Climate Risk Insurance – Models from India
Agenda

Crop insurance in India

Guwahati city & Risk financing – A case study

What more can be done?
Agenda

Crop insurance in India

Guwahati city & Risk financing – A case study

What more can be done?
In India, agriculture remains a major economic activity & it is climate dependent

- ~ 263 mn people employed directly with agriculture
- ~ 600 mn including allied activities in agriculture directly linked with core agricultural activities

Census data across years

<table>
<thead>
<tr>
<th>Year</th>
<th>Cultivators (mn)</th>
<th>Landless laborers (mn)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY 1951</td>
<td>27.3</td>
<td>69.9</td>
</tr>
<tr>
<td>FY 1961</td>
<td>31.5</td>
<td>99.6</td>
</tr>
<tr>
<td>FY 1981</td>
<td>55.5</td>
<td>92.5</td>
</tr>
<tr>
<td>FY 1991</td>
<td>74.6</td>
<td>110.7</td>
</tr>
<tr>
<td>FY 2001</td>
<td>107.5</td>
<td>127.6</td>
</tr>
<tr>
<td>FY 2011</td>
<td>144.3</td>
<td>118.6</td>
</tr>
</tbody>
</table>

Key challenges faced by Indian agriculture

- Large part of the Indian rural population directly connected with agriculture activities
- Most of these are small and marginal farmers
- Dependent on weather & challenge of irrigation
- Increasing trend of adverse & unpredictable weather

Need of a strong & mainstream agriculture insurance programme

*Source: Indian Census, 2001; HT article, TOI article*
Pradhan Mantri Fasal Bima Yojana
Evolution of crop insurance in India has led to Pradhan Mantri Fasal Bima Yojana (PMFBY)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>● Yield based product</td>
<td>● MNAIS* (yield based) and WBCIS* (index based)</td>
<td>● Majorly yield based (PMFBY) and RWBCIS* (index based)</td>
</tr>
<tr>
<td>● Claims beyond 95% to be borne by Govt</td>
<td>● All claims to be borne by insurer</td>
<td>● All claims to be borne by insurer</td>
</tr>
<tr>
<td>● AIC sole implementing agency</td>
<td>● 11 players in the market</td>
<td>● 18 players including 5 PSUs</td>
</tr>
</tbody>
</table>

*MNAIS: Modified National Agriculture Insurance Scheme  
*WBCIS: Weather based Crop Insurance Scheme  
*RWBCIS: Restructured Weather based Crop Insurance Scheme

more responsive to the impact of climate change on Indian agriculture
### Key features of PMFBY

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Sum Insured</td>
<td>• Based on cost of cultivation</td>
</tr>
<tr>
<td>Prevented sowing coverage</td>
<td>• If &gt;75% of area is not sown, immediate relief</td>
</tr>
<tr>
<td>Mid season adversity coverage</td>
<td>• If &gt; 50% of sown area impacted, on account payment</td>
</tr>
<tr>
<td>Localized risk coverage</td>
<td>• For individual losses reported to insurers (hail)</td>
</tr>
<tr>
<td>Fixed insurance premium rates for farmers</td>
<td>• Difference between actuarial rate &amp; farmer share borne by government</td>
</tr>
<tr>
<td>Use of technology envisaged</td>
<td>• Increased usage of Remote Sensing Technology &amp; digitization of various aspects</td>
</tr>
</tbody>
</table>

In addition to an all risk cover for of yield drop have increased the scope of coverage under the scheme.
PMFBY implementation mainstreams crop insurance in Indian context

Crop insurance market grew to USD 4 Bn; 3rd largest market after USA (USD 11.5 bn) & China (USD 8 bn)

- 18 insurers participated in crop insurance in FY 17
- Focused approach by government & insurers - ~ 57 mn farmers insured
ICICI Lombard – PMFBY implementation in FY 17

- Presence: 10 states
- Farmers covered: ~4 mn
- Major crops covered:
  - Paddy, Bajra, Soyabean, Groundnut, Cotton, Gram, Wheat, Mustard, etc

Geographical spread

- Haryana (HA)
- Uttar Pradesh (UP)
- Madhya Pradesh (MP)
- Jharkhand (JH)
- West Bengal (WB)
- Odisha (OD)
- Telangana (AP)
- Tamil Nadu (TN)
- Himachal Pradesh (HP)
- Uttarakhand (UK)

Map not to Scale
Copyright © 2012 www.mapsofindia.com

9
Parametric insurance models implemented by ICICI Lombard
ICICI Lombard – Seed germination failure

- **Concept**
  - A brand of Direct Sowing Rice (DSR) requires minimum 200 mm rainfall within 21 days of sowing to ensure germination

- **Perils covered**
  - Protection against the risk of rainfall being 200 mm rainfall in 21 days post sowing
  - If <200 mm, cost of seed is paid to farmer

- **Key feature**
  - Floating start date in line with minimum 50 mm rainfall being recorded at weather station in the block (minimizes basis risk)

- **Scale**
  - Covered ~ 10000 farmers across 6 districts in the state of Chhattisgarh
ICICI Lombard – Insurance against Disease conducive weather

- **Concept**: Potato crop in West Bengal is prone to “Late Blight“ if the atmospheric conditions constitute of low temperature and high Relative Humidity

- **Perils covered**:
  - Coverage was provided against the occurrence of low temperature and high RH

- **Key features**:
  - Use of technology to onboard farmers since field enrollment had to be done

- **Scale**:
  - ~ 2000 acres of sown area covered under insurance
Agenda

Crop insurance in India

Guwahati city & Risk financing – A case study

What more can be done?
Guwahati City: Key parameters

<table>
<thead>
<tr>
<th>Key Statistics</th>
<th>Disaster proneness</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 27 districts</td>
<td>Prone to multiple hazards</td>
</tr>
<tr>
<td>• Population of ~ 31 mn (2011 census)</td>
<td>• EQ: Falls under seismic zone V, moderate to high intensity EQ</td>
</tr>
<tr>
<td>• Area of ~ 78,500 sq kms</td>
<td>• High vulnerability due to population explosion and ill-maintained infrastructure</td>
</tr>
<tr>
<td>• Population density of ~ 400 / km sq (2011 census)</td>
<td>• Floods: High risk due to high rainfall in short time and overflow of river Brahmaputra and tributaries</td>
</tr>
<tr>
<td>• Three physiographic domains</td>
<td>• Soil erosion: in Azara and Chandarpur revenue circle</td>
</tr>
<tr>
<td>• Brahmaputra Valley</td>
<td></td>
</tr>
<tr>
<td>• Central Assam Hills</td>
<td></td>
</tr>
<tr>
<td>• Barak Valley</td>
<td></td>
</tr>
<tr>
<td>• Major rivers</td>
<td></td>
</tr>
<tr>
<td>• Brahmaputra</td>
<td></td>
</tr>
<tr>
<td>• Barak</td>
<td></td>
</tr>
</tbody>
</table>

Floods & EQ: major perils that need to be addressed
4 areas identified as potential risk financing / insurance focus areas

- Insurance for Homeowners
- Insurance for local authorities
- Insurance for proposed infrastructure projects
- Insurance for current critical infrastructure of the city

Risk Financing / Insurance focus areas
Structuring Disaster Risk Financing Solutions through insurance - Key discussion points

| Insurability of disaster risk | • High frequency & High severity events need risk mitigation; risk transfer can be for residual risk  
| | • High Severity, Low Frequency events – insurance ideal |
| Asymmetry in information | • Overall impact is available; granular data - a challenge  
| | • Detailed information typically available with various departments & needs to be collated |
| Clarity on use of insurance | • Can insurance be used as a disaster risk financing tool & are there any precedence for the same  
| | • International examples; precedence in India? |
| Sum insured estimation | • Challenges of determining the exposure currently  
| | • Loss limit based insurance covers may be structured |
### Structuring Disaster Risk Financing Solutions through insurance - Key discussion points

| Pricing & Extent of coverage | • Customization is possible as required  
|                            | • Pilot projects could be the way forward to test sustainability |
| Continuity of coverage       | • Multi – year covers can be structured in conjunction with the requirements of the programme |
| Speed of Claim settlement    | • Can be as low as two weeks for parametric insurance covers |
| Mode of claims payment       | • Who can insurers settle the claim to?  
|                            | • Can be settled to the government for onward distribution |
Agenda

Crop insurance in India

Guwahati city & Risk financing – A case study

What more can be done?
Sovereign risk covers may be explored by the government for macro covers

**Trigger**
Earthquake > X in the defined area denoted by the box

**Trigger**
Wind speed > Y in the area defined by the box

**Trigger**
Rainfall volume > Z in pre-defined area eg. District

Customization of peril as well as the triggers can be carried out
Meso / Micro cover can be provided for borrowers of financial institutions (FIs)

**Concept**
- Most FIs working with urban and rural poor provide income generation loans
- Paying capacity reduced in case of natural catastrophe

**Perils covered**
- Coverage can be provided against deficit rainfall (drought), excessive rainfall (floods) and high wind speeds (cyclone/tsunami)

**Key feature**
- Parametric cover – faster claims settlement
- Can be contributory / non-contributory

**Scale**
- Coverage should be provided at state / district level depending upon the exposure of FIs
Thank you