Enhancing the benefits of Remote Sensing Data and Flood Hazard Modeling in Index-based Flood Insurance (IBFI) for the Rural Farmers in South Asia

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PRESENTATION OUTLINE

- Human cost of natural disasters and its impact
- Flood situation in Bihar
- Linking Disaster Management and Index Insurance
- IBFI Concept, Implementation Strategy
- Project Progress and Updates from team members
 - Pilot area selection
 - Flood hazard modeling
 - Implementation process
 - Business model and institutional framework
 - Communication and IP
- Partnership for Implementation



HUMAN COST OF NATURAL DISASTERS AND ITS IMPACTS

Number of disasters and affected people reported per country (1994-2013)



BIG FACTS ON FLOODING

Global to Regional

- Recent report by UNISDR about 800 million people are currently living in flood-prone areas, and 70 million are experiencing floods each year.
- Global flood losses in 2011 >\$100 billion with major losses from Thailand, Australia and Hurricane Irene
- Recent Overseas Development Institute (ODI), UK estimates to over \$450 billion by 2030
- In 2007, floods killed 3,200 people in India and Bangladesh alone. In 2010, flooding killed 2,200 people in Pakistan and another 1,900 in China, while in 2013, an exceptionally high number of 6,500 people died due to floods in India.
- Bihar is India's most flood-prone state.
- **73%** of the total geographical area is annually flooded.
- **76%** of the population in North Bihar is at risk of flooding.
- Major flood events have occurred in 1987, 1995, 1998, 2002, 2004 and 2007.
- Approx. 15million people are affected by flooding
- Approx. 300,000 metric tons of rice production damaged by floods
- For example Muzaffarpur District, alone, incurred **losses of over USD 3 million** per year from 2001 to 2012 due to floods.



Bihar

HISTORICAL FLOOD TRENDS IN GANGES BASIN









THE ROLE OF DISASTER MANAGEMENT



http://www.wmo.int/pages/prog/drr/events/Barbados/Pres/4-CCRIF.pdf



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PROMOTING PREPAREDNESS AND INCREASING RESILIENCE



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CAN INSURANCE BATTLE CLIMATE CHANGE?

- Insurance is a post event compensatory mechanism
- Insurance doesn't affect the average outcome of insured event
- Insurance spreads cost over time and geography
- Climate change induces covariate risks at a global scale



REDUCING THE FLOOD RISK

PORTFOLIO OF FLOOD MANAGEMENT OPTIONS

MULTIPLE BARRIER PROTECTION

arly warning

Storages



Source: Jha et al, (2011) adapted from Ranger and Garbett-Shiels (2011)

PRIMARY INDICATORS OF A POSITIVE CHANGE

- Funds to cover the post-disaster liquidity gap faced by governments between immediate emergency aid and long-term redevelopment assistance
- A facility which would enable governments to receive money quickly, with the payout calculated in a completely objective way
- A mechanism which would minimise the burden on governments to provide exposure information prior to coverage being initiated and loss information after a disaster
- A win-win solutions on the aspect of flood index insurance to address flood risk reduction measures, improving the livelihoods and sustainable development in the region



OTHER IMPORTANT INDICATORS

- Case for IBFI approach communicated effectively to key stakeholders and accepted as a mainstream practice
- Investments in short-term flood relief are being replaced by longer-term upstream interventions
- Significant areas are under improved land and water management leading to livelihood improvements
- Women have directly and preferentially benefitted through IBFI interventions
- Think about others???

SHORT HISTORY OF IBFI

ACTIVITY



PROJECT SUMMARY

CCAFS Project ID: P41-F2-SA-IWMI Period: 2015 to 2018 Budget: USD 1.0 Million (approx.) Target Countries: India & Bangladesh

Research Partners:

Regional: IWMI (L), IFPRI International: UoB, MCII, GlobalAgRisk, UNOOSA + + India: ICAR-IIWM, NIH, FMISC, CWC + + Bangladesh: IWM, MoDM, BWDB, UoD + + **Implementing/Co-sponsoring Partners:** AIC, eeMausam, BajajAllianz, DOA-BH, NABARD + + **Knowledge Sharing Partners:** *FMISC, BSDMA, CWC, DoA-Bihar* + +

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RESEARCH OBJECTIVES

- Setting up pilot-scale trials to demonstrate that positive verifiable impacts emerge from IBFI in terms of agriculture resilience and improving productivity, and household incomes, locally and at the broader scale
- 2. Developing tools and strategies that support IBFI development and upscaling, integrated with existing and future flood control measures.



CONCEPT: INDEX BASED FLOOD INSURANCE



INDEX BASED FLOOD INSURANCE

Characteristics

Government support helps reach scale

Investment-wary private insurers enter the market only if they are sure of outreach and demand.

Donors support financially and technically.

Index insurance projects (and pilots) involve community based organisations.

Like traditional insurance, index insurances are still costly for clients.

Multiple distribution channels need to be employed to attain high outreach.

Challenges

Weather infrastructure in the developing countries is inadequate for index insurance products.

Reinsurance is not available for small programmes.

Index insurance programmes are subsidy dependent.

Index insurance programmes linking with DRM aid financing

POTENTIAL FOR SCALING UP INDEX-BASED FLOOD INSURANCE IN THE PILOT COUNTRIES

- Identification of the right parameter is essential for a successful programme
- Governments should be part of the programme
- Ensure reinsurance before piloting
- Investment in weather infrastructure is a must
- Data sharing among agencies including IMD, CWC, DoA for societal benefits
- Capacity of local stakeholders should be increased
- Bancassurance channels should be put to use
- Client literacy and education must be a priority

COMPONENTS	METHODS
IBFI system planning, design, implementation and evaluation	site characterization, design, pilot-scale implementation, baseline data, performance monitoring and testing, hydrologic modeling and scenario analysis/ forecasting, training & capacity building
Institutional, economic and gender analysis	baseline socio-economic data, gender/social disaggregated analysis, social/institutional/ policy arrangements, cost-benefit analysis
Technical guidelines and business case development	synthesis; cross-country comparisons, IBFI vs alternative mitigation approaches
Strategy development and dissemination	knowledge exchange meetings/dialogues/ regional workshops for key stakeholders and potential investors, investment support tools; risk management framework

MAJOR DELIVERABLES

- Proof-of-concept on IBFI coupled with the flood hazard model and remote sensing (RS) data in selected districts of South Asian countries.
- 2. Digital flood mapping tool to monitor and quantify the impact of floods on crops, and its application in insurance schemes.
- **3. Design and pilot test** a set of farmer-friendly flood insurance contracts for at least three districts with a considerable number of marginalized female farmers/poor people to ensure contracts are not gender biased.
- 4. Obtaining feedback and develop community of practice from officials/staff of insurance regulatory authorities in countries, operating insurance companies, meteorological agencies, agricultural research institutions, micro-finance institutions or NGOs, and relevant government agencies (e.g., ministries involved with disaster management, water resources, and agriculture).
- **5.** Policy and institutional guidelines translated into business models for the implementation of flood insurance product.
- 6. Comparative analysis of the cost-effectiveness of RS-based index insurance compared to traditional methods, and estimating the potential in other parts of the target countries.
- 7. Research papers and reports, planning guidelines, **policy/investment briefs** and other **communications** material including websites, brochures and videos.

THANK YOU

" Let not a single drop of water received from rains go waste into the sea without benefiting the man and the beast " King Parakramabahu (1153-1186 AD)