Workshop Report
Index Based Flood Insurance: Testing Business Model in Agricultural Risk Management

Hotel Jaypee Siddharth, New Delhi, India
8 March 2017

International Water Management Institute (IWMI)
Sri Lanka

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Background

Growing population, poor management of land and water resources, and increased exposure to extreme climatic events have left a large number of people vulnerable to floods. Floods lead to widespread destruction and human tragedy, severely impacting infrastructure, agriculture and ecosystems. Agricultural communities are subjected to severe economic pressure from flood-induced losses. However, over the last few decades, evidence has emerged that a broader approach through planning, building regulation and early warning systems can significantly reduce flood losses. Index-based flood insurance (IBFI) is one such solution that is both cost-effective and can better target post-disaster relief to compensate agricultural losses.

The event was coordinated by Dr. Giriraj Amarnath (Sub Theme Leader: Water-related Disaster and Risk Management of IWMI) and the workshop was inaugurated by Sh. Anil Sinha (Senior Advisor & Mentor, Hazard Risk Management and Climate Change Adaptation and former VC, BSDMA), and opening remarks from Mr. Jeremy Bird (Director General of IWMI), Dr. L S Rathore, (former DG, Indian Meteorological Department (IMD)), and Dr. Alok Sikka (IWMI India Representative), who gave the welcome remarks.

Participants from government bodies, agricultural banks, public and private insurance companies involved in the workshop to exchange ideas and expertise on development of Business model for Index-Based Flood Insurance (IBFI). Experts attended the workshop from multiple organizations including National Disaster Management Authority (NDMA), Indian Council of Agricultural Research (ICAR), Indian Agriculture Research Institute (IARI), NABARD, UN-ESCAP (New Delhi), Agriculture Insurance Company of India (AIC), CCAFS, CDOT, Bajaj Allianz, ICICI Lombard, HDFC ERGO, Royal Sundaram General Insurance, Skymet Weather Service Pvt. Ltd. and others.

The objective of the workshop is to present the progress of the IBFI business model and discussion about improving the value-chain process in index insurance and way forward in implementation of the product in 2017 monsoon season in Bihar. To briefly discuss existing business modeling approaches and the case studies and obtain feedback from participants, three presentations (presented by Dr. Giriraj Amaranth of IWMI, Dr. Ravinder Malik of IWMI and Dr. Avinandan Taron of IWMI) were presented respectively on Project progress, IBFI Business Model and Economic analysis and Business model implementation in Indian Scenario. During the workshop, group discussions were supported by broad communications between participants from government bodies, private insurers, public and private banks and others.

A copy of the concept note, agenda and full list of participants can be found in the Appendices. For more information on the workshop and project, including social media and access to presentations given, please visit the IBFI website link – http://ibfi.iwmi.org/.

1 *OPENING SESSION*: INTRODUCTIONS

Fig.1. Opening Session: (L to R) – Dr. Giriraj Amarnath, Dr. Alok Sikka, Mr. Anil Sinha, Mr. Jeremy Bird, Dr. L.S.Rathore (Photo: IWMI).

1.1 WELCOME REMARKS BY ALOK SIKKA (IWMI INDIA REPRESENTATIVE)

Dr. Sikka welcomed the participants in the workshop and spoke about the Index Based Flood Insurance in context with the India's Farmers. He highlighted the gap between the existing insurance plans and flood prone communities. He also emphasized on IBFI's key role in bridging this gap and how advanced technology can help in the recovery from these natural disasters.

1.2 WORKSHOP INTRODUCTION & PROGRESS BY GIRIRAJ AMARNATH, SUB THEME LEADER: WATER-RELATED DISASTER RISK MANAGEMENT, IWMI

Dr. Amarnath briefly presented the IBFI project and workshop motives and agenda. He presented workshop objectives like the index design, policy, gaps in implementation, incorporation of IBFI in Pradhan Mantri Fasal Bima Yojana (PMFBY) scheme or other crop insurance scheme namely WBCIS. He highlighted the potential opportunities of IBFI within the framework of disaster risk management and the coherent to the global agenda on UN Sustainable Development Goals (SDGs) and Sendai framework on Disaster Risks Reduction (SFDRR). He also emphasized the need and involvement of multi-stakeholders in IBFI for scaling up and sustainability in addressing the flood vulnerable communities and ex-ante disaster risk financing. He discussed about the role of micro-finance institution and insurance companies presently in India and their cooperation. He also stressed the need to strengthen and active participation of non-loanee farmers in crop index insurance and gender equality.

1.3 *OPENING REMARKS* BY JEREMY BIRD, DIRECTOR GENERAL, IWMI

Mr. Jeremy Bird, Director General, IWMI welcomed participants and discussed about gender impacts on agriculture. He discussed about drought and flood projects and how these projects are playing a major role in improving the livelihoods of farmers. How different models of catastrophe insurance are already present and how IBFI insurance is different. He spoke about IBFI, 2017 pilot and how we can incorporate IBFI in PMFBY scheme. He also advised participants to work together for scaling up in flood-affected regions elsewhere and protect the farmers against major flood events.

1.4 *OPENING REMARKS BY* ANIL SINHA, Sr. ADVISOR & MENTOR, HAZARD RISK MANAGEMENT AND CLIMATE CHANGE ADAPTATION AND FORMER VC,BSDMA

Mr. Sinha began with the gender dimension and its impact on IBFI. He stated that IBFI is an innovative approach and uses advanced technology for flood prone communities in India. He discussed about the field visits to Bihar with Dr. Giriraj Amarnath and Dr. Alok Sikka, different issues, and challenges involved in IBFI. He talked about upcoming workshop to be held in 6th May 2017 in which the involvement of state authorities from district management department and local private insurers and the key issues of IBFI that needs to be brainstormed for experimenting the product in 2017 monsoon seasons. Different aspects to be considered in IBFI like gender impact, agriculture, sustainable development, disaster risk management and others. He also stated that the insurance plans in India are low key affair and there's a need to create awareness in the community. He discussed about the plans for 3 districts selected in Bihar, already in implementation.

1.5 OPENING REMARKS BY L.S.RATHORE, IMD INDIA

Dr. Rathore discussed about the aim of the project and the modelling used in this complicated natural catastrophe. He pointed that different meteorological events namely monsoon flooding, flash floods, inland flooding are their impacts are quite different in both from the magnitude and intensity of economic losses and the population exposures. There is a need to categorize the flood prone areas and assess the risk, vulnerability and economic damage caused by floods. Different stages of crops associated in the IBFI and how localized database will play a key role in the project. He also stated about the framework of different insurance schemes not being user friendly is the reason of insurance to be a low key affair in India. IBFI develops a mechanism to make insurance more transparent. Government roles in popularizing and helping insurance companies to come up with further more innovative ideas are desirable.

2 UPDATE ON PROJECT RESULTS: BUSINESS MODELS AND ECONOMIC ANALYSIS

2.1 *IBFI PROJECT OVERVIEW* BY Dr. GIRIRAJ AMARNATH, IWMI

Fig2. Session 2: *IBFI Project Overview* by Dr. Giriraj Amarnath (Photo: IWMI)

Dr. Amarnath started with different objectives & key points of IBFI. He suggested how to use technology for insurance and other aspects of IBFI including gender and livelihood component, socio-economic development and others. He stated that IBFI can play a major role in flood affected areas and the possibility to incorporate in the ongoing PMFBY scheme as a sister product in areas where floods are major issues and the flood-crop loss quantification is limited where IBFI could be strengthen . He also highlighted the complimentary of promoting the flood index insurance product with the information sharing on flood early warning system and insurance.

Following are the key points from the presentation-

- Project components of IBFI including data preparation, flood modelling, institutional and economic factors, gender analysis, technical guidelines, and business case development, strategy development and dissemination and others.
- Range of challenges in piloting the IBFI including availability of water level and discharge data and its sharing from government agencies including Central Water Commission, MoWR and high-precision DEM data for improving the modeling accuracy.
- Different partners involved in IBFI scheme and how to invest as ex-post disaster funds in terms of paying premium and utilize the funds in case of major flooding and support in coping strategy.
- The flood parameters namely the flood depth, flood duration and crop damaged information being used for disaster management, risk preparedness, and insurance plans.
- Briefly discussed the similar activities to pilot in Bangladesh and the customization of index design wherein the losses are related to labor wages.
- IBFI in India will have large impact in addressing the agricultural resilience and flood proofing livelihood. Scaling up of IBFI with state government authorities subsidy load will improve the agriculture production risk and better social protection measures.
- How we can make the product more village specific instead of district and block?
- Discussion on how IBFI can be experimented in the 2017 monsoon floods and the support of re(insurer) in finalizing the index design and approval requirement with IRDA.
- Presented possible term sheet for Muzaffarpur, Bihar (done for 8 villages by asking farmers in person) and marketing channels for IBFI under different partnership arrangements (public private partnership, fully by government bodies, complete market system).
- Shown roadmap for the pilot and implementation of IBFI.

- Channels added to the product in terms of duration (instead of 10 days, now it is 8 days).
- Timeline of IBFI and the ongoing activities.

Some of the questions raised in the presentation are-

- How to cover non-loanee farmers under this scheme (how landholders are having the insurance and landless farmers are still not covered)?
- How to incorporate policy or agreement within the government schemes and other insurance plans to include the farmers who are yet not covered.
- How to add IBFI within the scope of PMFBY or WBCIS scheme?
- Need to educate the farmers on the flood index design and communicate with insurer and state government in finalizing the policy guidelines to pilot with few farmers in selected districts in Bihar?
- About the resolution and frequency of satellite imagery in validation and its application in index insurance?
- What is the correlation between the trigger value and crop loss?
- What's the level accuracy of models and satellite datasets used in IBFI?

2.2 *IBFI BUSINESS MODEL & ECONOMIC ANALYSIS* BY Dr. RAVINDER MALIK

Fig 3. Session 2: IBFI Business Model & Economic Analysis by Ravinder Malik (Photo: IWMI)

Dr. Malik presented the public private partnership (PPP) model and also discussed about the advantages of Business model. He emphasized on separate product for insuring agricultural losses due to floods with the combined parameters (like rainfall and discharge) are involved, a separate product is needed. Presented the Business model concept and its components. The initiatives of World Bank survey on agricultural insurance programs in 65 countries and the advantages of public private partnership. He presented the template of business model and requirement of stakeholders, government bodies, institution to contribute in designing of the Business model. He highlighted IBFI's key components like flood modelling, crop yield modelling, socio-economic analysis, government services and insurance services, provisioning of data (access of data, collection of data) and how private insurer can use the product. He concluded with the current issues and challenges involved in the market for IBFI product, government roles in the marketing of IBFI and the choice of channel for distributing of IBFI.

2.3 *BUSINESS MODEL IMPLEMENTATION IN INDIAN SCENARIO* BY Dr. AVINANDAN TARON

Fig4. Session 2: Business Model Implementation in Indian Scenario by Avinandan Taron (Photo: IWMI)

Dr. Taron started with the costs-benefit analysis and its feasibility, coping mechanism and risk management involved in weather insurance products. He also pointed on different types of index based weather insurance such as Micro (insurer, distributor, policy holder) and Macro (Insurer, policy holder, aggregators (banks, Micro Finance Institution's)). He presented business case studies (including macro, micro and meso) and reviews from different case studies globally. From the reviews some key points are highlighted like the preference for satellite datasets, complex models reduction, willingness to pay by farmers, inclusion of non-loanee farmers, and preference for meso model exists. Briefly presented the example of the Bangladesh payout process.

Still, there are facts to be considered for the product like there's a need for contracts, data sharing and insurer's methodology. He presented the organizational structure i.e. PPP mode for flood insurance and how different (re)insurer can play a vital role in IBFI. His recommendation go with Meso scale model for IBFI in Indian context. Need to strengthen the market potential of index-based insurance and Coordination of public and private entities will help in the scaling up IBFI.

3.1 *Group Discussion—Finalization of the Business Model For Indian Scenario*

Fig 5: Session 2: Group Discussion- Finalization of the Business Model (Photo: IWMI)

The participants took a group discussion of the issues and challenges involved in IBFI. Some key points from the discussion are-

- Community based approach may be considered for piloting IBFI before considering as an add-on cover under PMFBY;
- Possibility to pilot IBFI as "RWBCIS – Restructured Weather Based Crop Insurance Scheme" but again this need to filling and coordination with GOI
- Is there a possibility to denotify PMFBY in certain districts e.g. Muzaffarpur to pilot IBFI and this requires coordination with State Government and Department of Cooperation, Bihar;
- How an individual catastrophe i.e. flood-based index insurance can be piloted in area where other perils might have crop failure while PMFBY includes other perils;
- Reliability of flood parameters and yield assessment to be evaluated prior piloting;
- Engagement with Micro-finance institutions are very crucial for scaling up and wider outreach in targeting marginal farmers;
- As the GOI is about to finalize the guidelines for PMFBY scheme and if IBFI has to be incorporated in PMFBY then procedure for filing and approval need to be started at the earliest;
- The approval process with IRDA whether as add-on in PMFBY, RWBCIS or standalone product with subsidy from State Government need to be further explored;

4.1 CLOSING REMARKS AND NEXT STEPS

Dr. Giriraj Amarnath, Sub theme leader: Water-related Disaster Risk Management, IWMI

Recommendations that emerged from the workshop were presented for feedback. The recommendations are listed below.

- Options to explore as an add-on in PMFBY, RWBCIS or standalone product with subsidy from State Government need to be further explored;
- With the limited time and the monsoon is approaching the need to obtain approval with IRDA is to explore IBFI has a standalone product and subsidy the government and consider for a fast track in piloting the product in the 2017flood season;
- Subsidies from Government are crucial for the success of IBFI;
- Alternative approaches in promoting a bundled product and the premium is affordable and likely the participation of non-loanee farmers through Microfinance institutions are a possibility;
- Completion of Business Model with minimum of 2 scenario and demonstrate a viable PPP model is crucial for a successful scaling up;
- Gender equality in Index Insurance and participation of marginalized farmers are relevant in addressing poverty reduction and enhancing agriculture production;
- Communication and Awareness raising through informational and educational purposes to the general public and among potential beneficiaries and policyholders;

5 APPENDICES

Index Based Flood Insurance Workshop: Testing Business Model in Agricultural Risk Management
Hotel Jaypee Siddharth, New Delhi (India)
March 8th, 2017

With growing concerns about the negative impacts of climate change on agriculture, adaptation to the changes becomes increasingly urgent and important. Climate change is deepening the risks already faced by the poor and vulnerable people in rural areas in developing countries who are involved in agriculture and allied climate-sensitive sectors for their livelihoods. Because of the high cost of verifying losses on large numbers of small landholdings, traditional loss-based insurance is not viable for remote rural smallholders. In this context, advances in satellite technology and data analysis help avoid the pitfalls of high transaction costs and therefore expand the potential reach of insurance policies to rural areas previously considered uninsurable.

Index-based flood insurance (IBFI) is an innovative approach to developing effective payout schemes for low-income, flood-prone communities. This project aims to integrate hi-tech modelling and satellite imagery with other data to predetermine flood thresholds, which could trigger speedy compensation payouts. Effective end-to-end solutions is being developed in collaboration with a range of organizations and experts from central and state government bodies, private insurance firms, community-based organizations (CBOs) and nongovernmental organizations (NGOs). The project is being piloted in selected locations of India and Bangladesh, making it the first attempt to develop IBFI at a large scale.

The aim of the workshop is to briefly present the progress on the IBFI business model and seek feedback for testing and improving the value-chain process in index insurance. We will briefly present several case studies on index insurance implemented and the business models that are currently operational to explore ways how best we can implement the Index Based Flood Insurance within the current crop insurance scheme i.e. Pradhan Mantri Fasal Bima Yojana (PMFBY). IBFI explores various business models which includes: (1) Microfinance institutions (MFIs) as delivery channels of index insurance, offering index insurance to their borrowers through bundling of credit with insurance (2) MFIs as direct customers of index insurance, purchasing index insurance to protect their lending portfolio; (3) Bundling IBFI with early credit based on flood forecast data to reduce community loses and ready itself to provide relief immediately after the event.

At the workshop, participants will explore Osterwalder's Business Model Canvas to develop and clarify what a weather-index insurance business model might look like. Partners mapped out product offerings, channels, value proposition, relationships etc. – all the essential elements of how a weather-indexed insurance product i.e. IBFI can be offered and scaled for smallholder farmers.
The main purpose of the workshop is to:

- *Briefly present the IBFI project and the progress;*
- *Present global case studies on Weather Index Insurance Business Model Canvas*
- *Draft Report on IBFI Business Model and Cost-Benefit analysis in agricultural sector; Formalize the business model and plans for implementation*

With business models being developed, the partners are now working to formalize a partnership that will result in the launch of an IBFI product for smallholder farmers by mid-2017. By harnessing the power of climate data, insurance companies, governments, donors and scientists are giving smallholder farmers the tools they need to adapt to a rapidly changing climate.

Program Outline

Time	Program	Resource Persons
09:00 – 09:15	Registration	Nirmal Sigtia
Session 1: Inauguration ceremony **Facilitator: Nitasha Nair, IWMI New Delhi**		
09:15 – 10:00	Welcome Remarks	Alok Sikka, IWMI Delhi
	CCAFS in South Asia	Pramod Aggarwal, CCAFS
	Workshop Introduction and progress	Giriraj Amarnath, IWMI HQ
	Opening remarks from IWMI	Jeremy Bird, IWMI, HQ
	Opening Remarks from BSDMA	Anil Sinha (Ex. Vice Chairman, BSDMA)
	Opening Remarks from MoA	Ashish Kumar Bhutani, JS, MoA
	Vote of thanks	Nitasha Nair, IWMI Delhi
10:00 – 10:30	Group photos and Tea Break	
Session 2: Update on Project Results: Business Models and Economic Analysis Moderator: Amarnath Giriraj, IWMI		Rapporteur: Pooja Pandey,
10:30 – 10:45	IBFI Project Overview	Giriraj Amarnath, IWMI HQ
10:45 – 11:45	IBFI Business Model and Economic Analysis	Ravinder Malik, IWMI Delhi
11:45 – 12:00	Business model implementation in Indian Scenario	Avinandan Taron, IWMI Delhi
12:00 – 13:00	Business Model Finalization	Moderator: Amarnath Giriraj, IWMI

To roll out IBFI in hand with PMBFY the last hour is kept for discussions and finalization of the business model for Indian Scenario. The key issues that needs to be brainstormed during this time are as follows -

- What is the role of government in PPP set up for IBFI and how can be enhanced? What preconditions are necessary for the development of a flood insurance market?
- What can be done to improve smallholder farmers understanding of the risks that they face?
- What can be done to support the establishment of an insurance culture in countries with limited experience with insurance?
- What contribution can an insurance regulator make to building trust in insurance companies' capacity to meet their obligations?

13:00- 14:00	*Lunch*

5.3 APPENDIX C: LIST OF PARTICIPANTS

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