Comprehensive Climate Risk Management
Not without Climate Insurance

Insights from an on-ground pro-poor pilot

Rupalee Ruchismita,
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Bonn Climate Conference, MCII @ UNFCC-2016
WHO ARE WE
Innovation

How

Processes

Product Features

Greater Product Coverage

Risk Reduction

Risk Identification

Risk Valuation

Adverse Selection

Transaction Cost

Valuation

Features

Greater

Risk

Risk Identification

Risk Reduction
How

Market Creation

Capacity Building

Insurer / Regulator
Multi-lateral / Aggregator
Training

Data Warehousing

Live Industry Databank

Impact Research

Rigorous Academic Research

Policy Advocacy

Knowledge Synthesis Reports

Influence Govt. and Multi-lateral Policy

Resilience
Design & Research Labs

Safety Nets for All
Safety nets for all in collaboration with

www.resilencedesignlabs.org
AGENDA
Areas of Intervention

Business Models
- RISK POOLING
  - Risk layering
    - National
    - International
  - PEER to PEER Insurance

Processes
- DIGITISATION of
  - Risk assessment (Modeling)
  - Partnership
  - Claim Distribution

Product Features
- MOBILEs for SALES and SERVICING
- Personalized
- Simple
- Inexpensive
- Easily accessible claims
### DATA: Defining the Client for Climate Insurance

<table>
<thead>
<tr>
<th>Product Filing (Regulator)</th>
<th>Target Client</th>
<th></th>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Urban</td>
<td>Rural</td>
<td>Non-LIG</td>
<td>LIG*</td>
<td>LIG</td>
<td>Non-LIG</td>
</tr>
<tr>
<td>Products under ‘Rural and Social Sector’ Obligation</td>
<td>Non-LIG 1</td>
<td>LIG* 2</td>
<td>LIG 3</td>
<td>Non-LIG 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Products under ‘Microinsurance Act 2005’</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. MiM relies on Industry data reported under IRDA regulation (as under MI Act 2005 and under the Rural and Social Obligations)
2. Under the IRDA regulations, reported data includes products served to RED PLUS GREEN
3. Hence, Microinsurance Maps also presents data for RED PLUS GREEN
4. Ideally it should report for products offered to GREEN

* LIG: Low Income Groups
* IRDA: Insurance Regulatory and Development Authority
Piloting Climate Insurance

Floods in Bangladesh
Need for a Comprehensive Disaster Risk Management
The case for ex ante strategy: Risk reduction (resilience) and Transfer

1. Why Insurance
2. Why Meso-level cover and micro-level distribution?
3. Why index-based contract?
4. Designing with multiple partners
Piloting Climate Insurance: **Catastrophic Floods in Bangladesh**

Ganges, the Brahmaputra, and the Meghna — annually drain a vast basin **12 times Bangladesh’s area**

Flood (*Bonna*) is an annual recurring phenomenon beneficial for Bangladesh

**Flood Frequency and Damages**
## Piloting Climate Insurance: Catastrophic Floods in Bangladesh

### Coping mechanisms: Increased severity due to climate change?

<table>
<thead>
<tr>
<th>Traditional coping mechanisms</th>
<th>Ex post</th>
<th>Impact</th>
<th>Ex ante</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Household</td>
<td>Migration</td>
<td>• Loss of property, homestead, life</td>
<td>Reduced investment (livestock agriculture, home construction)</td>
<td>Lower income, prone to accidents and health shocks</td>
</tr>
<tr>
<td>NGO</td>
<td>Relief Rehab Reconstruction</td>
<td>• Financial cost, • Delay in response due to donor dependence, • Low regional devpt.</td>
<td>Teaching women to swim, improving pooling of group practises</td>
<td>• Limited awareness of degree of loss • Limited predictable access to funds</td>
</tr>
<tr>
<td>Input Output providers, credit providers</td>
<td>No business</td>
<td>Reduced business growth, limited portfolio</td>
<td>Reduction in provision of credit, seeds, vaccination</td>
<td>Reduced business growth, limited portfolio</td>
</tr>
<tr>
<td>State/ Funder</td>
<td>Financing Relief Rehab Reconstruction</td>
<td>Loss of GDP</td>
<td>Embankments</td>
<td>• Cost, embankment breach loss • Limited awareness of degree of loss</td>
</tr>
</tbody>
</table>
Need for **ex ante** strategies:

Combining **ex ante efforts** (risk reduction and risk transfer) with **ex post strategies** (relief, rehab, reconstruction) help build a comprehensive risk management strategy.
Flood risk reduction: Structural approach

Embankments:

- Costly in terms of construction and maintenance
- Increases erosion, inhibiting silt deposition
- Increases the risk for low income households living inside the embankment zone
- Tend to increase height and speed of river flow
- Recent embankment breach
Flood risk reduction: Community approach

- **Managing effects of flood** instead of attempting to prevent it
- Focus on household resilience building in the context of climate change induced erraticity
  - Dredging rivers to increase the capacity of rivers
  - Improved preparedness
    - **Flood warning**: Improve Flood monitoring, measurement, zoning and forecasting
    - Shelters and stronger houses
    - Increased height of water sources
OxFAM’s strategy in Bangladesh

Community Resilience Building

**RISK** → Increased flood intensity and longevity

**Raising Homes:**
Higher and stronger foundations help protect homes

**RISK** → Floods contaminate water supply

**Raised Tubewells:**
Raising tubewells potentially preventing health epidemics during severe floods
Community Resilience Building

**Risk**
- Changing farming calendars, Sudden floods due to embankment breach.

**Radio Forecast and Warning:**
- Weather forecasts, Special broadcasts alert

**Risk**
- Severe and widespread floods
- Rescue rental Boats, free access to poly covers
- Rescue boats provided to the NGO Disaster Management Cell
Piloting Climate Insurance: **Catastrophic Floods in Bangladesh**

Financing immediate Disaster Relief

- Short-term emergency assistance
- Long term infrastructure & sustainable development assistance

Liquidity Gap

- Emergency Response
- Recovery
- Reconstruction & Rehabilitation

Adapted from *CCRIF: Application of risk analysis & modeling in insurance sector*
Piloting Climate Insurance: **Catastrophic Floods in Bangladesh**

**Unlocking finances for Resilience Building**

- Funds for emergency aid
- Funds for resilience building

*Significant amount of money locked in disaster relief funds need to be unlocked for resilience building*
Insurance can help unlock the money that is kept for relief and use it for climate change adaptation and mitigation.
Coping with residual risk

1998:

- 2/3rd of Bangladesh flooded for almost 13 weeks
- ¾ million hectares of agri-land submerged ruining most of the autumn rice crop
- 1.2 million of Grameen Bank’s 2.3 million customer affected

- Embankment Breaches
- Recurring Floods – 1962 (3 floods in July, August, September)
- Intense Local Floods – Sylhet (1966),

Coping with residual risk

Increased frequency and severity strain all reduction and coping strategies.

Embedding insurance within specific risk verticals help in:

- No white spaces in risk coverage continuum
- Lower probability of loss and improved affordability
- Improve product designing capability – coverage,
- Platform for Distribution
Operation Challenges

- Need to insure public finances – donors and state
  - Increased severity of recent events lead to aggravated financial loss
- Household premium financing impractical
  - Inability of households to premium finance severe shocks) and
  - Low demand (unwillingness to allocate budgets for low or no probability catastrophe)
- Need for predictability in disaster preparedness and relief financing for NGOs
- Need for regional risk zoning
  - Non availability of reliable individual loss data correlated to severe floods
- Inability to access damage in real time
- Inability to reach the insured in real time
  - Identification and targeting challenges
- Adverse selection

Hence meso level contract
Design Challenges

• Post disaster ground level loss assessment impractical, costly and cause time delay
• Need for relief financing ‘immediately’ for reduction in losses
• Index contract based on historical data which also helps predict probability and improve forecasting
• Poor Data Quality and Availability at higher resolution
  • Flood Impact Data wasn’t available
  • Historical data on flood depths no available
  • DEM not updated

Hence Index Based Insurance
Meso-Level Flood Index Insurance

Project Details:

Design - RDRL, Institute of Water Modeling
Implementation – OXFAM, GB
Insurer - Pragati Insurance
Project Location - Sirajgunj, BD
Initiation - 2009
Structure of Flood Insurance

Client Loss Data → Loss Module → Analysis → Index design → Payout Structure and Partner sign off

Flood Hazard Module → Digital Elevation Model

Flood Insurance for Bangladesh
Pieces of the Puzzle

- **Flood loss Designers**
  - Institute of Water Modeling
  - Flood Forecasting and warning center

- **Data Sources**
  - Bangladesh Met. Dept.
  - Bangladesh water Board

- **Financial Product Designer**
  - Centre for Insurance and Risk Management

- **Disaster Relief: NGOs and Grantor**
  - OXFAM

- **MFI Refinancing Bank**
  - PKSF

- **State Departments**
  - Ministry of Disaster management
  - Ministry of NGO affairs

- **Insurer**
  - Pragati General Insurance

- **Reinsurer**

- **Scale**
Meso-Level Flood Index Insurance

Scale & Sustainability

Obstacles

• High Cost of development
• Data availability
• Product complexity
• Poor Credibility
• Adverse Selection
• Limited Scale

Partners

• Ministry of Disaster
• Grantor
• NGO
• Designers
• Ministry NGOs Affairs
• Insurance Industry
• Refinancing Bank

PKSF
What

Likelihood

- Invest in data infrastructure
- Invest in identification (cash and data) infrastructure

Layer risk
- insurance on resilience solutions
- Parsing out layers to household, private sector, regional government and then Aid

Likeability

Building-block products
Bundle ‘Tangible’ services
Define uninsured events
How NOT to build Climate Insurance Solutions

Insurance is at the end of a risk trajectory

The client is the household and small business

Use existing ‘highways’, the poor shouldn’t be paying for the new highway

Use aid for long term market creation NOT one time premium subsidy

Leverage the power of high volumes
WBCIS Scheme: State-wise outreach
State Specific Scheme Overview
Market Potential: No. of rain gauges state-wise
Structure of Flood Insurance
Safety Nets for all

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Resilience Design Labs

May 17th, 2016

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CLIMATE
AGRICULTURE DESIGNING EXERCISE
Enabling macro level agencies to insure their catastrophe exposed credit portfolio, reducing transaction cost for end client.

**Activity Plan**

<table>
<thead>
<tr>
<th>Month</th>
<th>Task</th>
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<tbody>
<tr>
<td>April</td>
<td>Project Partner sign-offs</td>
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<tr>
<td>May</td>
<td>Client Feasibility Study</td>
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<tr>
<td>June</td>
<td>Peril identification (depth, level)</td>
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<tr>
<td>July</td>
<td>Client data analysis for Loss Model</td>
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<tr>
<td>Aug</td>
<td>Flood hazard Model Design and validation</td>
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<td>Sep</td>
<td>Distribution Methodology</td>
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<tr>
<td>Oct</td>
<td>Validation: Analysis of Model Data</td>
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<tr>
<td>Nov</td>
<td>Project Monitoring Report</td>
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<tr>
<td>Dec</td>
<td>Project Process Documentation</td>
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<tr>
<td>Jan</td>
<td>Product Design</td>
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<tr>
<td>Feb</td>
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<td>March</td>
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**Thematic Learnings**
- Product Design
- Distribution Models
- Government Advocacy for premium
- Regulator Advocacy

**Audience**
- Lender
- Government
- Regulation

**Outputs**
- Flood Insurance ‘how to’
- Product Manual for Insurer
- Draft Peril and index design
Safety Nets for all

Rupalee Ruchismita, Resilience Design Labs

May 17\textsuperscript{th}, 2016

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Stakeholder Value: Solutions for Policy Makers

Use
• Monitor impact of regulation on providers and products

Benefit
• Create industry benchmarks on product, process and service quality
• Identify early trends (sectors trends and also for specific providers and risk categories) to respond accordingly
• Make proactive regulation and policy for underserved regions and track its impact on the market
Next Steps

Agriculture Index Insurance Conference 2012

Understanding Agricultural Index Insurance: Field Visit and Training, August 2012.

Organised by: CRM and Gramin Credit Agricole Microfinance Foundation (GCAMF).

Training venue: CRM Office, Chennai
Field Visit: Coimbatore District and Nagapattinam district, South India.


Background
Objective
Agenda
Field Visit
Participants’ Profiles
Host Profiles
Speaker Profiles
Presentations
Photos
Blog

Safety Nets for All

Field Visit
Participators’ Profiles
Host Profiles
Speaker Profiles
Presentations

Day 1

- Using product design to increase Client Value in Weather Index Insurance by Mr. Ashish Talreja, CRM
- Index Insurance as Risk Mitigation Tool in Agriculture by Mr. Koll Ras, Agriculture Insurance Company of India (AIC)
- Pricing of HR Products by Mr. Anil Mehra, HDFC ERGO General Insurance

Day 2

- Index Insurance in Indian Agriculture - An Overview by Mr. Navin Sharma Vice President – Weather Insurance, ICICI Lombard General Insurance
- Stakeholder engagement in product design and distribution by Mr. Nitu Naik
- Managing Information for Security and Safety / Disaster Management by Mr. Y. D. Prashik, Director, Karnataka State Natural Disaster Monitoring Centre

Presentations in French

- Travaux des produits d'assurance HR by Mr. Anil Mehra, HDFC ERGO General Insurance
- Strategies utilisées pour distribuer durablement des produits d'assurance météorologique by Mr. K. Gopinath, ICICI Lombard General Insurance
- Engagement des parties prenantes dans la conception et la distribution du produit by Mr. Nitu Naik
Technical content

Publications

Technical Papers

- Rashtriya Swasthya Bima Yojana – Performance Trends
- Financing Disaster Management in India: Possible Innovations
- Review of current state of world capture Fisheries Insurance
- Providing Insurance through Microfinance Institutions: Theory and Practice
- Livestock Insurance: Lessons from the Indian Experience
- Index Based Flood Insurance Products: Report on Flood Insurance
- Impact Evaluation of Health Microinsurance through Randomized Communal Experiments
Discussions

Email group- Transitioning to Blog

Understanding Agricultural Index Insurance: Field Visit and Training, August 2012.
August 11, 2012 by CIRM

We are excited to host a delegation of insurers, funders, research institutions and NGOs from across the world (well, 11 countries to be precise!).

The primary objective of this field visit and training is to garner first-hand understanding of agriculture insurance, especially index based insurance in developing countries.

Background:
Agriculture is the predominant source of livelihood in India and contributes nearly 18 per cent of Indian GDP, employing about 60 per cent of the labour force. Weather phenomenon like precipitation is a major yield risk for the farmers as a majority of the agricultural land is not irrigated and the limited irrigated areas suffer from inadequate and unreliable water.

The major instruments used by the government to protect farmers from agricultural variability include crop yield insurance scheme, procurement of food grains at predetermined prices and in addition to these, they have also introduced index insurance.

Agricultural Index Insurance: Pre-conference Update
August 24, 2012 by CIRM

Our conference on Agricultural Index Insurance is shaping up to be a stellar event.

The event has attracted a range of participants including NGOs, Insurance Professionals, Insurance Commissioners, Regulators and researchers, to name a few.

Similarly for speakers, we have also managed to rope in leading thinkers in this sector.

We have also organized a two day field visit to help the participants get an on ground experience of adoption and impact of index based microinsurance in the agricultural sector in rural Tamil Nadu.

You can find more information and latest updates at the exclusive microsite – HERE.
Discussions

• Blog

Understanding Agricultural Index Insurance Conference – Highlights of Day One
August 28, 2012 by CIRM

The first day of the workshop was flagged off with a presentation by CIRM elucidating the context of agricultural insurance in India. Attention was devoted to ways in which “client value”, can be increased to improve demand. The presentation also showcased specific models that provided agriculture advisory services as a bundled service to improve farmer’s demand for insurance products by providing something to claimants and non-claimants. A perfect example is a project undertaken by CIRM – Comprehensive Agriculture Risk Management Services, wherein, weather-related forecast information covering a 24-

Participant Views – Day One
August 28, 2012 by CIRM

Dr. Georges Abbey
Lecturer, University of Lome.

“The objectives of the workshop are very well-aligned with our expectations and allows for everyone to discover some important lessons. The guest speakers are well in tune with their topics and we wish they had more time to share their experiences.

In Africa, we are taking our very first steps in agricultural index insurance and we need to better understand the challenges the Indian practitioners encountered and how they overcame those obstacles so that we do not repeat their mistakes. Today, the speakers also underlined the importance of constant innovation in order to reduce transaction costs and increase client value.”

Pacome Bonou
Head, AMAB Production Service (Agricultural Mutual Insurance of Benin)

“This first day we learnt about the behaviour one needs to have when starting an index agricultural insurance venture and the role farmers play at this stage. The speakers also stated that making payouts the first season can be a powerful demonstration effect and improve take up for the next season.”

Fabrice Larue
Project Manager, Foundation for World Agriculture and Rurality (FARM), Paris.

One of the things that struck me the most today was that the speakers were really passionate about their topics and managed to transmit their enthusiasm to the participants.

It also stood out that for the establishment of a successful index agricultural insurance the key technical issues have been very advanced (i.e. issues relating to infrastructure) but despite that, there are other decisions that are more difficult like choosing between a simpler product or a more complex product that might better reflect the farmers’ actual loss.
The day started with two interesting presentations. While the first focused on the importance of information (data) for weather risk and natural catastrophe management, the second delved into product design innovations.

Mr. V.S. Prakash from the Karnataka State Natural Disaster Monitoring Centre (KSNDMC), who made the first presentation, began by stating that the paradigm shift in the approach to disaster management from rescue/relief post disaster, to disaster risk reduction through preparedness necessitates the use of Information Communication Technology (ICTs). According to Mr. Prakash the first step in disaster management is proper measurement of weather parameters. “If it cannot be measured properly, it cannot be managed properly”. Hence, much of his

Ms. Sessimè Martine Dahoun, Ms. Hellen Olima and Ms. Vusala Garayeva

Sessimè Martine Dahoun

Head of Regulation – Insurance Department, Ministry of Finance, Benin.

It is a very good day for me because the translation was very fluid and I was able to engage in the discussions.

Everything we learnt today was practical. I learnt today that the Weather Index is a real opportunity for agriculture and insurance.
Discussions: Blog Field visit

Participating Views – From the Field Visit
August 30, 2012 by CIRM

Agricultural Index Insurance: Field Visit and Training is well underway. And now the participants are in the field, talking to farmers and meeting with a local farmers organisation. We will have a more detailed write-up soon, but meanwhile, here are the initial reactions of some of the participants.

Constance Collin
University of Rennes
It was great to discuss directly with the farmers and to hear their opinions. During the discussions we discovered many of the practical issues that the farmers face were not always covered in the classroom sessions.
It was also very insightful to see the context in which these policies are sold. They are also excellent hosts and very welcoming.

Jimmy Loro
Senior Adviser, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH.

For me, one of the key elements of a good insurance product is that it is understood at the farmers’ level. Explaining rainfall levels to smallholder farmers was a challenge. This group bought their first insurance in 2006 and even after 6 years, they still haven’t fully understood the trigger and payout calculations. There is a need for more financial and technical training on the product for farmers.

The presence of extreme weather events like drought resulted in higher demand for crop insurance.
I also noted that the weather data provision and the insurance companies are very closely linked. In the Philippines, we would have seen this as a risk as we put great importance on separating these two actors in order to ensure that the data is reliable and objective.

Oscar Chamale
Business Director – Aseguradora Rural (Banrural Financial Group S.A.)
I was surprised by the involvement of the farmer organisation in the management of the product and they were even responsible for the claims process. It’s very much integrated with their other activities and hence becomes a part of the value chain.
Platforms: Linkedin and Facebook