Business Models and Institutional Framework for Up-scaling Index-based Flood Insurance Products

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Outline

- Background and earlier studies
- IFPRI’s role in the project
- Approach to implement activities
- Partners
Background and Earlier Studies
## Estimated losses due to flood in Bihar

### Extent of flood in Bihar (Source: Sinha et al 2012)

<table>
<thead>
<tr>
<th>Year</th>
<th>Crop area (000 ha)</th>
<th>Crop damage (Rs million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>44.3</td>
<td>830.37</td>
</tr>
<tr>
<td>2001</td>
<td>65.0</td>
<td>2672.18</td>
</tr>
<tr>
<td>2002</td>
<td>94.0</td>
<td>5114.96</td>
</tr>
<tr>
<td>2003</td>
<td>61.0</td>
<td>626.61</td>
</tr>
<tr>
<td>2004</td>
<td>139.9</td>
<td>5220.56</td>
</tr>
<tr>
<td>2005</td>
<td>13.6</td>
<td>116.45</td>
</tr>
<tr>
<td>2006</td>
<td>8.7</td>
<td>70.66</td>
</tr>
</tbody>
</table>

### Estimated value of flood losses in Kosi (Source: UNDP 2009)

<table>
<thead>
<tr>
<th>Item</th>
<th>Average loss/HH, Rs</th>
<th>Total loss, Rs million</th>
</tr>
</thead>
<tbody>
<tr>
<td>Property</td>
<td>14,000</td>
<td>4002</td>
</tr>
<tr>
<td>Livestock</td>
<td>7,570</td>
<td>3936</td>
</tr>
<tr>
<td>Food grain</td>
<td>6,358</td>
<td>4002</td>
</tr>
<tr>
<td>Domestic goods</td>
<td>3,763</td>
<td>1567</td>
</tr>
<tr>
<td>Other goods</td>
<td>6,406</td>
<td>608</td>
</tr>
</tbody>
</table>
Farmers covered by India’s WBCIS, NAIS and mNAIS crop insurance programmes (Source: Joseph 2013)
Premium cost ratio and loss cost for WBCIS during 2007-2013
(Data source: GOI, 2014)
4 major hindrances to index based crop insurance (Cole, 2013)

- **Complexity of index**
  - Single parameter does not adequately describe the flood impact on crops and a multiple parameter based index is complex
  - Geospatial flood vulnerability maps are needed

- **Premium price**
  - Finance is a major constraint, which can be made affordable by right amount of subsidy which should neither too meagre nor too high.
  - Demand-price elasticity of insurance product is very high (-0.6 to -0.8)

- **Liquidity**
  - Liquidity constraints matters most

- **Awareness**
  - Awareness about the benefits of insurance in the public are lacking
Vulnerability of rice to depth and duration of flooding at different growth stages (Lotsch et al, 2009; Maiti, 2007)
Typical Risk Layers: Retention, commercial, and catastrophic (Cartel et al, 2014)
## Constraints in scaling-up WBCIS

<table>
<thead>
<tr>
<th>S No</th>
<th>Key concern</th>
<th>% response</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Location of weather station</td>
<td>81</td>
</tr>
<tr>
<td>2</td>
<td>Quantum of sum assured</td>
<td>44</td>
</tr>
<tr>
<td>3</td>
<td>Knowledge of WBCIS policy</td>
<td>37</td>
</tr>
<tr>
<td>4</td>
<td>Delay in claim settlement</td>
<td>34</td>
</tr>
<tr>
<td>5</td>
<td>Period of risk covered</td>
<td>30</td>
</tr>
<tr>
<td>6</td>
<td>Type of risk covered</td>
<td>27</td>
</tr>
<tr>
<td>7</td>
<td>Design of WBCIS policy</td>
<td>25</td>
</tr>
<tr>
<td>8</td>
<td>Reliability of weather data</td>
<td>17</td>
</tr>
</tbody>
</table>
Willingness to pay for climate smart agriculture: Indian IGP (Eastern and western) (CCAFS-IFPRI study)

### Eastern IGP

1. Laser land leveling
2. Rainwater management
3. Systems of rice intensification
4. Green manure
5. Crop diversification
6. Crop insurance
7. Green manure

### Western IGP

1. Laser Land leveling
2. Direct seeded rice
3. Irrigation scheduling
4. Crop insurance
5. Leaf color chart
6. INM
7. Green manure

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Willingness to pay for CSA in Bangladesh (CCAFS-IFPRI study)

### CCAFS sites
- *Dumuria*
- *Shyamnagar*
- *Gabgachhia*
- *Jagannathpur*

### CS intervention

<table>
<thead>
<tr>
<th>Sl No</th>
<th>CS intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Leaf color chart</td>
</tr>
<tr>
<td>2</td>
<td>Urea deep placement</td>
</tr>
<tr>
<td>3</td>
<td>Bag gardening</td>
</tr>
<tr>
<td>4</td>
<td>Saline tolerant varieties</td>
</tr>
<tr>
<td>5</td>
<td>Rainwater harvesting</td>
</tr>
<tr>
<td>6</td>
<td>Weather forecasting and advisory</td>
</tr>
</tbody>
</table>
Community insurance: Farmers’ satisfaction activities (CCAFS-IFPRI study)

- **High satisfaction activities**
  - *Social mobilization & group formation*
  - *Members’ engagement in assessment processes*
  - *Engagement of members for product design*

- **Medium satisfaction activities**
  - *Premium amount*
  - *Grievance redressed*
  - *Yield assessment process*

- **Low satisfaction activities**
  - *Claim payment and amount of benefit receive*
II

IFPRI’s Role in the Project
Activities and deliverables

- Farmers’ preferences of flood products & their feasibility
  - Compile existing weather risk insurance programs
  - Interact with all stakeholders to develop the supply chain
  - Farmers’ behaviour to risk and insurance to understand the demand side of insurance
  - Farmers’ willingness to pay for insurance products

- Financial feasibility of insurance products under different scenario

- Develop business models acceptable to farmers and insurance industry
  - Subsidy, efficiency, transaction cost
  - Add-ons and bundling insurance product

- Develop institutional framework for scaling-up flood insurance product
  - Community-based insurance
  - In-built in Farmer Producer Organization
  - Contract farming
Schematic diagram of flood hazard modelling (Source: Venkatachary, et al, 2001)

\[ I(l,j) = b \sum(WI) + C \sum(RF) \]

\[ CD(l,j) = nD(i,j) \times ICA \times LF \]
Specific tasks

- Baseline socio-economic data collection
  - Livelihood analysis, social & gender differences analysis; and gender & equity analysis

- Analysis of social, institutional and policy arrangements that facilitate farmers’ inclusion; cost-benefit sharing for sustainable operation

- Assess the expected benefits of IBFI interventions on gender and socially disadvantage groups in flood risk zones

- Develop an insurance market to scale-up the potential benefits of IBFI product on a sustainable basis
III

Approach
Approach

- Learning lessons from other countries
  - Thailand, Vietnam, Bangladesh, Munich Climate Insurance Initiative, etc
- Stakeholder consultation at national and state level
- Consultation meetings with policy advisors and policy makers
- Focus group discussions and household surveys
- Benefit-cost analysis to assess feasibility of insurance products
- Benefit-cost analysis of different business models
- Communication approach
  - Policy briefs, op-eds, and Policy dialogues
Institutional arrangements

Key issue:
1. Loss assessment
2. Claim settlement
3. Bundling
4. Transaction cost
Conditions for success for Index-based Flood Insurance

1. Risk zoning, flood mapping and loss assessment modeling
   - GIS and remote sensing
2. Product design
3. Demand-supply balance premium
   - Role of government
4. Scale of operation
5. Infrastructure for regular monitoring flood risk
6. Institution arrangement for claim settlement
7. Capacity development and awareness of product
Characteristics of insurance products (Consultation meet)

- Simple to implement
- Cost-effective
  - Government
  - Farmers
  - Insurance and financing institutions
- Transparent to the stakeholders
- No-claim bonus
- Large coverage
- Add-ons (bundling)
- Swift claim settlement
- Regulatory authority
Partners
Partners

- Research partners
  - ICAR Research Complex for Eastern Region
  - Indian Institute of Water Management
  - Rajendra Agricultural University

- Government
  - Department of Agriculture, Government of Bihar

- Industry partners
  - Insurance companies (AIC and private companies)
  - Financing institution

- Civil Society Organizations
Flood insurance for improving livelihood of flood affected smallholders

Thank you