to farmers

- In Batticaloa, farmers were advised not to wait for rainfall; start planting immediately to take advantage of available water
- Advised farmers to reduce cultivation extent
- Advised farmers to plant early maturing varieties
- Provided irrigation support

Farmers apply information

- Farmers planted immediately in March and harvested in July
- Recorded very good production

In 2013-2014 drought season, farmers were not exposed to drought - no crop loss
ESCAP Regional Drought Mechanism
Based on Global Framework of Climate Services

Regional Drought Mechanism

Products/Services

Monsoon Forum

Products/Services

Warning
Monitoring and Alert (In-season)

Seasonal Forecast
(National Meteorological /Hydrology Services – 3 months in advance – RIMES..)

Climate Outlooks
(WMO – more than 3 months in advance)

El Nino/
La Nina

Piloting Drought Mechanisms with climate risk management approach in Myanmar, Cambodia And Sri Lanka
Seasonal Forecast: high temperature and low precipitation corresponds to drought index.
#4 Priority
Enhance knowledge management and innovation in support of disaster risk reduction and climate change adaptation in agriculture
Objectives:
Fill in the gaps in flow of data, information and knowledge and improve communication for informed planning, evidence based risk sensitive decision making in agriculture

Gaps to be addressed:
The wealth of existing technical and indigenous knowledge promoting resilience of farmers’ livelihood options is not put to use operationally.

Strategies:
Improved access to data, knowledge management and information dissemination and to capitalize on utilization of CCA/DRR innovations in agriculture sector.
Transboundary river basins are home to a large number of poor populations. It is estimated that about 40% of the world’s poor live on or close to the major transboundary river-basins in South Asia. Among these, two-thirds live on the Indus, Ganges and Brahmaputra basins.

**Poverty figures:**
*India national vs. Uttar/Bihar*
Benefits of Lead-time Forecast Are significant

Increasing lead time of flood forecast can substantially reduce flood damage in different sectors.

3 Key challenges of the Lead-Time Flood Forecasting

- Access to real-time data (flow, discharge) across the river-basin
- Capacity to utilize advances in weather/flood forecasting modeling
- Inter-governmental platform of operational hydrologist, meteorologists and DRR community.
Model solutions to the stream flow forecasting problem in GBM basin

In Bangladesh: Lead time flood forecasting (probabilistic) – Up to 10 days
.. 5 days with deterministic forecast approach (ensembles plus satellites products)

Source: World Bank and RIMES 2015
Focus on innovations in flood forecasting

- Longer lead time forecast strengthens household response with tangible benefits to the vulnerable and poor.
- Recent advances in weather forecasting, modeling systems and space applications enables longer lead times (up to 5-8 days).

Establish inter-governmental platforms in cross-border basins

- ESCAP is to put in place an inter-governmental platform of hydrologists, meteorologists and disaster risk reduction professionals from the riparian countries of cross-border river-basins – ESCAP/WMO model of TC/PTC
#5 Priority

Reduce vulnerabilities to disasters by improving technical options and implementing community-based disaster risk reduction and climate change adaptation measures in agriculture
Objectives:

Increase livelihood resilience by enhancing capacities of technical staff and increasing options for farmers to implement a wide range of good practices to reduce hazard risk exposure, damages and losses, and by creating additional livelihood opportunities and risk transfer schemes.

Gaps to be addressed:

Insufficient use of good practices that reduce underlying vulnerability of farming systems and farm families;

Strategies:

• Promote integrated farming systems and crop diversification to build resilience of agriculture communities to disaster impacts.
• Reduce land degradation and erosion through community sustainable land management and interventions.
• Promote sustainable water management and conservation practices on farmer fields.
• Promote risk sharing and risk transfer mechanisms.
#6 Priority

Strengthen effective preparedness and response capacities into agriculture interventions for DRR/CCA
**Objectives:**
Enhancing the national, sub-national and local capacities for disaster preparedness for emergency response and recovery and ensure that disaster risk reduction and climate change adaptation activities are included into response and recovery interventions.

**Gaps to be addressed:**
Disaster response in the agricultural sectors has largely been reactive rather than proactive in the past. Preparedness activities need to be institutionalized and systematically strengthened at all levels; response and recovery processes should be designed in a way that interventions provide new opportunities to integrate disaster risk reduction and climate change adaptation priorities considering a long term perspective also during response.

**Strategies:**
- Enhance capacity to conduct regular contingency planning and their integration in ongoing planning and activities
- Enhance preparedness measures to improve effectiveness of emergency response and recovery actions in agriculture
• Good practices from India
• Watershed development programme
• NDMA Study Tour
Thank you

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