



International Water
Management Institute

The logo for the Asian Development Bank (ADB), consisting of the letters 'ADB' in white on a dark blue square background.

ADB

Turning from risk to resilience: How the IWMI's innovations and emerging solutions can help investors?

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Research Group Leader: Water Risk to Development and Resilience

Innovative water solutions for sustainable development

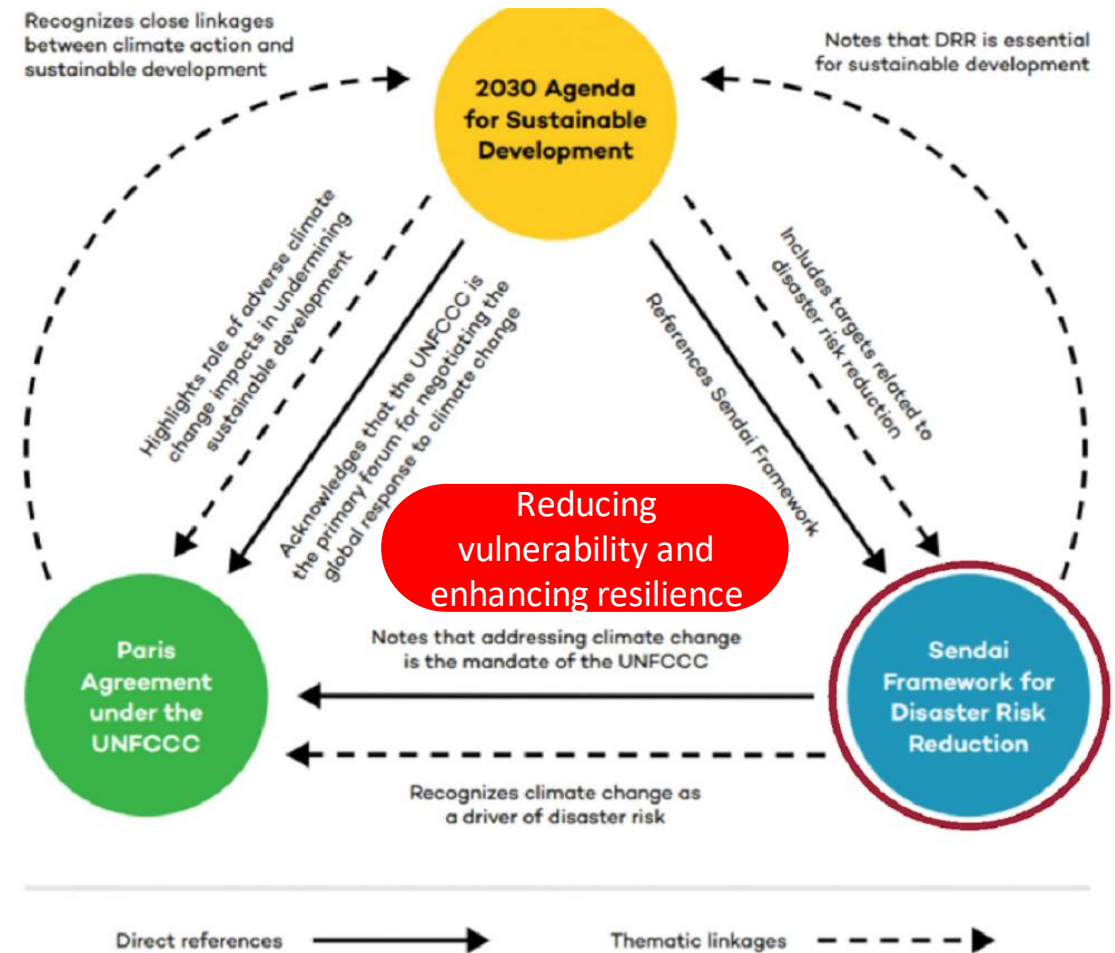
Food · Climate · Growth

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Presentation outline

- Understanding risk and investing in resilience
- Water risk knowledge products and tools
- Climate risk insurance

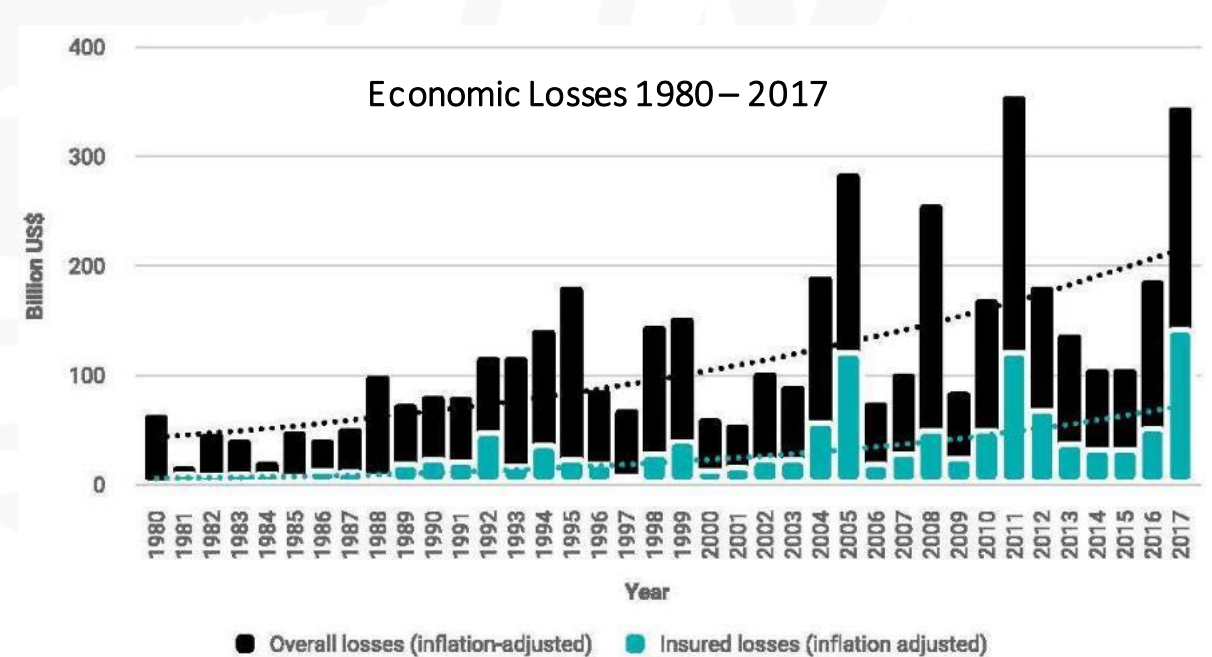
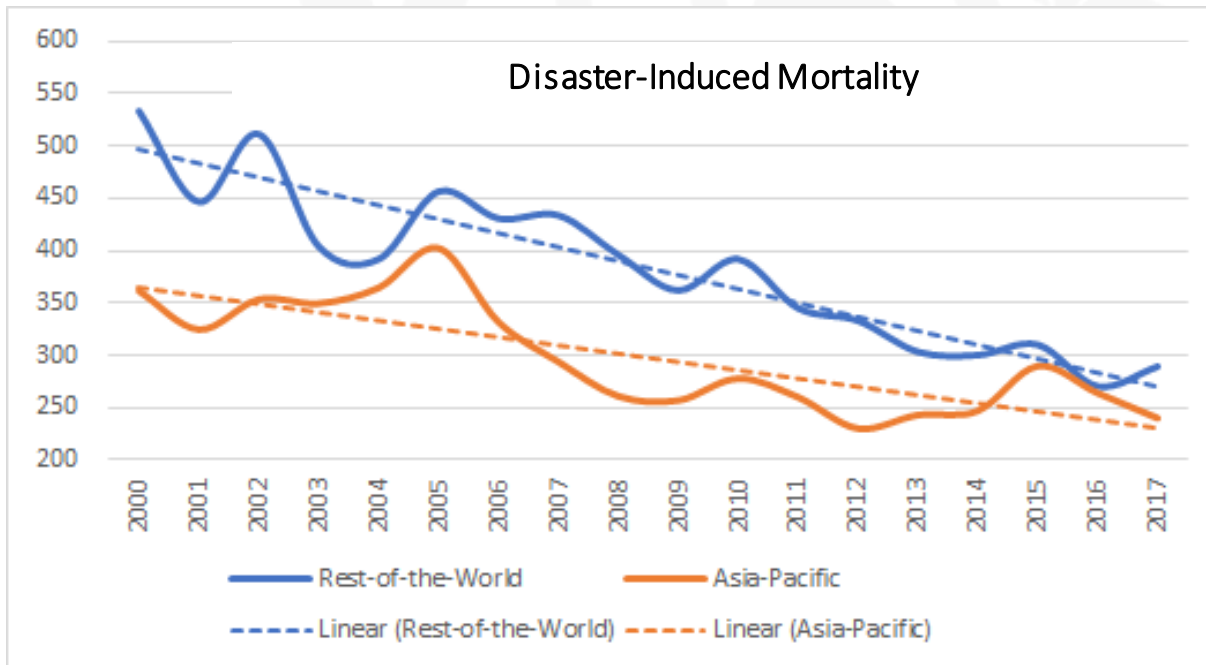
Integrating adaptation into sustainable development and Sendai framework for Disaster Risk Reduction



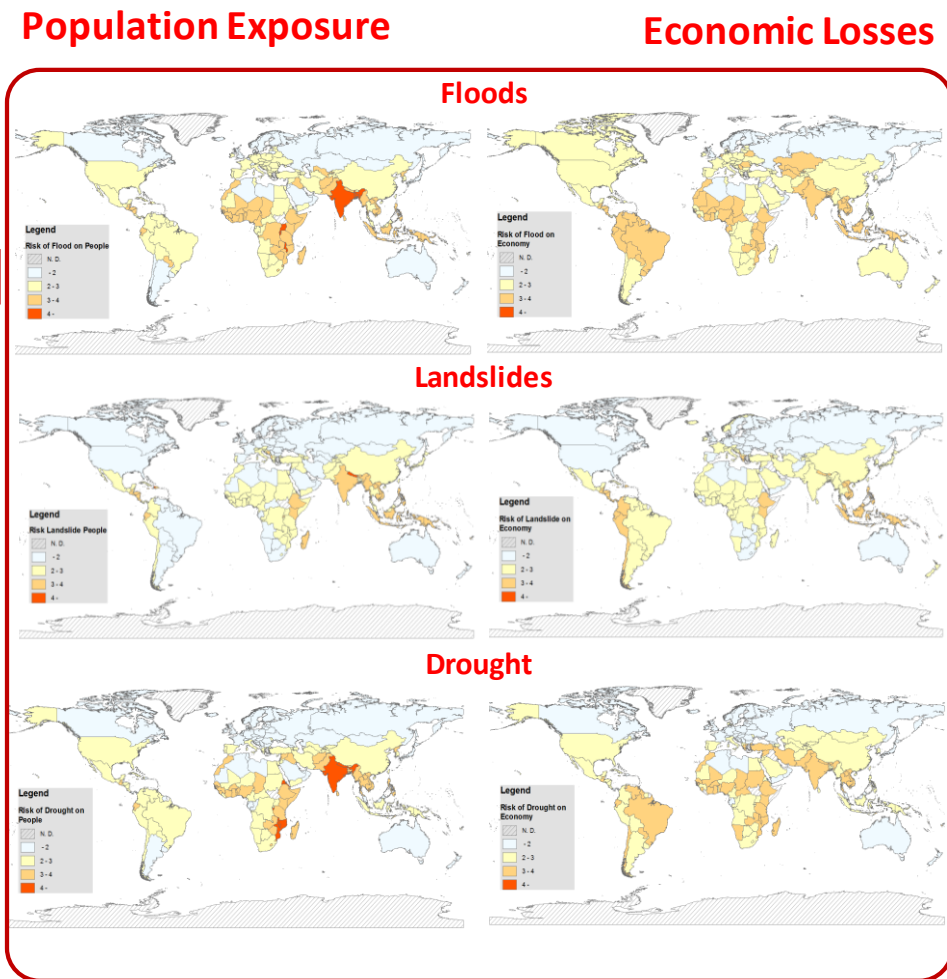
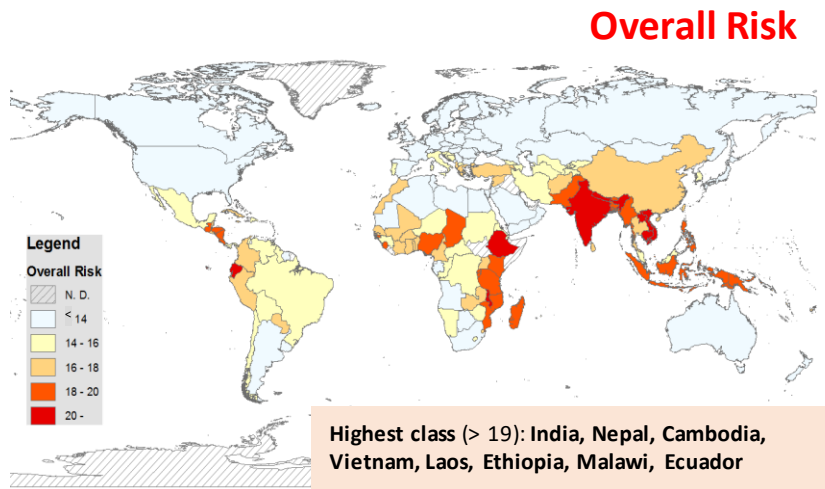
Trends in disaster impact in Asia and the Pacific

Decreasing mortality; increasing economic losses

- Decrease in mortality
- Disaster losses are outpacing the region's economic growth
- Annual economic losses stand at US\$675 billion, or 2.4% of the region's GDP (including drought impact)



Mapping global water-related disaster risk



Publicly available data sources

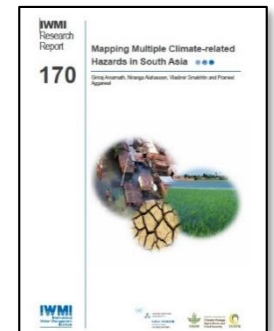
Global Risk Data Platform (UNEP)

Socioeconomic Data and Applications Center (SEDAC)

Human Development Report (UNDP)

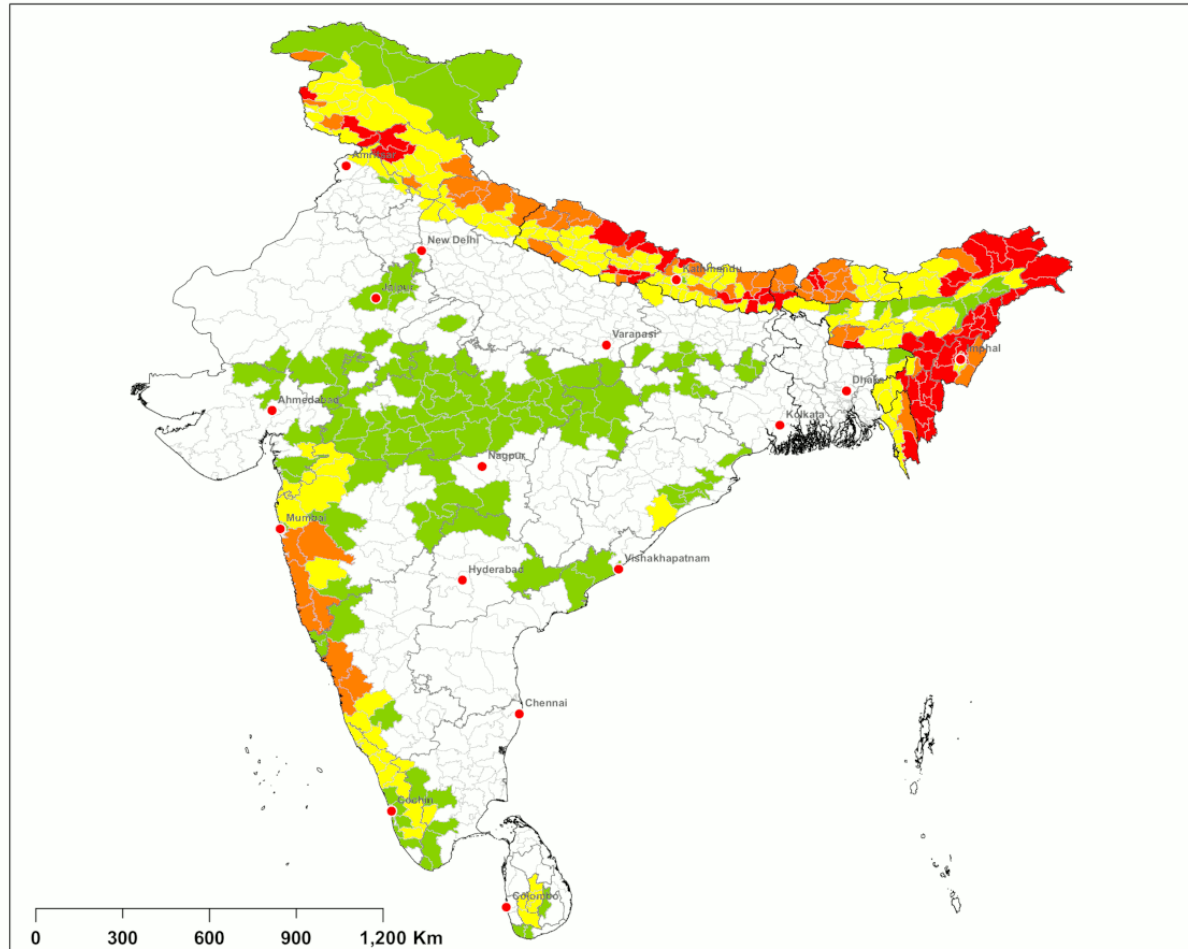
Amarnath G, Yoshimoto S, Goto K, Fujihara M, Smakhtin V, Aggarwal P, Ravan S. 2016. Global trends in water-related disasters using publicly available database for hazard and risk assessment, Congress of JRC SA 2016, held in Kyoto, Japan.

Amarnath, G.; Alahacoon, N.; Smakhtin, V.; Aggarwal, P. 2017. Mapping multiple climate-related hazards in South Asia. IWMI Research Report 170, 41p. doi: 10.5337/2017.207



Climate Screening products for investing in disaster resilience

Landslide Map



1. Data

This dataset includes an estimate of the annual frequency of landslides triggered by precipitation. It depends on the combination of trigger and susceptibility defined by six parameters: slope factor, lithological (or geological) conditions, soil moisture condition, vegetation cover, precipitation and seismic conditions.

2. Legend

Landslide hazard level in South Asia

Very Low

Low

Medium

High

Very High

Country boundary

State/Province boundary

3. Sources

This data was modeled using global data bases of slope factor, geological conditions, vegetation cover, soil moisture condition, precipitation and seismic condition.

4. Feedback

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5. Disclaimer

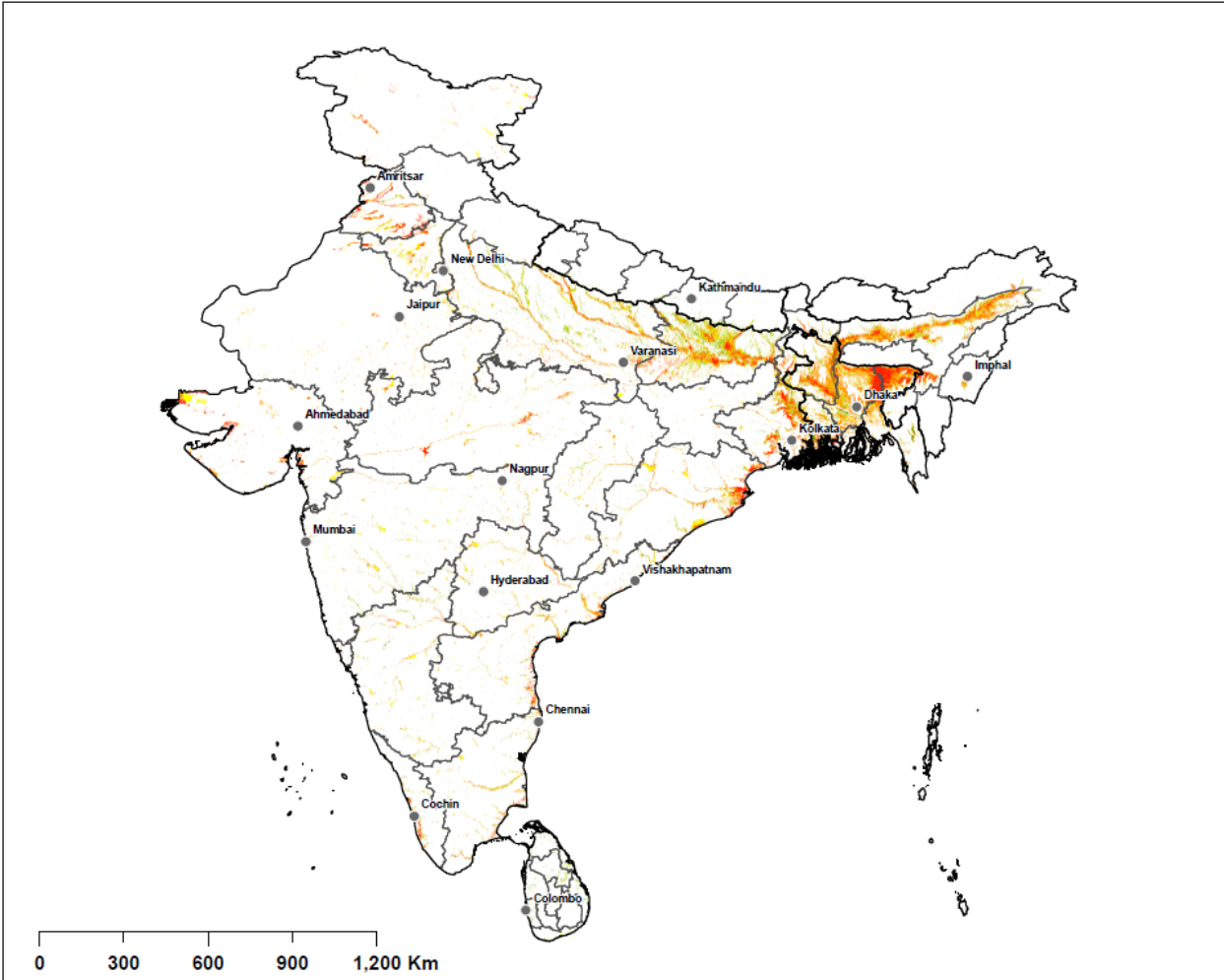
The depiction and use of boundaries, geographic names and data shown here are not warranted to be error-free nor do they imply official endorsement or acceptance by the ADB, IWMI or the governments in South Asia region.

Date created 05 September 2018

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

Climate Screening products for investing in disaster resilience

Flood Gender Vulnerability Map



1. Data
The Gender Vulnerability Index (GVI) is based on UNDP's Gender Development Index (GDI) and calculated as follows: $GVI = 1 - GDI$. The closer the GVI ratio is to 1, the higher the gap between women and men. Flood hazard and GVI were given equal weight, calculated by multiplying the flood hazard value in a given pixel with the national GVI values, and normalized to values between 0 and 100. The colour gradients indicate relative flood gender vulnerability at 500m

2. Legend
Flood gender vulnerability in South Asia. Applied natural breaks (Jenks) classification method.

- Very Low (< 7.84)
- Low (7.85 - 22.35)
- Medium (22.36 - 43.92)
- High (43.93 - 69.80)
- Very High (69.81 - 100)

— Country boundary
— State/Province boundary

3. Sources
The Gender Development Index (GDI) data was obtained from 2018 Statistical Update of the Human Development Indices and Indicators. http://hdr.undp.org/sites/default/files/2018_human_development_statistical_update.pdf

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

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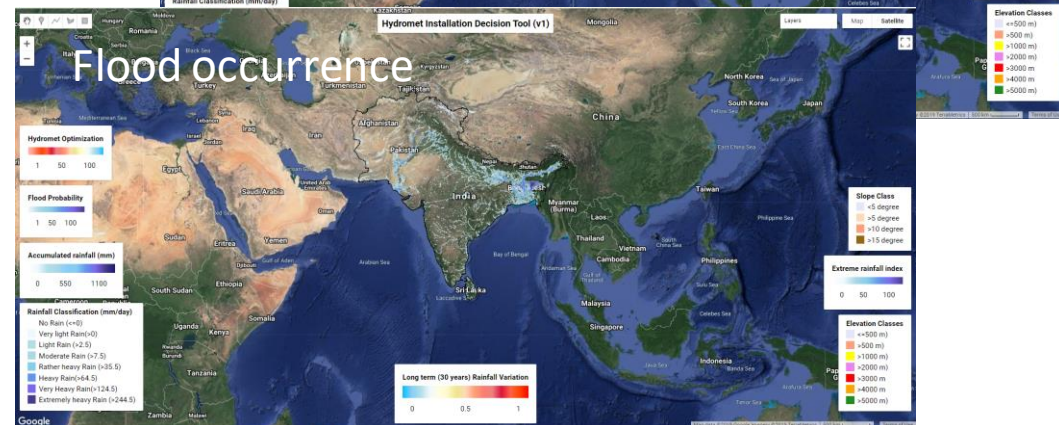
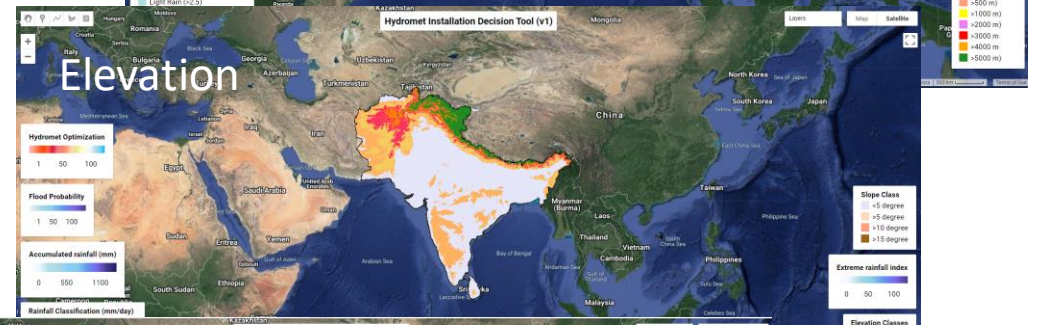
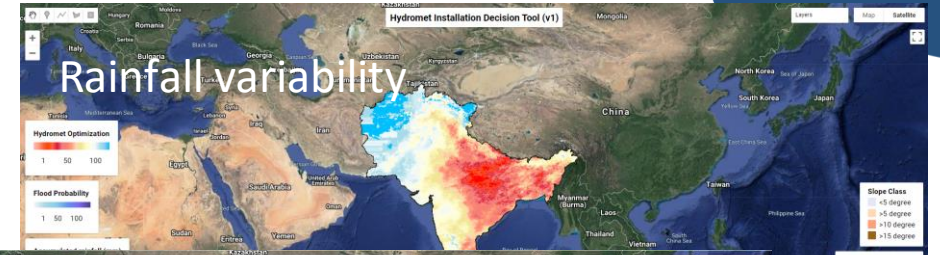
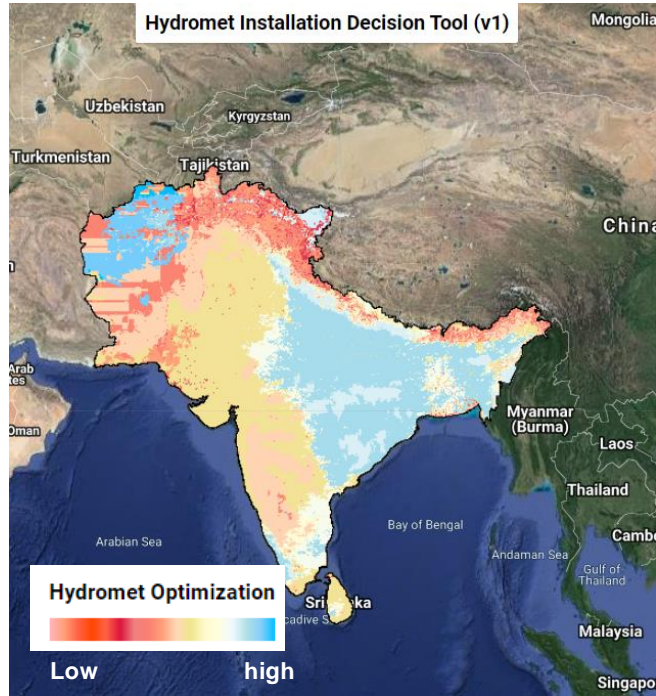
Version 2
28 March 2019

Multi-hazard Data
+
Population Exposure,
Gender Risk
+
Gross Domestic Product
(GDP)
+
Historical loss and event
database

=

Multi-hazard Economic
Exposure and gender-risk
maps can guide DRM
policy and Sustainable
climate Finance

Hydromet optimization tool (v1)



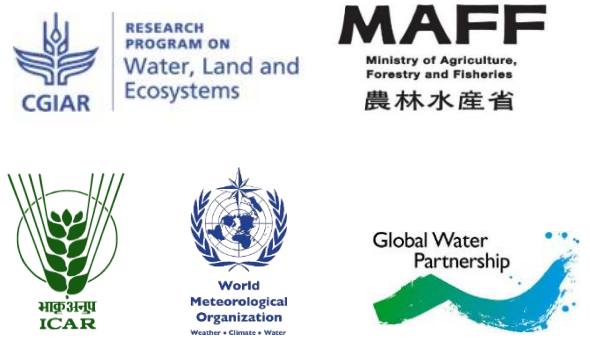
- Guide the process of impactful investments in hydromet and early warning services;
- Digital data solutions can help in optimizing the hydromet operations to strengthen hydrological simulations to manage disaster risks;

https://wrd_iwmi.users.earthengine.app/view/hydromet

IWMI's ongoing drought resilience projects



South Asia



Southern Africa



MENA

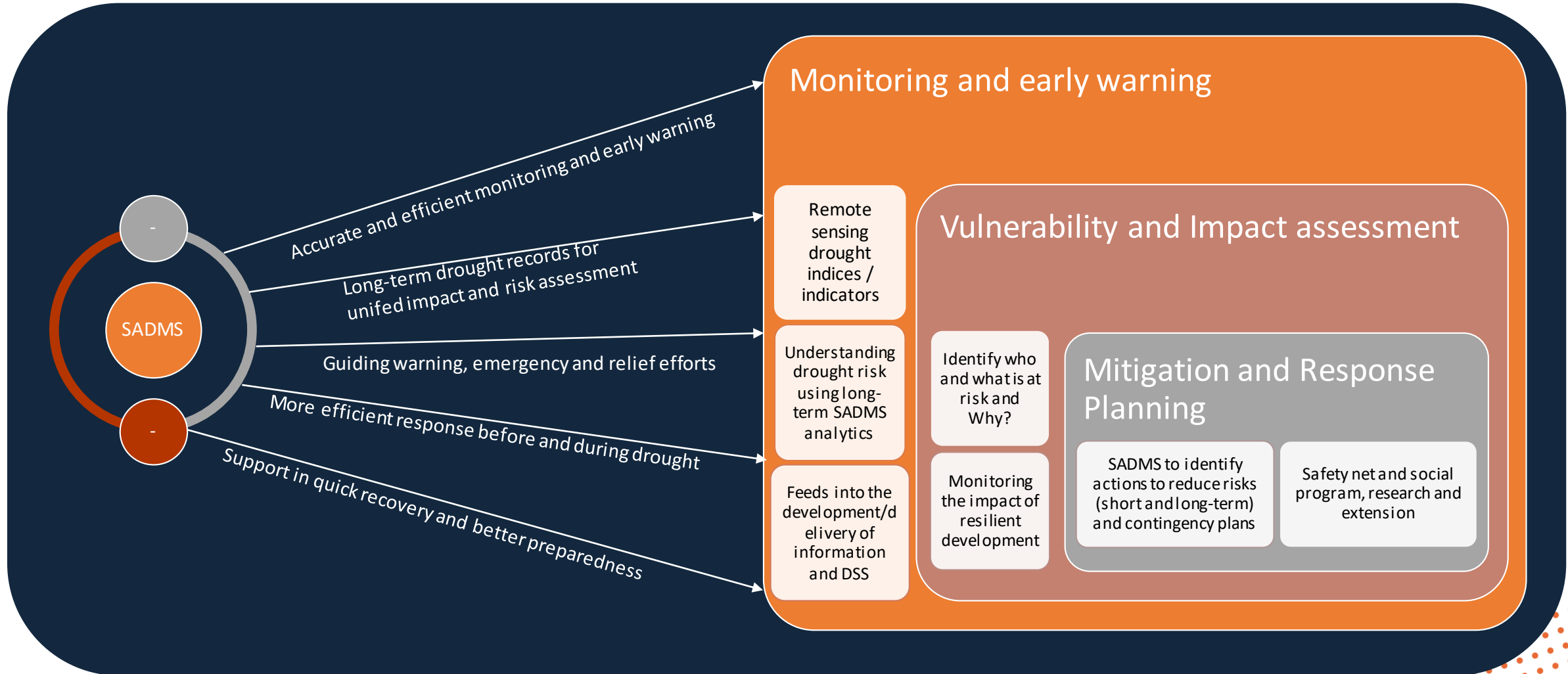


Senegal and Ethiopia



South Asia Drought Monitoring System (SADMS)

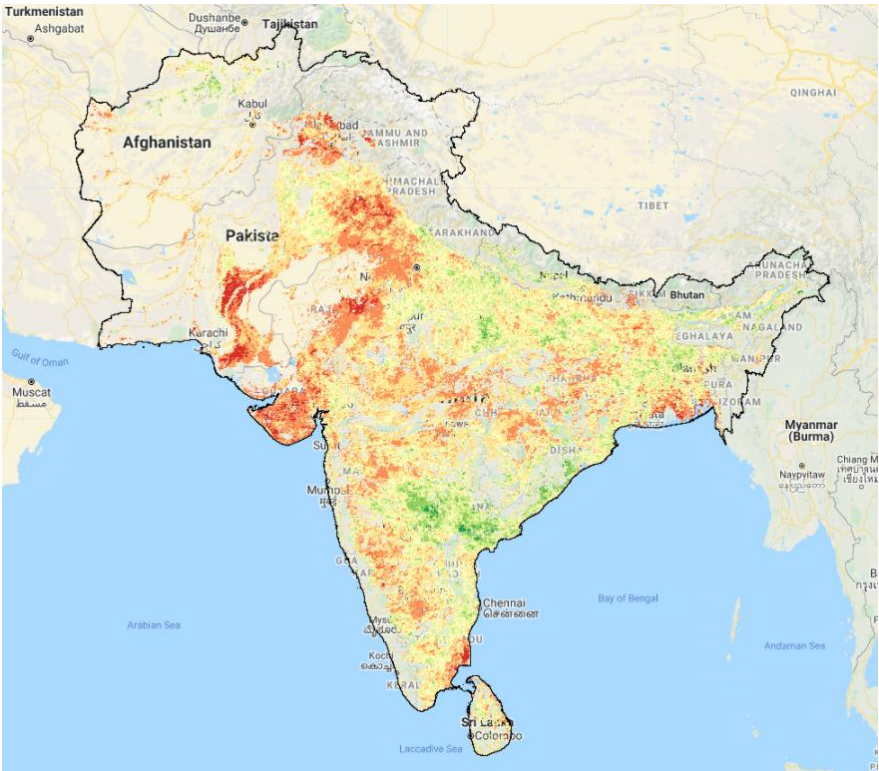
strengthens three drought pillars



Drought Surveillance System for South Asia



Information and Action



Agriculture Stress monitoring using satellite indices

Knowledge



Consultation and awareness on the digital tools and actionable information

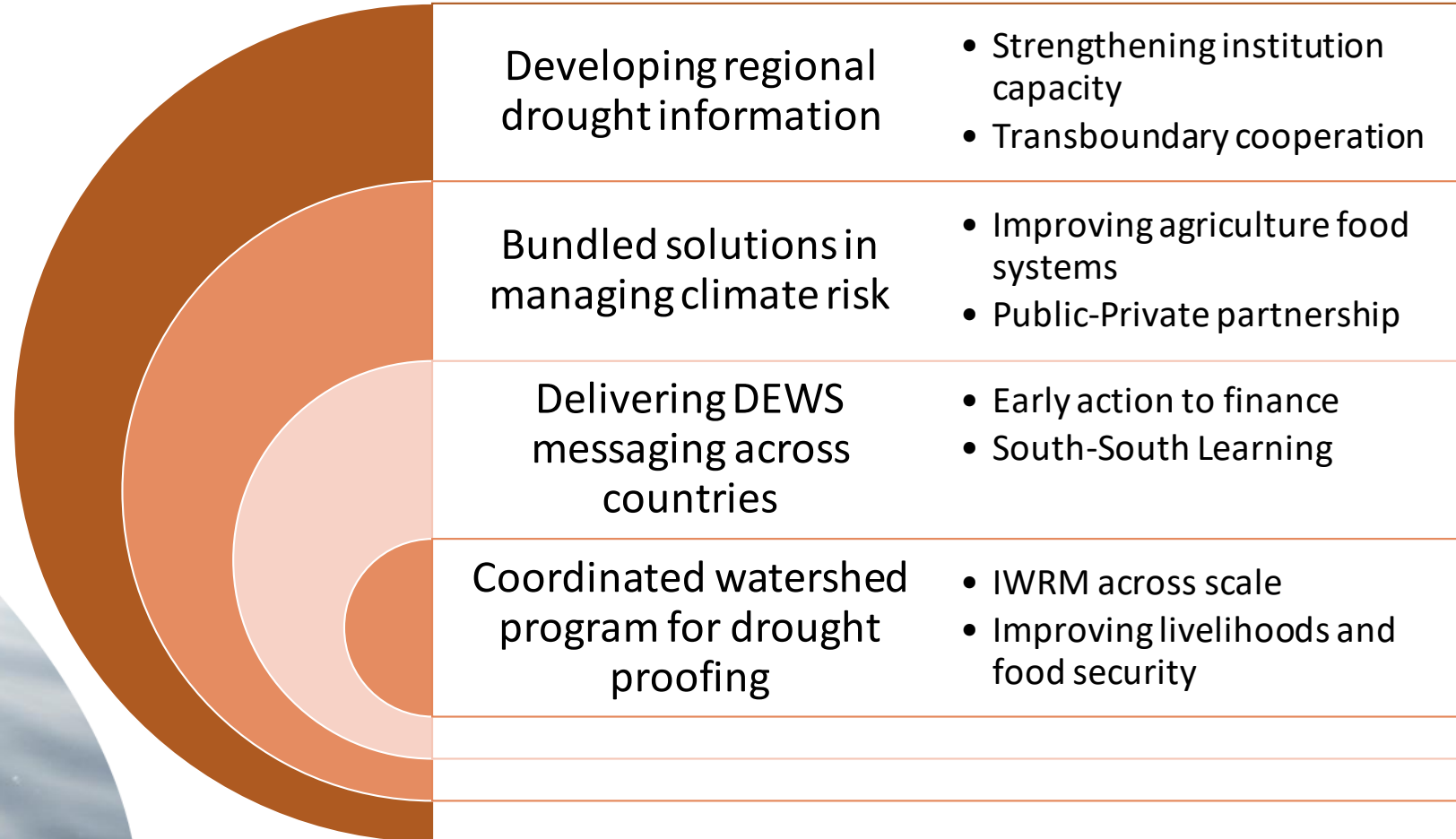
Decisions

Contingency Measures and Strategy

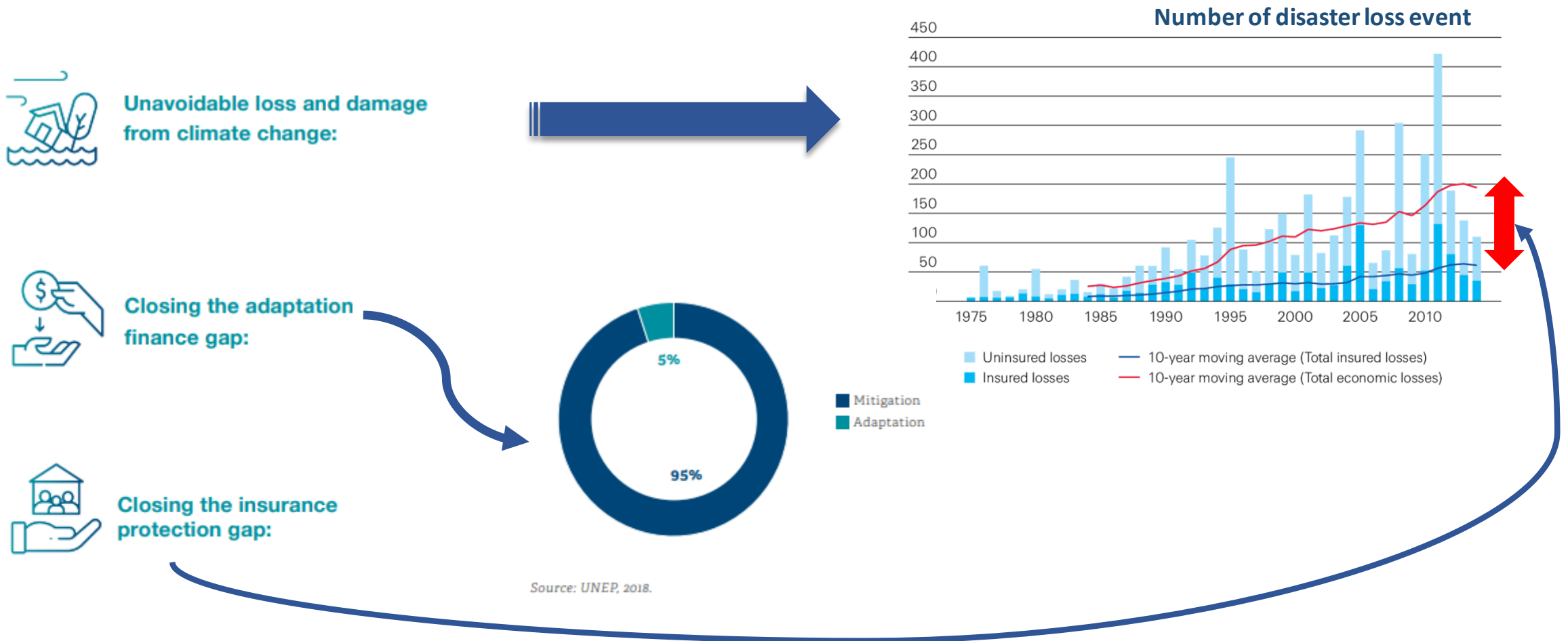
Measure	Strategy
Shallow soils with assured rainfall	Interculture with furrow for weeding
Blockgram	Interculture for weeding and to create soil mounds
Copern	Protective irrigation possible through farm pond water
Plant water	Prepare shallow furrow while weeding by tying ropes to plough, which will provide soil support for crop plant and conserve soil moisture
Landuse	Assess the dressing of fertilizers till sufficient soil moisture is available
IGSI	Interculture with furrow for weeding and to create soil mounds
SWADI	Protective irrigation if possible through farm pond water

Drought response strategies integration information and knowledge products for decision making process

SADMS Value Chain



How climate insurance increases resilience?



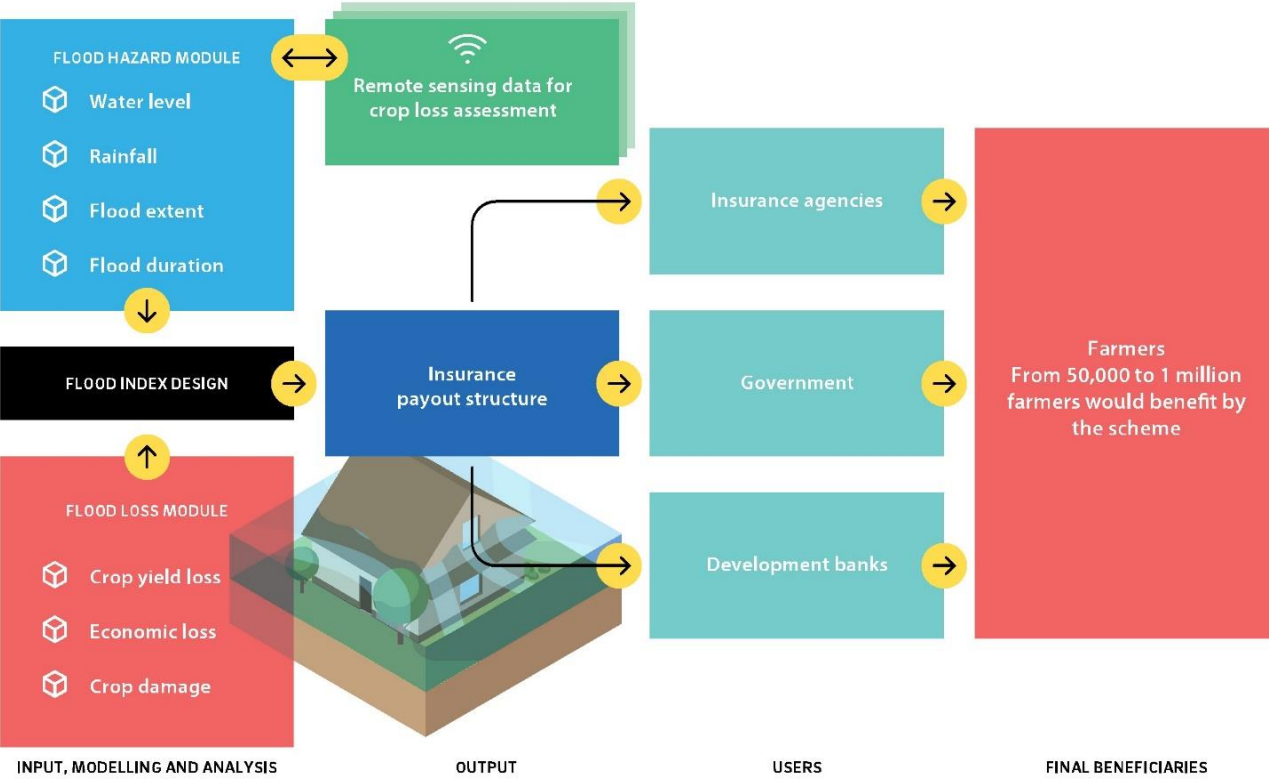
- Increasing the availability and use of insurance products can help people recover from shocks more quickly.
- Recent evidence suggests that even a 1 percent increase in insurance penetration reduces the disaster recovery burden on developing countries by 22 percent



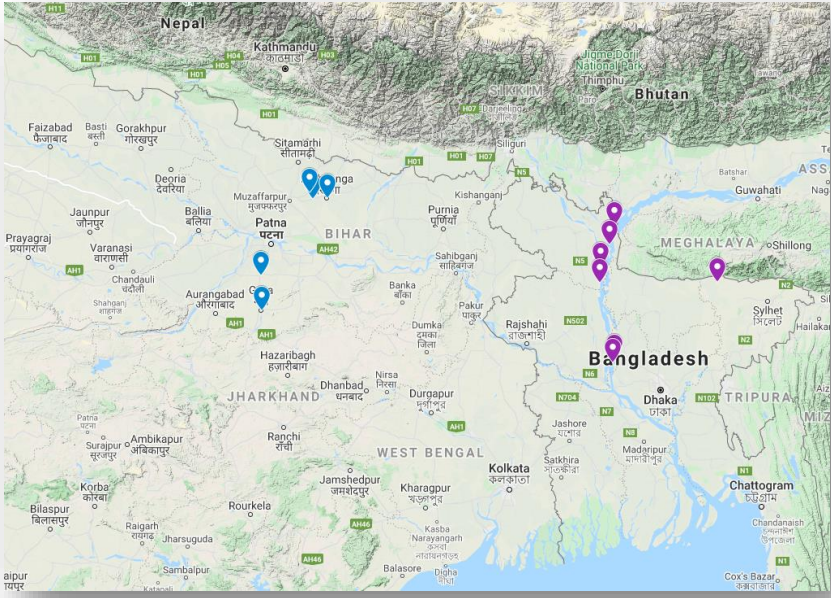
“Data – essential first step for making agricultural insurance universally accessible among smallholder farmers”

- Poor insurance penetration for floods in Asia
- Insuring the uninsured i.e. parametric insurance
- Monitoring crop health using satellite data and digital innovation
- Better coordination among public and private sectors
- Ensure readily accessible financial instruments for smallholder farmers

IBFI – Flood proofing communities and agriculture resilience



Index Insurance program in Bangladesh and India



- Bangladesh IBFI
 - Individual styles
 - Jatrapur (Kurigram District)
 - Chilmari Upazila (Kurigram Di...
 - Fulchhari Upazila (Gaibandha...
 - Saghata Upazila (Gaibandha ...
 - Tahirpur Upazila (Sunamganj ...
 - Sthal Char (Sirajganj District)
 - Gharjan (Sirajganj District)
- India IBFI
 - Individual styles
 - Gaighat, Muzaffarpur District
 - Katra, Muzaffarpur District
 - Darbhanga District
 - Gaya District
 - Jahanabad District

Source: Amarnath, 2017.

<https://www.youtube.com/watch?v=YVQ0soREjmM>
<https://www.iwmi.cgiar.org/success-stories/how-hi-tech-insurance-is-helping-farmers-survive-floods/>

Launched the first WII product in Sri Lanka for Yala Season, adopted by Sanasa General Insurance Company Ltd.

Index based flood insurance (IBFI)



RESEARCH PROGRAM ON
Climate Change,
Agriculture and
Food Security

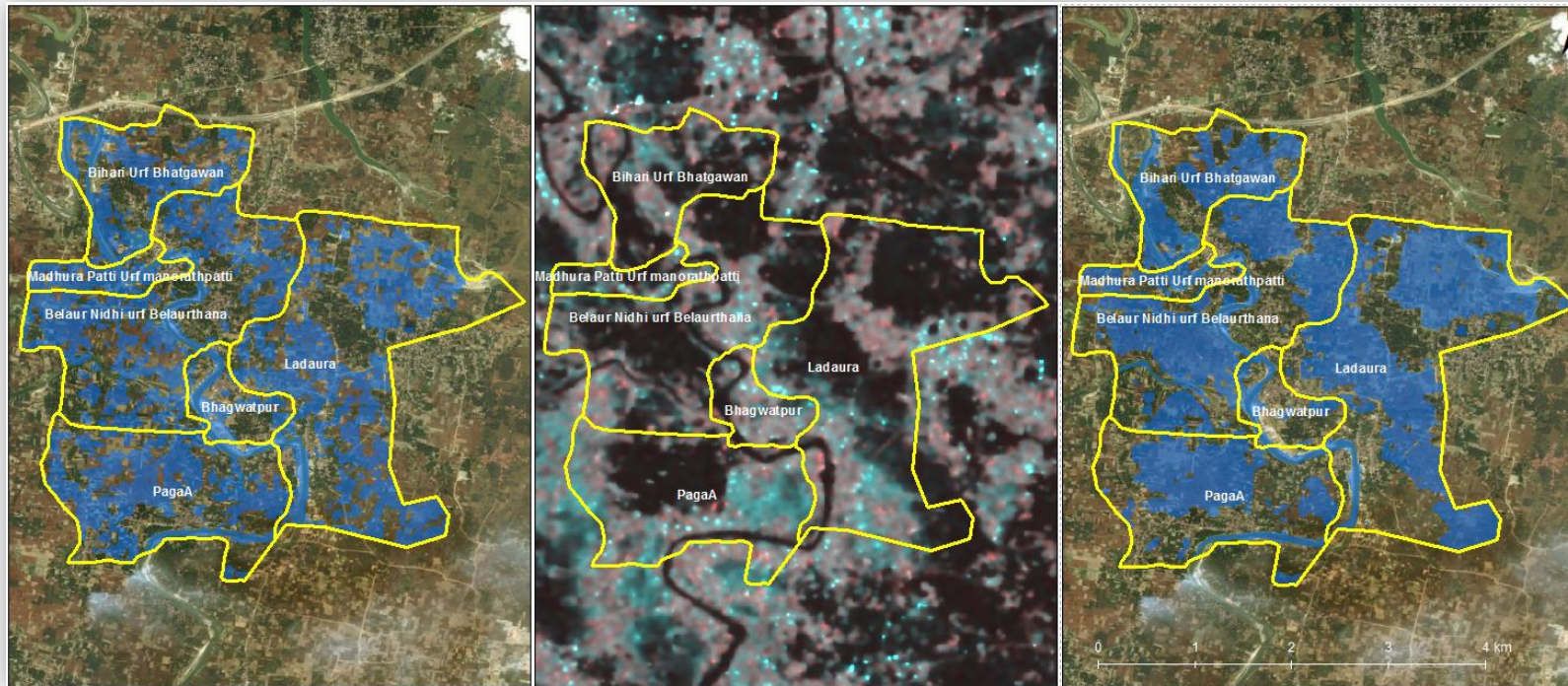


RESEARCH PROGRAM ON
Water, Land and
Ecosystems



IWMI

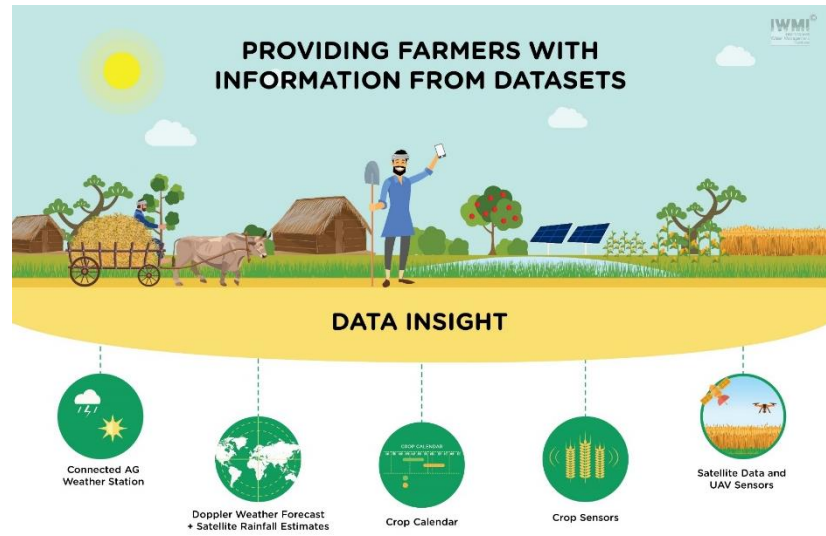
Earth observation data and modeling tools strengthen scaling risk solutions in protecting poor and vulnerable people in developing countries



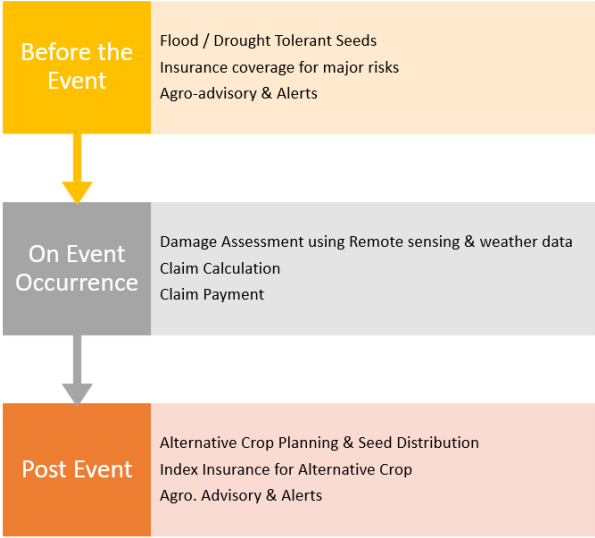
- Since 2017 pilot trials in India and Bangladesh over 7,000 households with total payout of \$150,000 USD
- Insurance solutions could help bolster farming livelihoods, reduce post-disaster costs for governments and contribute to reducing poverty, achieving gender equality and underpinning food security.

2021 Scaling
- BICSA 25,000 Household by WRMS Pvt. Ltd
- IBFI 100,000 household by GDIC

Bundled solutions (Seeds, Insurance and Climate Information Services)



Bundling Concept (BICSA)



BICSA a well-designed financial products and services such as insurance, savings, seeds, agrometeorological advisories and digital banking all play a role in increasing smallholder farmers' resilience.

Summary

Our solutions to investors would assist in **building momentum to climate actions** and transformative pathways in building resilient economy;

Promoting public and private partners alliance in de-risking agricultural risks across smallholder farmers;

Digital and bundled insurance solutions will advance transformation of food systems and reduce the impact of climate change

Strengthening of relevant institutions –build capacity of partners in scaling and south-south learning;



Thank you

