

Impact of climate change & natural disasters on agriculture: How to manage risks and improve resilience ?

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Headlines

- **Economy and its people are vulnerable to natural disasters**
 - A typical El Niño event reduces GDP by US\$420 million and pushes 300,000 people below the poverty line
- **Governments have responded to natural disasters in the past**
 - But coordination, preparedness and response plans can be improved, and could better reflect unique risks and challenges
- **Policies can reduce some of the damages**
 - But no single policy can protect all people in all regions
- **A portfolio of actions exists that could be implemented today**
 - To prepare for future natural disaster and climate events and enhance the resilience of agriculture-food system

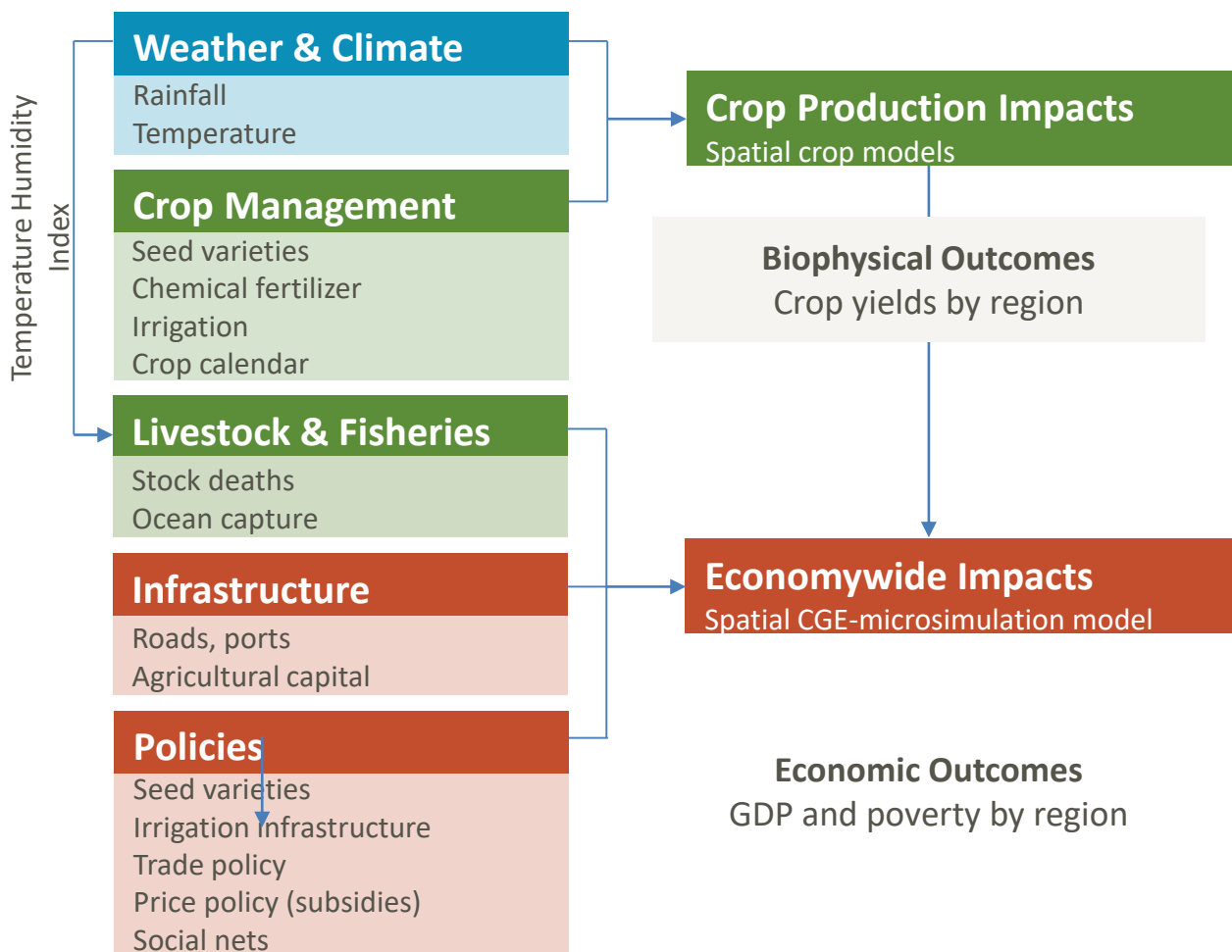


1

Measuring Economic & Social Impacts



Spatial Agriculture -Economy Models

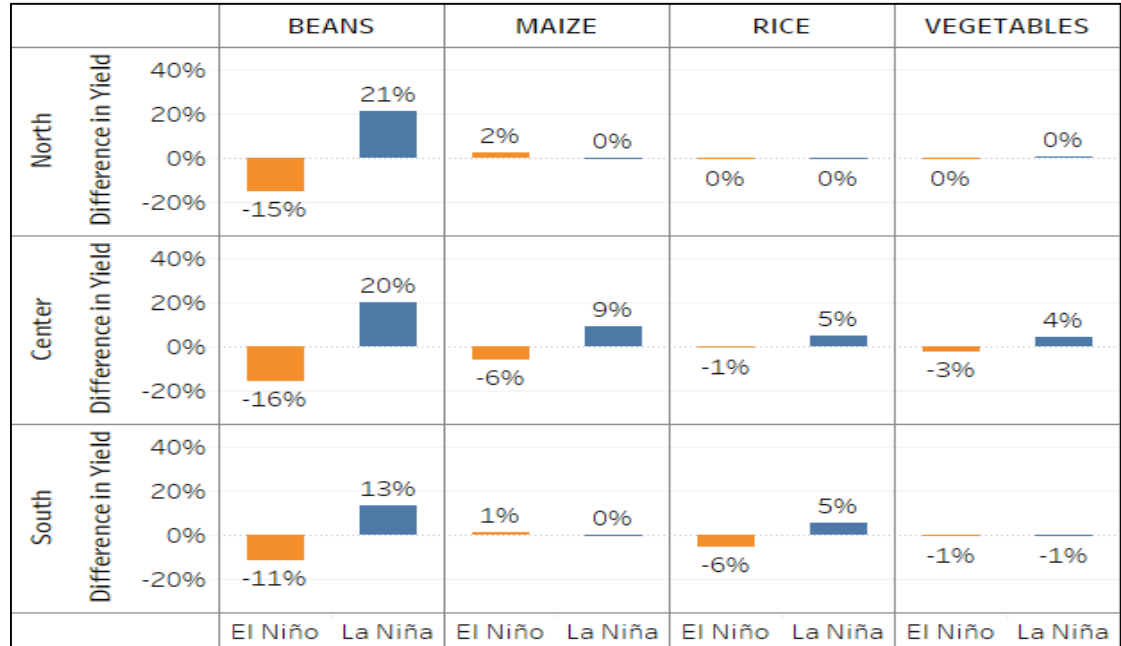




Example of Impacts on Crops

- Yield impacts vary by crop and region
- Yields usually fall during El Niño and rise during La Niña
- La Niña yield gains are usually slightly larger than El Niño yield losses

Crop Yield Deviations During ENSO Events



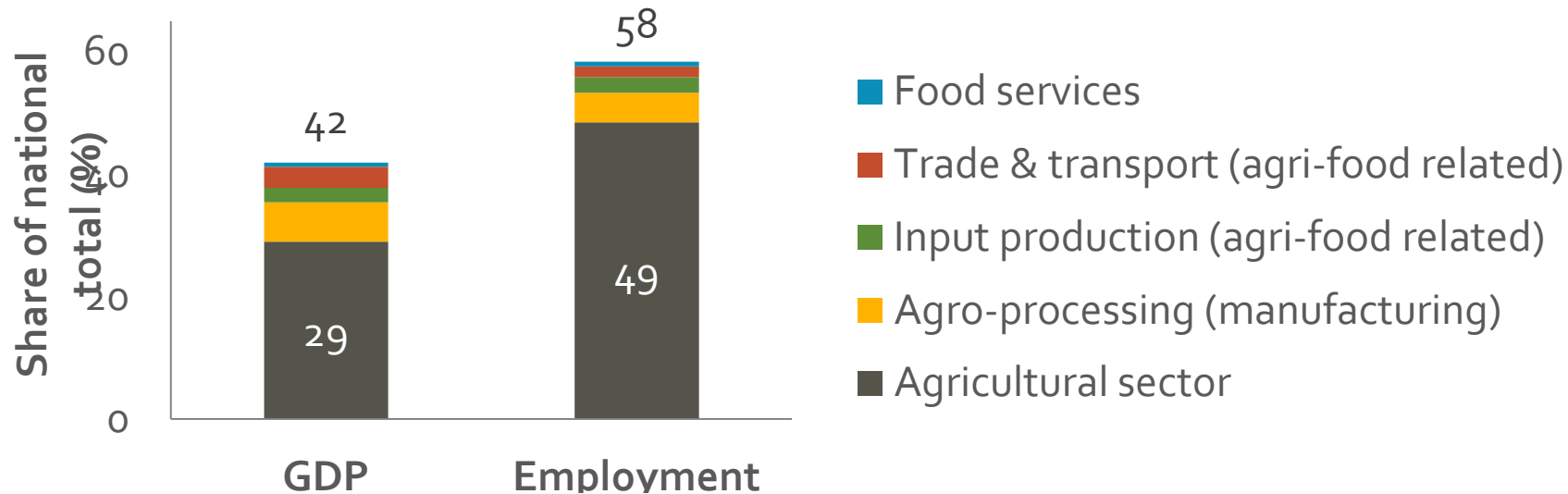
Source: Gridded DSSAT crop model simulations weighted by IFPRI's spatial agricultural production database (SPAM)



Agriculture-Food System

Agricultural shocks spillover to broader food system and economy

Agri-Food System GDP and Employment, 2015





2

Current Preparedness & Responses



Areas that
usually need
strengthening

- **Despite clear commitment to responding to climate shocks, many countries still rank low on capacity to respond**
- **Policy and response gaps remain:**
 - More appropriate water and agricultural management is needed to reduce vulnerability to climate shocks
 - No clear policies and action plans for slow onset climate related shocks
 - Shortcomings in Early Warning Systems
 - Budget system inefficiencies can delay effective policy responses
 - Greater institutional coordination and human capacity is needed



Policy and institutional Reforms

Integrate response to Agricultural , Climate Change and Natural Disasters Risks

- Researches and imports drought-tolerant seed varieties
 - Constructing and maintaining local dams and water supply facilities
 - Promotes climate smart agriculture
 - Manage climate change negotiations and funding mechanisms



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Policies to Reduce Economic Costs

Range of Policy Interventions

On-farm

- ✓ Drought/flood tolerant seed varieties
- ✓ Additional irrigation
- ✓ Water saving techniques (AWD)
- ✓ Crop insurance mechanisms

Market

- ✓ Rice trade facilitation /integration
- ✓ Price stabilization
- ✓ Strategic stocks & Distribution market mechanisms

Social

- ✓ Cash transfers for poor households
- ✓ Education and training



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Actions to Enhance Preparedness



Improving Preparedness (1)

- **Form a National Task Force**
 - Goal: Develop a comprehensive framework for future natural disaster events (i.e., define agencies' roles at national and local levels, e.g., Philippines' RAIN)
- **Create a Government Focal Point** by type of risk
 - Goal: Improve preparedness and avoid fragmentation of response plans
- **Improve Financing Mechanisms**
 - Goal: Speed up investments in preparedness and responses to expected disaster impacts
- **Harness potential of favorable periods of weather and markets**
 - Goal: Take advantage of supportive environment to prepare and mitigate some of the damages caused by natural disaster events



Improving Preparedness (2)

- **Develop Risk Maps**
 - Goal: Provide detailed spatial information on natural disaster events' impacts/frequency to help target responses by local stakeholders
- **Update Early Warning System**
 - Goal: Take advantage of slow onset of some events to give extension agents and farmers time to respond/adapt
- **Improve Dissemination of Early Warning**
 - Goal: Dedicated and easy-to-understand communication channels on nature of events from Department of Meteorology and Hydrology
- **Target vulnerable areas**
 - Goal: Specific early warning for vulnerable areas, and invest in village-level resilience (e.g., water capture and storage)



Summary of Policy Options

- **Policies can reduce some of the damages caused by natural disasters**
 - But no single type of policy can protect all people in all regions
- **Need a portfolio of on-farm, market and social policies**
 - On-farm policies directly offset GDP losses
 - Market interventions usually benefit consumers more than producers
 - Social policies directly target the poor
- **Need to offset short-term losses and build long-term resilience**
 - Market and social interventions are shorter-term emergency responses
 - On-farm investments contribute to resilience and development



**INNOVATE
CATALYZE
TRANSFORM**

*Transforming lives through
the global rice sector*

Thank you



Policies to enhance Food System Resilience

- **Strengthen social safety nets**
 - Goal: To mitigate immediate welfare costs of weather shocks (e.g., cash transfers, food voucher schemes, etc.)
- **Invest in farmers' awareness and adaptive capacity**
 - Goal: Promote crop diversification, drought-tolerant seed varieties, and cost-effective irrigation rehabilitation/expansion (esp. amongst women)
- **Improve rural infrastructure**
 - Goal: Invest in and maintain roads, bridges, and other infrastructure to remove bottlenecks and increase markets' ability to respond to natural events
- **Maintain open economy**
 - Goal: To avoid limiting the ability of markets to offset production shortfalls when and where they occur