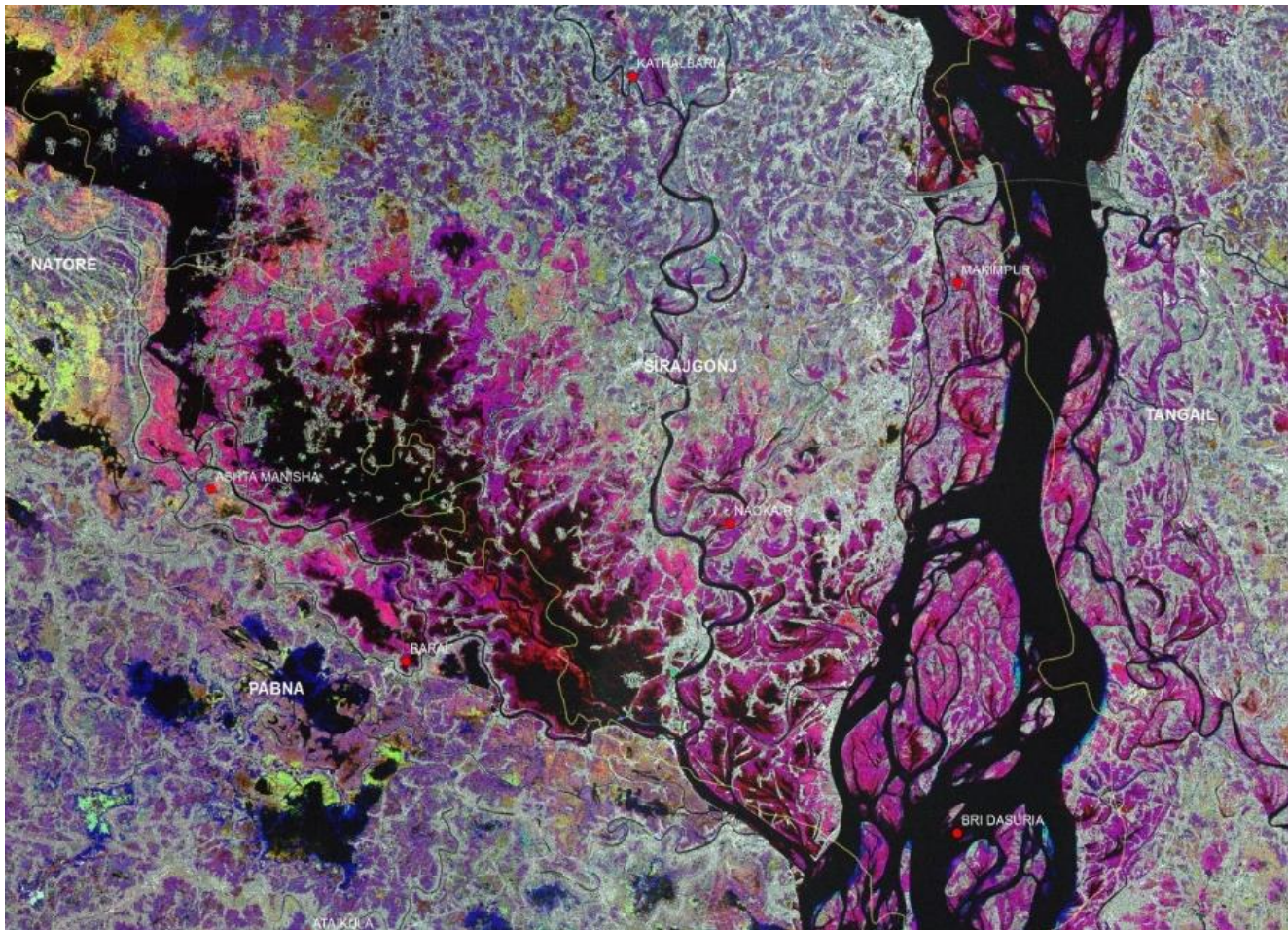


INVESTING IN RISK INSURANCE: ENSURING A DISASTER RESILIENT FUTURE



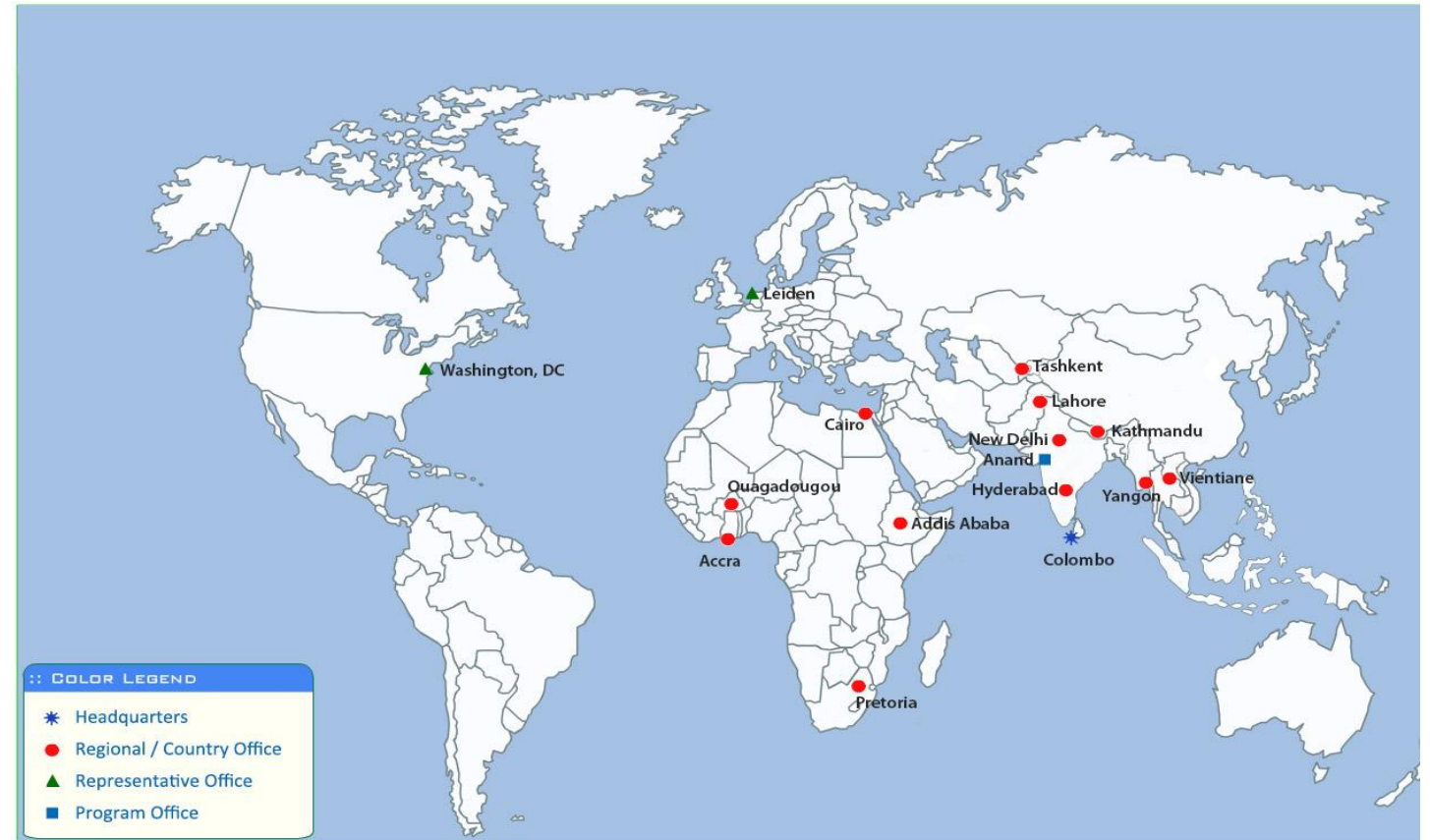
Giriraj Amarnath

International Water Management Institute (IWMI), Sri Lanka

11 September 2019

Our roles and where

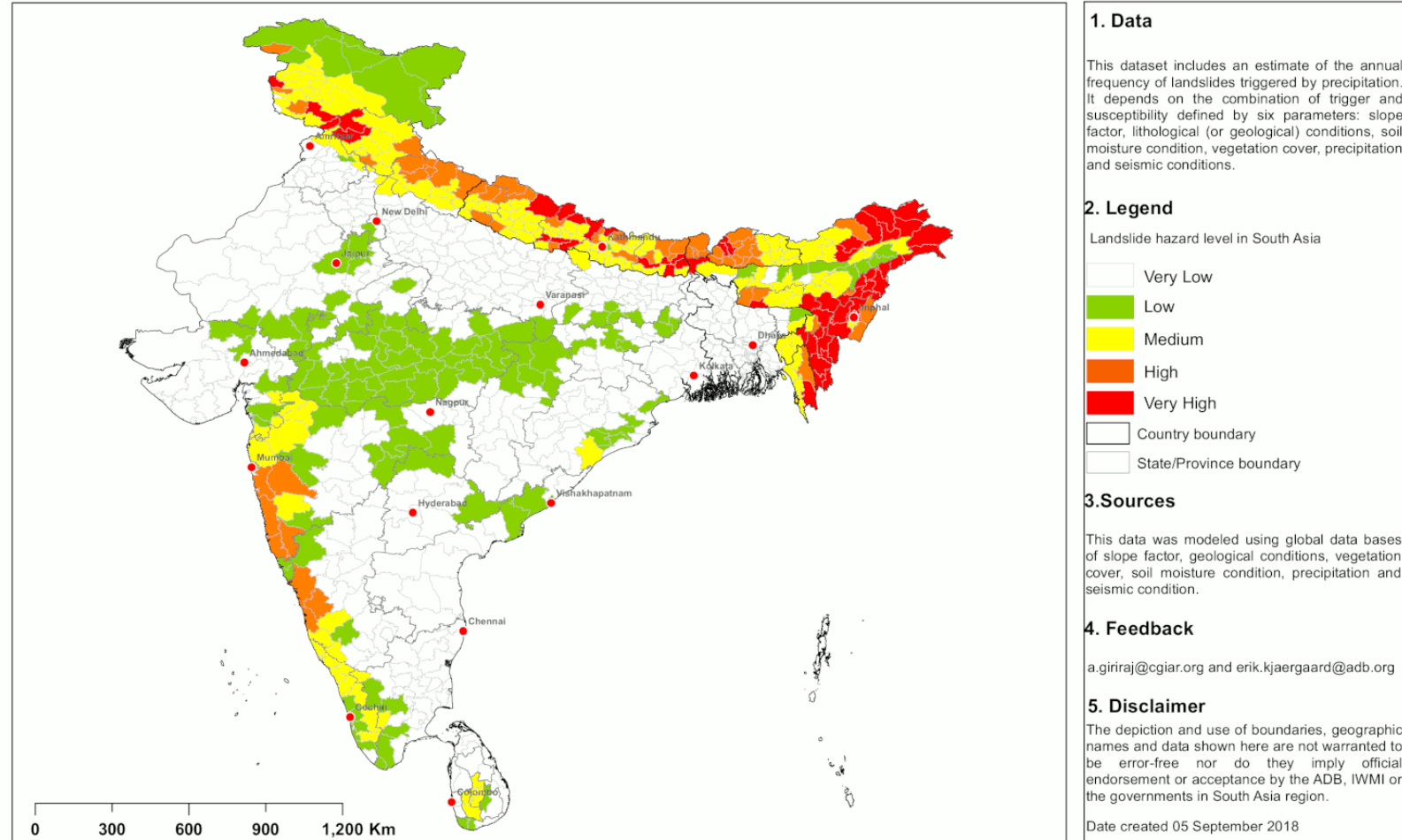
- **Think tank** conducting research to generative innovative solutions
- **Provider** of science-based products and tools
- **Facilitator** of learning to strengthen capacity and achieve uptake of research findings



Climate Screening products for investing in disaster resilience

Landslide Map

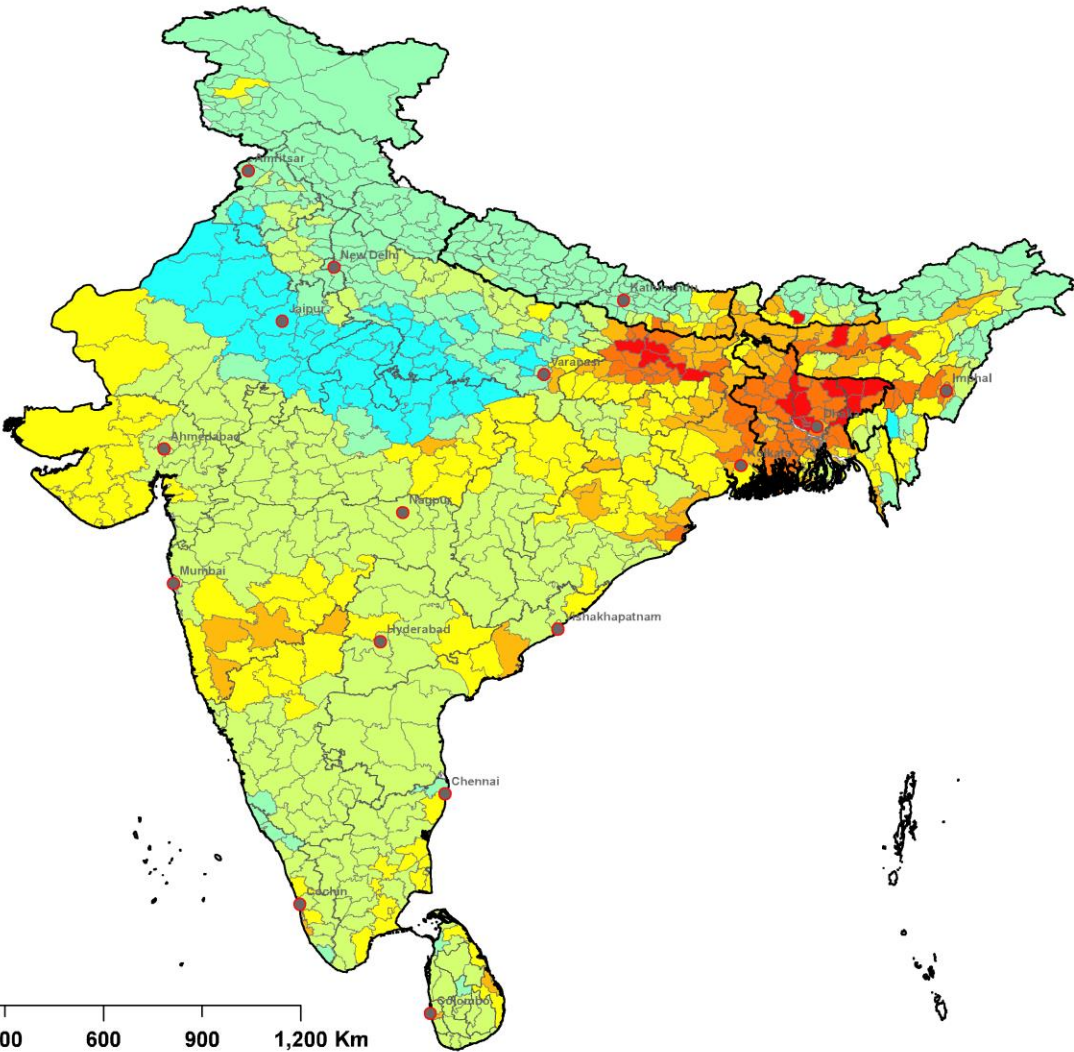
ADB



- Mapping individual hazards (Flood, Drought, Landslides, Coastal inundation, Cyclone, Forest fires, Earthquake, Extreme rainfall, Heatwaves and Sea level rise);
- Multi-hazard Risk Assessment to support in developing DRM policies and financial investment portfolio for building resilience

Multi-hazard Economic Exposure Map

Geospatial Intelligence Analysis



1. Data

This multi-hazard economic exposure map is based on different data sources including four individual hazard maps (flood, storm, earthquake and drought) and the 2015 Gross Domestic Product. The first step involved extraction of GDP values exposed to individual hazards and the second step applied weightage on the economic exposure using historical disaster losses from hazard events in the region year 1900-2017 obtained from EM-DAT. The weightage to individual hazards were: flood 62%, storm 23%, earthquake 11% and drought 4%. The final step consisted in normalizing the exposure of GDP with the total district GDP to identify the economic losses from multiple hazards across South Asia. The colour gradients indicate the relative economic exposure to multiple hazards at district level in South Asia.

2. Legend

Multi-hazard economic exposure in South Asia. Applied natural breaks (Jenks) classification method.

	< 9.5		40.7 - 53.6
	9.6 - 20.3		53.7 - 74.5
	20.4 - 30.9		> 74.5
	31 - 40.6		
	Country boundary		
	State/Province boundary		
	District boundary		

3. Sources

IWMI

4. Feedback

a.giriraj@cgiar.org and erikkjaergaard@hotmail.com

5. Disclaimer

The depiction and use of boundaries, geographic names, and data shown here are not warranted to be error-free nor do they imply official endorsement or acceptance by the IWMI, or the governments in South Asia.

Version 5
02 April 2019



Multi-hazard Data

+

Population Exposure

+

Gross Domestic Product (GDP)

+

Historical loss and event database

=

Multi-hazard Economic Exposure Map for disaster insurance and DRM policy perspective

Disaster risk hotspot : opportunities for building regional resilience

HOTSPOT 1	TRANSBOUNDARY RIVER BASINS
Flood and drought prone areas, South and South-East Asia	
Population exposure	Very high (mostly poor)
Economic stock exposure	High
Infrastructure: energy	Low
Infrastructure: transport	Moderate
Infrastructure: ICT	Low

HOTSPOT 2	RING OF FIRE
Earthquake, landslide and tsunami, typhoon tracks, North and East Asia, South-East Asia	
Population exposure	High (disproportionate impact on poor)
Economic stock exposure	Very high
Infrastructure: energy	Very high
Infrastructure: transport	High
Infrastructure: ICT	Moderate

HOTSPOT 3	PACIFIC SMALL ISLAND DEVELOPING STATES
Tropical cyclone, El Niño, earthquake and landslide	
Population exposure	Very high (mostly poor)
Economic stock exposure	High
Infrastructure: energy	High
Infrastructure: transport	Moderate
Infrastructure: ICT	Low

HOTSPOT 4	SAND AND DUST STORM RISK CORRIDORS
Sand and dust storms, drought and floods, South Asia, South-West and Central Asia)	
Population exposure	High (mostly poor)
Economic stock exposure	High
Infrastructure: energy	Moderate
Infrastructure: transport	Moderate
Infrastructure: ICT	Low

Very high Approximately over 75 per cent are exposed to hazards

High Approximately 51–75 per cent are exposed to hazards

Moderate Approximately 25–50 per cent are exposed to hazards

Low Approximately less than 25 per cent are exposed to hazards

Source: UN-ESCAP Asia Pacific Sustainable Development Report (2019)

A growing momentum

In the 15 years since 2000, there has been a clear evolution of initiatives that demonstrate the growing role of insurance in addressing sustainable development challenges, particularly in the areas of natural catastrophes and disaster risk reduction, access to insurance, and climate change:

- Consultative Group to Assist the Poor (CGAP) Working Group on Microinsurance (2002)
- Chief Risk Officers Forum Emerging Risks Initiative (2005)
- Munich Climate Insurance Initiative (MCII) (2005)
- ClimateWise Principles (2007)
- ILO Microinsurance Innovation Facility (2008)
- Microinsurance Network (2009)
- Access to Insurance Initiative (2009)
- Kyoto Statement of The Geneva Association (2009)
- The Global Insurance Industry Statement: “Adapting to climate change in developing countries” (2010)
of ClimateWise, MCII, Geneva Association and UNEP FI
- UNEP FI Principles for Sustainable Insurance (PSI) (2012)
- The Global Insurance Industry Statement: “Building climate and disaster-resilient communities and economies” (2013)
of Climate Wise, MCII and UNEP FI
- The Climate Risk Statement of The Geneva Association (2014)
- ILO Impact Insurance Facility (2014)
- PSI Statement: “United for disaster resilience: The insurance industry’s statement in support of disaster risk reduction” (2015)
- **G7 Initiative on Climate Risk Insurance (2015)**

Insurance and the Sendai Framework for Disaster Risk Reduction 2015-2030

The 3rd UN World Conference on Disaster Risk Reduction produced the Sendai Framework for Disaster Risk Reduction 2015-2030, which aims to “**prevent new and reduce existing disaster risk**” through “measures that prevent and reduce hazard exposure and vulnerability to disaster, increase preparedness for response and recovery, and thus strengthen resilience.”

The Framework is organized around **four priority areas**: understanding disaster risk, strengthening disaster risk governance, investing in disaster risk reduction for resilience, and enhancing disaster preparedness. Risk transfer, risk sharing and insurance are explicitly referenced under **Priority 3**:

30. (b) **Promote mechanisms for disaster risk transfer and insurance**, risk sharing and retention and financial protection (...) in order to reduce the financial impact of disasters on governments and societies, in urban and rural areas;

31. (b) **Promote the development and strengthening of disaster risk transfer** and sharing mechanisms and instruments in close cooperation with partners in the international community, business, international financial institutions and other relevant stakeholders;

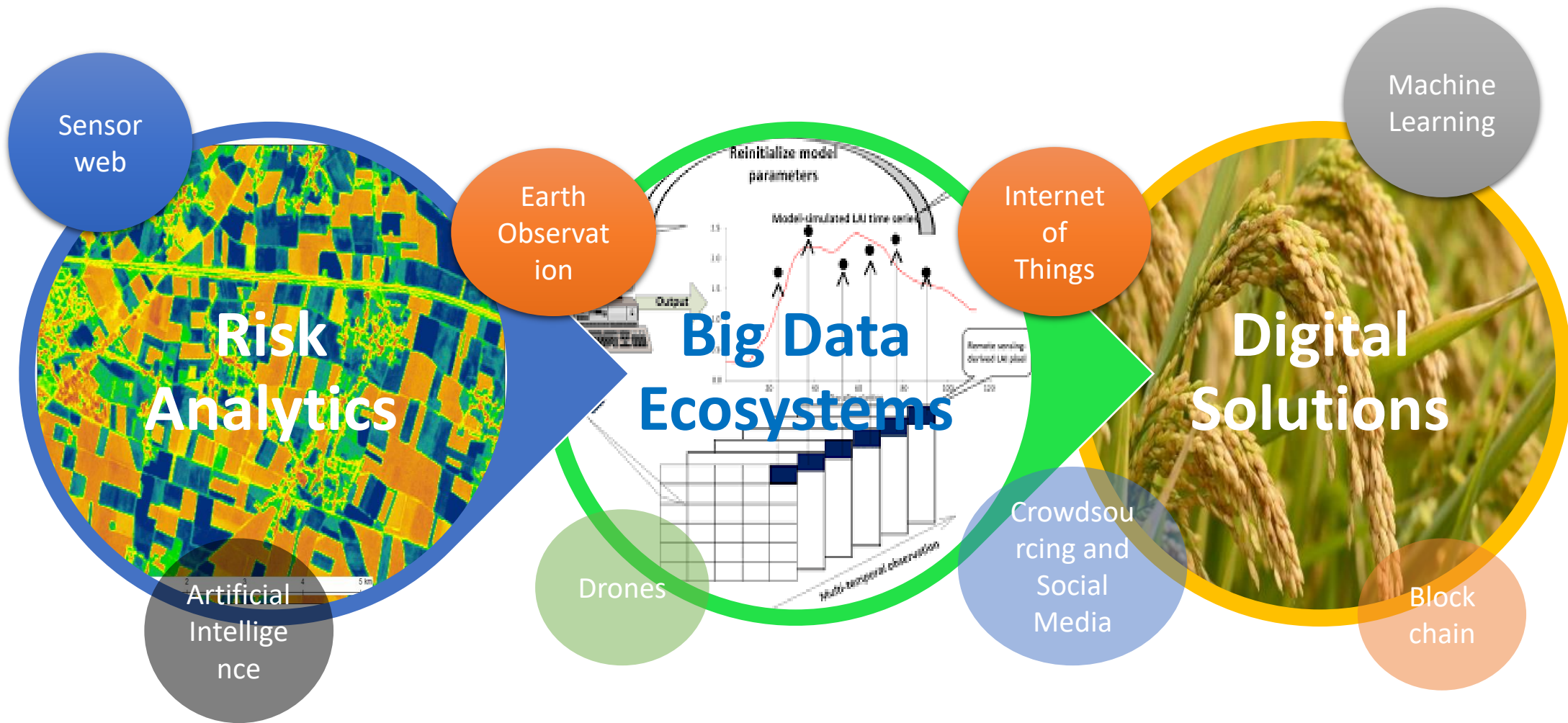
Insurance and the Sendai Framework for Disaster Risk Reduction 2015-2030

However, as the risk management process in insurance mirrors the disaster risk management continuum, each of the **four priority areas is directly relevant to the insurance industry**. The Framework recognizes that “while States have the overall responsibility for reducing disaster risk, it is a shared responsibility between Governments and relevant stakeholders.”

In this regard, it explicitly cites the business and financial institutions and regulators as key stakeholders:

31. (c) Business, professional associations and private sector financial institutions, including financial regulators and accounting bodies, as well as philanthropic foundations, to: **integrate disaster risk management, including business continuity, into business models and practices (...)**; engage in awareness-raising and training for their employees and customers; **engage in and support research and innovation as well as technological development for disaster risk management**; share and disseminate knowledge, practices and non-sensitive data; and actively participate (...) in the development of normative frameworks and technical standards that incorporate disaster risk management.

New technologies for managing disaster resilience : Agriculture and Food security



Example 1: Index Based Flood Insurance (IBFI) – India



RESEARCH PROGRAM ON
Climate Change,
Agriculture and
Food Security



RESEARCH PROGRAM ON
Water, Land and
Ecosystems



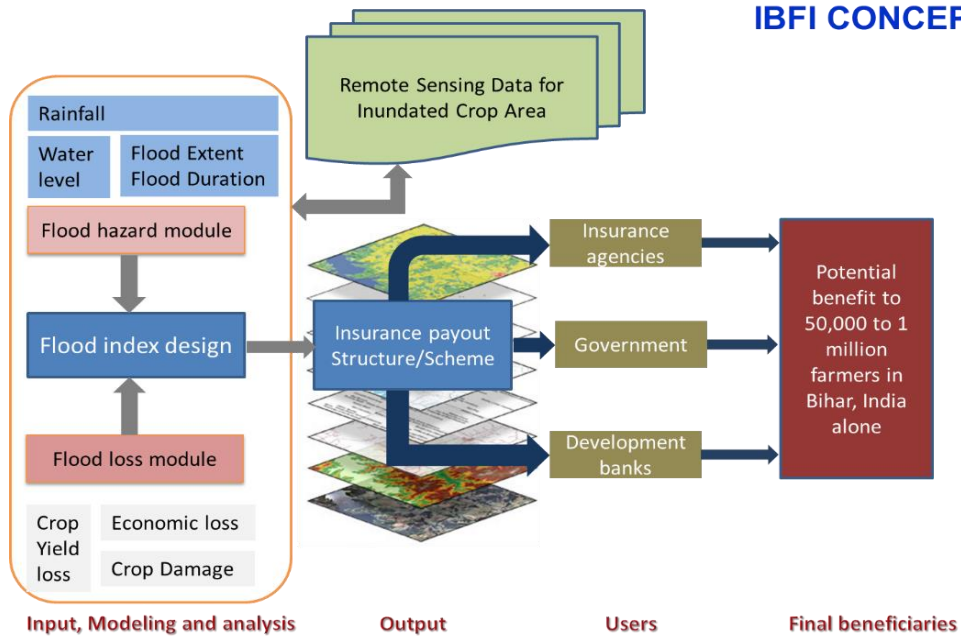
Swiss Re



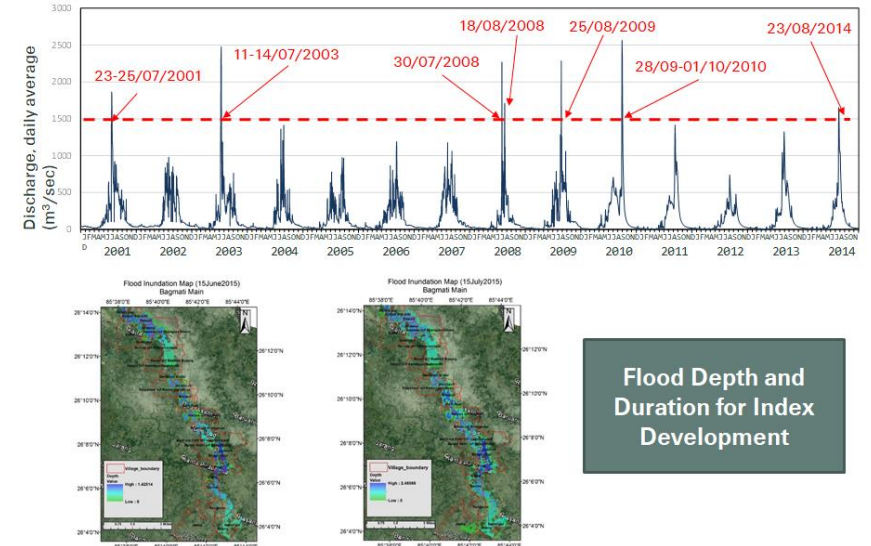
A water-secure world

www.iwmi.org

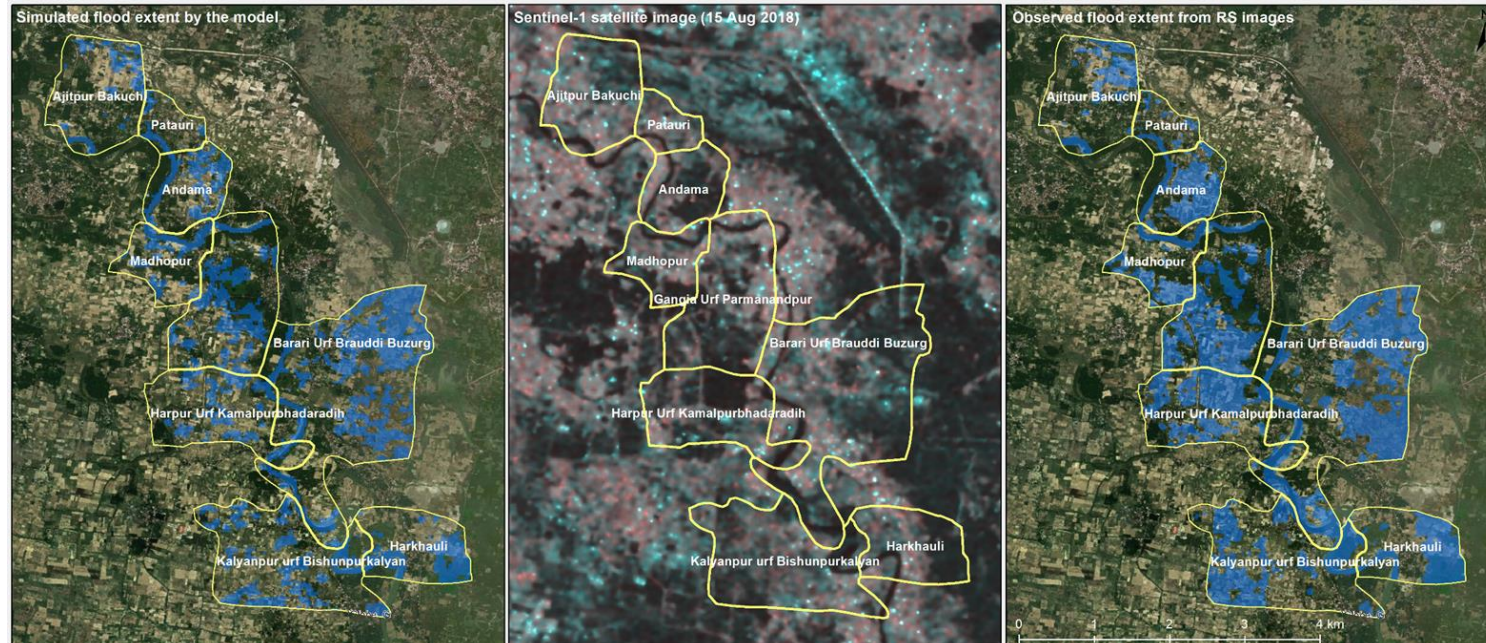
IBFI CONCEPT



Flood Depth and Duration



Comparison of flood model and satellite data



2018 Pilot (Bihar)

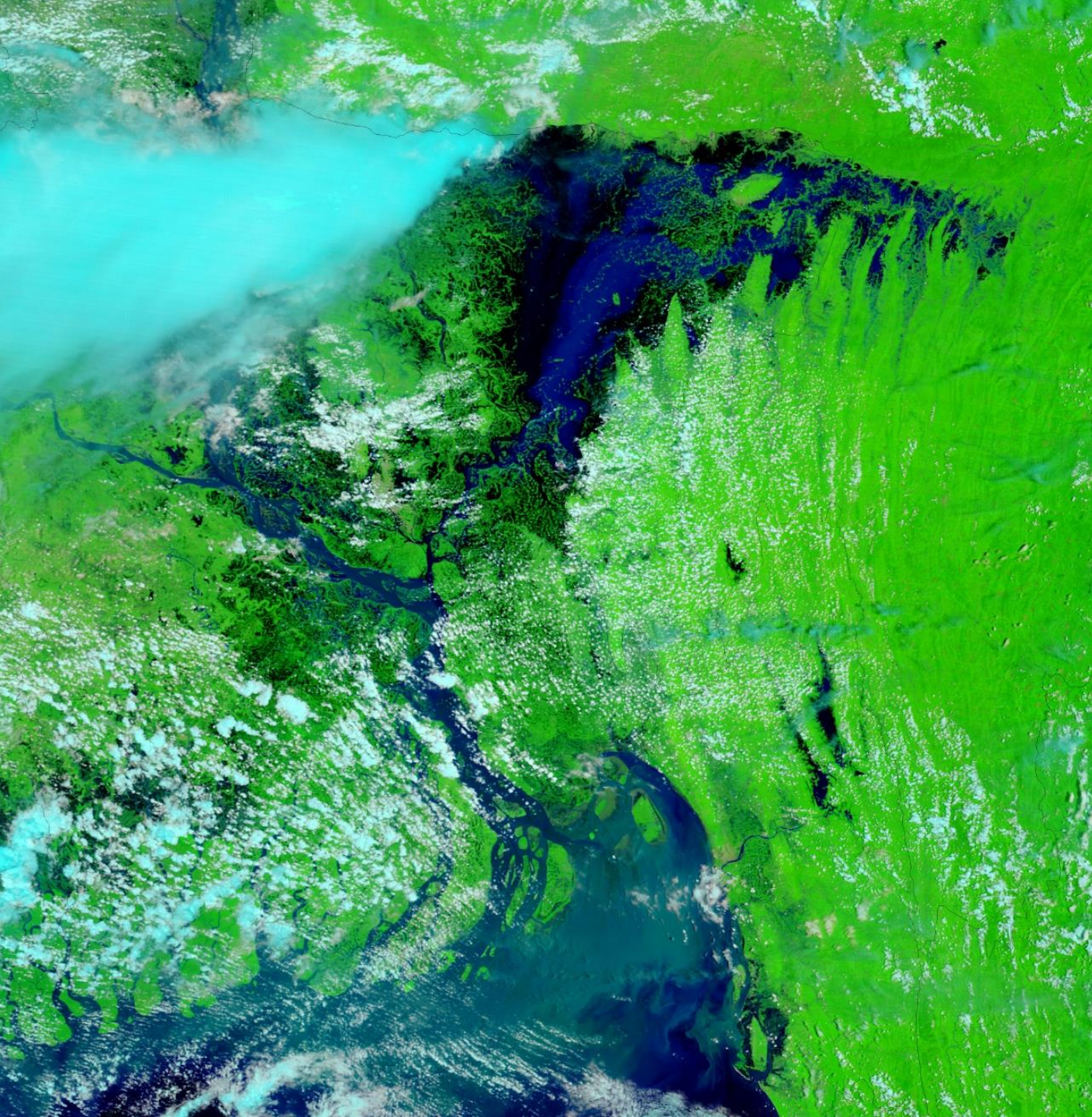


Shri Radha Mohan Singh, Union Minister for Agriculture & Farmers Welfare, India distributing dummy check on 22 Feb 2018 to eligible farmers

IBFI Payout Ceremony (2018) in Bihar



Sh. Vyas Ji, IAS Retd., Vice Chairman – Bihar State Disaster Management Authority (BSDMA), Govt. of Bihar, India distributing *dummy* check on 27 Dec 2018 to eligible farmers (Note: On the same day payout to farmers through DBT)



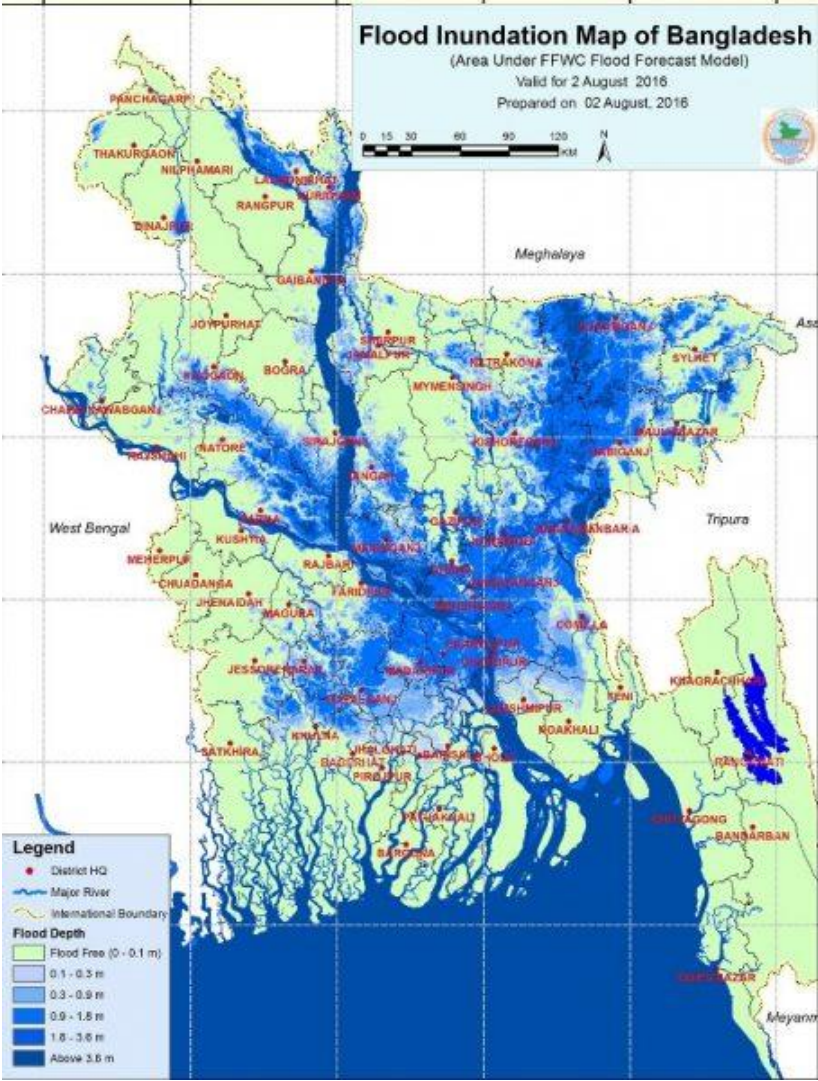
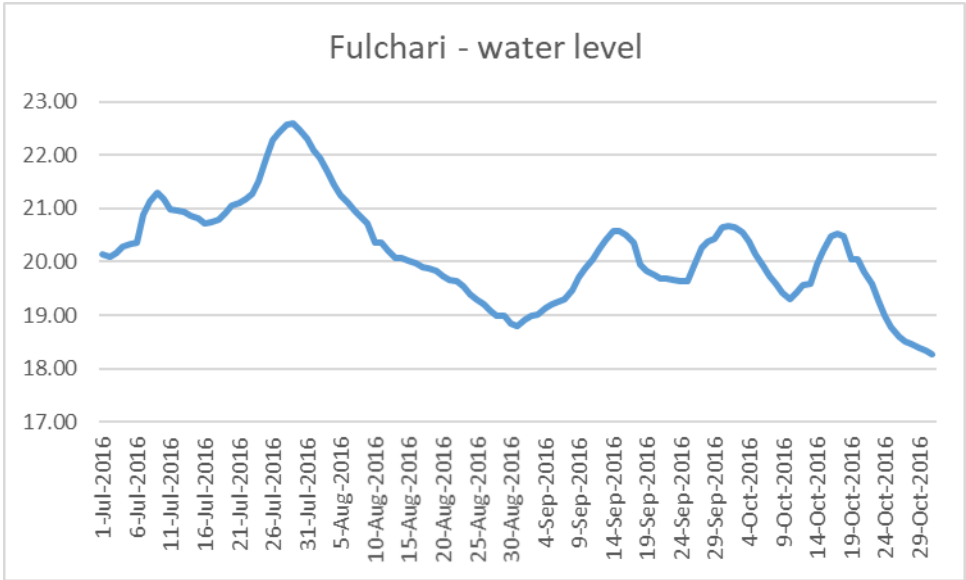
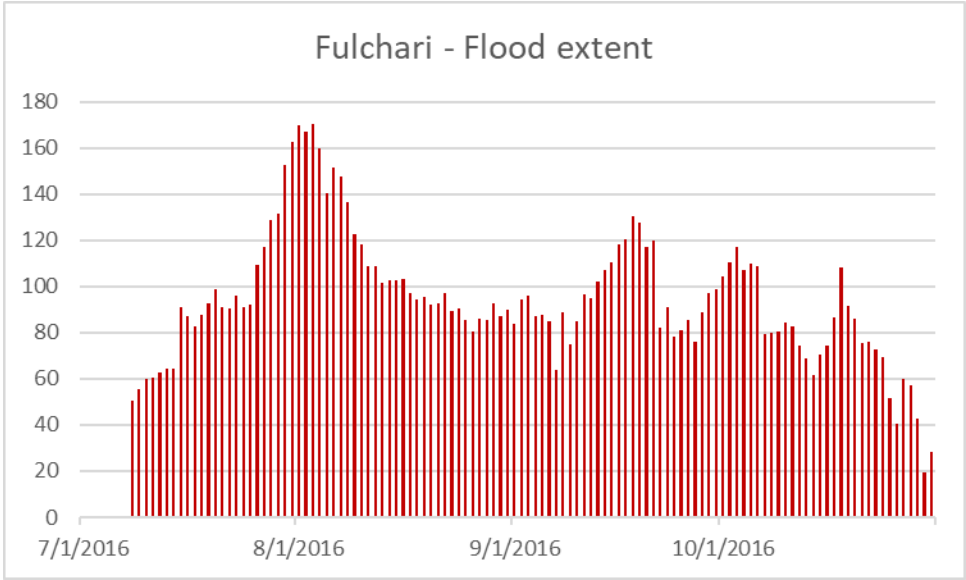
Example 2

Flood Inundation Mapping for Bangladesh – Product Evaluation

Background: IWMI produced MODIS daily flood inundation extent for the period between 2000 to 2018 to support in flood insurance product design and support in damage assessment for 2019 and beyond. The data support from IWMI with Oxfam to support pilot implementation in Gaibandha District covering two Upazilas. The presentation provides flood data comparison with other satellites namely ESA's Sentinel-1 or Landsat images to highlight the product accuracy.



Flood Insurance Product – Bangladesh



“Space technology has huge potential for insurance industry”

<http://floodlist.com/asia/bangladesh-floods-july-august-2016>
<https://www.humanitariancoalition.ca/bangladesh-floods-august-2016>

Water Level vs Flood Extent (2016)



Example 3

**BUNDLED SOLUTIONS OF INDEX INSURANCE WITH
CLIMATE INFORMATION AND SEED SYSTEMS TO
MANAGE AGRICULTURAL RISKS (BICSA)**

Flood / Drought Resistant
Seeds

























Index Insurance covering
drought / flood risks

Increase agricultural production
and income

Package of Practices on
agronomy, fertilizers and water
management

Advisory based on Climate and
weather information

Public Private Partnership are the key success for disaster resilience strategy

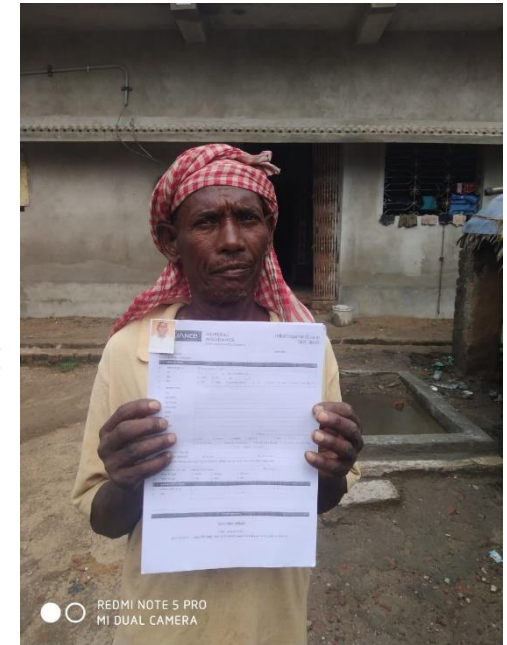
Government agencies	Research Institutes	Seed companies	Insurance industry	CGIAR Centres/CRPs	Scaling partners
 बिहार सरकार  Ministry of Agriculture & Farmers Welfare, Government of India 	 बाकृअनुप ICAR  भारतीय जल प्रबंधन संस्थान ICAR-IWM  কৃষি গবেষণা বাংলাদেশ কৃষি গবেষণা বাংলাদেশ AGRICULTURAL RESEARCH INSTITUTE	  ACI Limited  PIONEER A DUPONT BUSINESS PHI Seeds Limited	   GREEN DELTA INSURANCE  fairfirst INSURANCE A TIFRICE Company  Swiss Re	     INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE	    

BICSA pilot in Gaya and Muzaffarpur District, Bihar

Farmers awareness on BICSA and PMFBY




Drought insurance policy and AWS installation in pilot blocks, Gaya district



Seeds distributions to farmers in Pilot districts in Bihar



Weather and Advisory Services to farmers in managing climate risks

Row Labels 	Weather forecast & alerts	POP advisory	Disease alerts	Low NDVI alert	Grand Total
09-Aug	353				353
13-Aug	353				353
14-Aug		648			648
15-Aug	353				353
19-Aug	353	2,780			3,133
21-Aug	354				354
22-Aug	353				353
24-Aug			2,446		2,446
26-Aug	353	2,981	7,538		10,872
27-Aug		170			170
29-Aug	353				353
30-Aug	183				183
31-Aug	183				183
02-Sep	351	2,167			2,518
03-Sep		312	18,338	593	19,243
04-Sep		20	3,385	235	3,640
05-Sep	356				356
Grand Total	3,898	9,078	31,707	828	45,511

Key messages : Investing in disaster resilience

Policy Change

Governments can review and, where appropriate, revise disaster risk management legislative and regulatory frameworks to clarify and explicitly articulate the precise roles and responsibilities of individual households, communities, the private sector, governments, and the international community in strengthening resilience.

Risk Assessment

Governments can ensure that some form of disaster risk assessment is undertaken for all new investments in their countries, whether financed directly by a government, via support from the international community, or privately.

Financing

National and subnational governments can develop and implement comprehensive disaster risk financing strategies to reduce risk and to provide adequate and timely post-disaster support to strengthen financial resilience.

Financing

Governments, in cooperation with the international community, can encourage the growth and development of the insurance and reinsurance sectors in their countries and generally provide for a range of disaster risk financing instruments.

Governments, in cooperation with the international community, can establish public programs of financial support for community and local investment in risk assessment, risk reduction, and residual risk management.

Private Sector Engagement

Governments, working in cooperation with the international community, can develop programs of work to strengthen private sector understanding and appreciation of the commercial opportunities in strengthening resilience.

Knowledge Management

Governments and regional associations, working in cooperation with the international community and private sector partners, can establish an open-source, regional, online information platform to facilitate the development, exchange, and dissemination of hazard and risk data, including climate change modeling.

Governments and regional associations, working in cooperation with the international community, can establish a regional knowledge-development and capacity-building program to strengthen understanding across government and the wider society of the potential returns on investments in risk assessment, risk reduction, and residual risk management.



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Agriculture and
Food Security



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Water, Land and
Ecosystems

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Ministry of Agriculture,
Forestry and Fisheries
農林水産省

Thank You