

# The Crucial Role of Early Warning and Monitoring Systems in Empowering Disaster Preparedness and Mitigation

International Water Management Institute (IWMI)

17<sup>th</sup> September 2023

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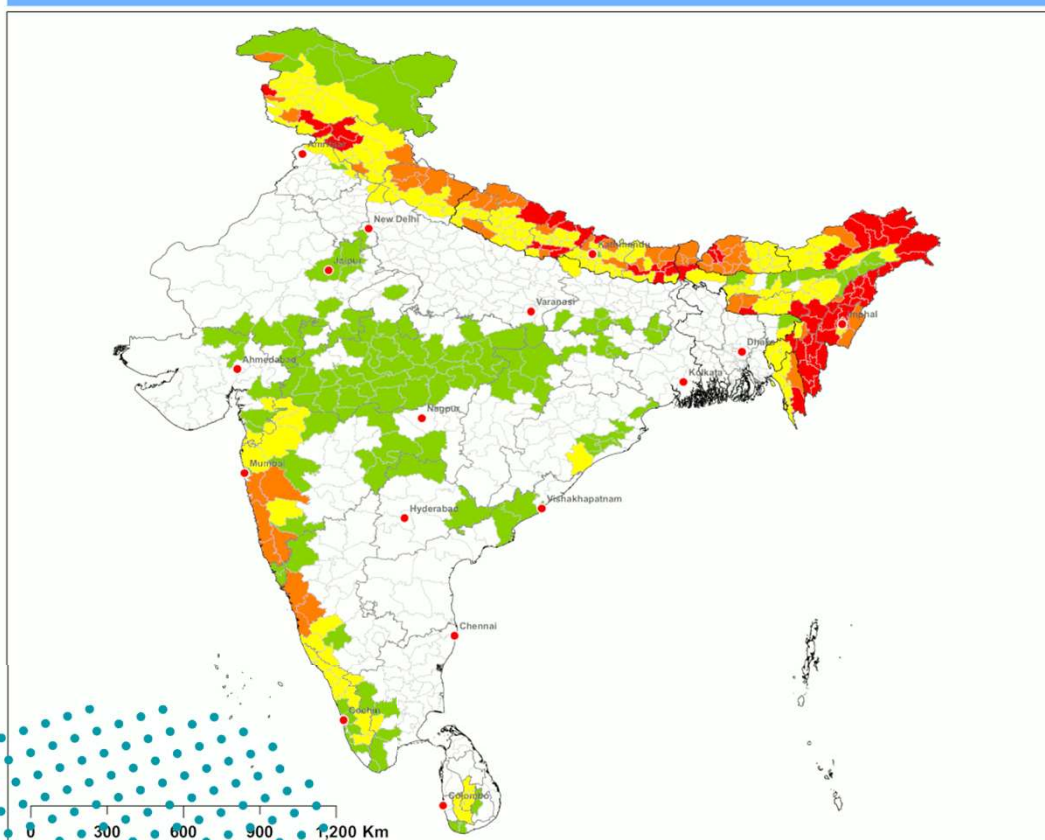
Innovative water solutions for sustainable development

Food · Climate · Growth

## Introduction

- Throughout human history, natural disasters have been a constant presence. (hurricanes, wildfires, Floods, Drought .... etc.)
- The human lives and economic destruction caused by disasters are immeasurable.
- In such instances, preparedness becomes our strongest shield. But how do we prepare effectively? This is where we need to understand, the role of early warning and monitoring systems.
- Early warning systems are the eyes and ears that help us anticipate these disasters.
- Today, we'll explore into how early warning and monitoring systems empower us in our fight against disasters.
- They are not just tools; they enable the mitigation of the worst effects of these events.

## 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, IWM 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 Assessment to support in developing DRM policies and financial investment portfolio for building resilience

Source: IWM

# South Asia Drought Monitoring System (SADMS)



**IWMI** International Water Management Institute

**SADMS** South Asia Drought Monitoring System

South Asia Drought Monitoring System

Sign In Development Version

**Weather Forecast**  
The Tool offers seasonal to short-term weather forecast to guide users for drought early warning and management measures.

**Drought Management**  
The tool allows the users to monitor past and current drought frequency and severity and to determine the drought conditions to promote proactive drought management measures.

**Drought Decision Support**  
Drought decision support tool offers triggers using pre-defined conditions for drought alert to determine drought conditions and support in contingency plan.

**Contingency Plan**  
This tool summarizes the actions to be measured for different stages of drought using the monitoring system to mitigate drought risk.

**Newsfeed**  
This space is to learn various information related to drought, water scarcity and food security from IWMI and relevant institutions on the news contents, publications, and various other resource materials.

**User Guide**  
User Guide provides opportunity for users step wise procedure on the various knowledge products of SADMS for quick access and information sharing.

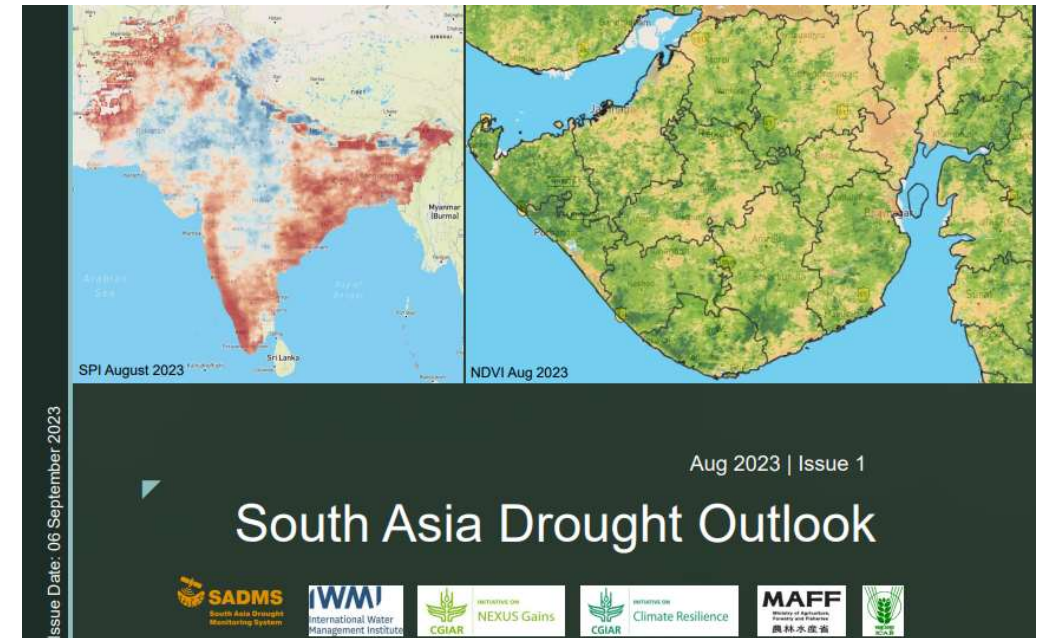
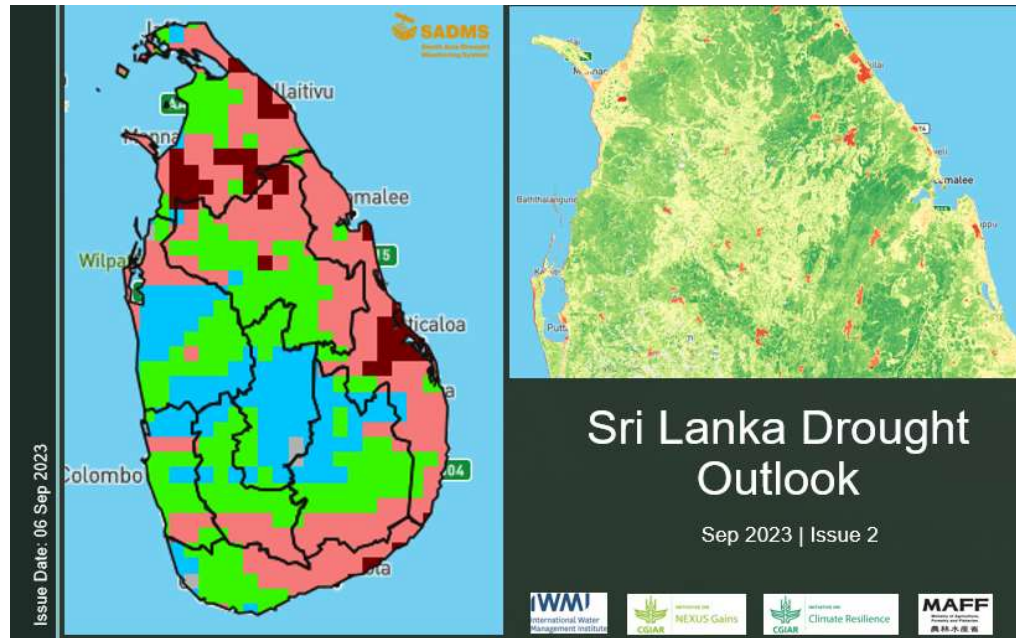
**Public API**  
The Application Programming Interface (API) offers the users to retrieve various indices developed in SADMS platform to be used in other platforms through REST framework to promote integrated solutions.

**Online Bulletin**  
This space is to learn various information related to drought, water scarcity and food security from IWMI and relevant institutions on the news contents, publications, and various other resource materials.

It enables users to oversee the entire application process, spanning from early warning to monitoring to contingency planning, encompassing both preparedness and mitigation efforts for drought hazards.



# South Asia Drought Monitoring System (SADMS)



The SADMS system is utilized to monitor and predict the likelihood of dryness or droughts in the next four weeks, using various indicators such as accumulated rainfall, SPI, vegetation indices (NDVI, VCI), VHI, IDSI .... etc.

It provides national-level drought mapping and offers insights into short and long-term drought outlooks through alert maps. Additionally, it offers media briefings to report on drought impacts in the region.

# Earth Observation for Agricultural Risk Management (EO4ARM)



## About Portal

Earth observation for Agricultural Risk Management (EO4ARM) platform is to support various institutions including insurance companies to strengthen agricultural insurance program to enhance agricultural resilience among smallholder farmers in Sri Lanka. The platform provides a complete stack of solutions ranging from weather forecast, monitoring of floods and drought, crop health status and integrate farm-level updates for assessing climate risks among agencies for timely compensation and mitigation measures. The platform is developed using cloud-based spatial analytical framework to have seamless access to near real-time publicly available satellite data namely NASA MODIS, ESA Sentinel 1 & 2 for fine-scale agricultural insurance monitoring. The platform has capacity to access historical data to assist various partners to promote new insurance products, disaster preparedness program including climate resilience strategies.

## Weather & Water



Forecast

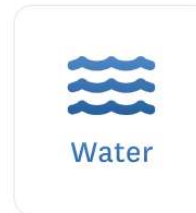


Monitoring

## Crop Health Monitor

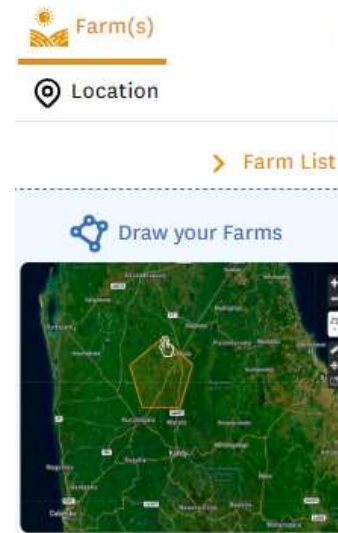


Agriculture



Water

## Farm Tracker



## Risk Analytics

Farm Details

**Niranga**  
8th Sep 2023

Description : Rice variety  
Latitude : 8.32 ° N  
Longitude : 80.72 ° E  
Area : 1.34 ha

**91.8** Risk Score : **91.8**  
Risk Level : **Very High**  
[Analyze Risk](#)

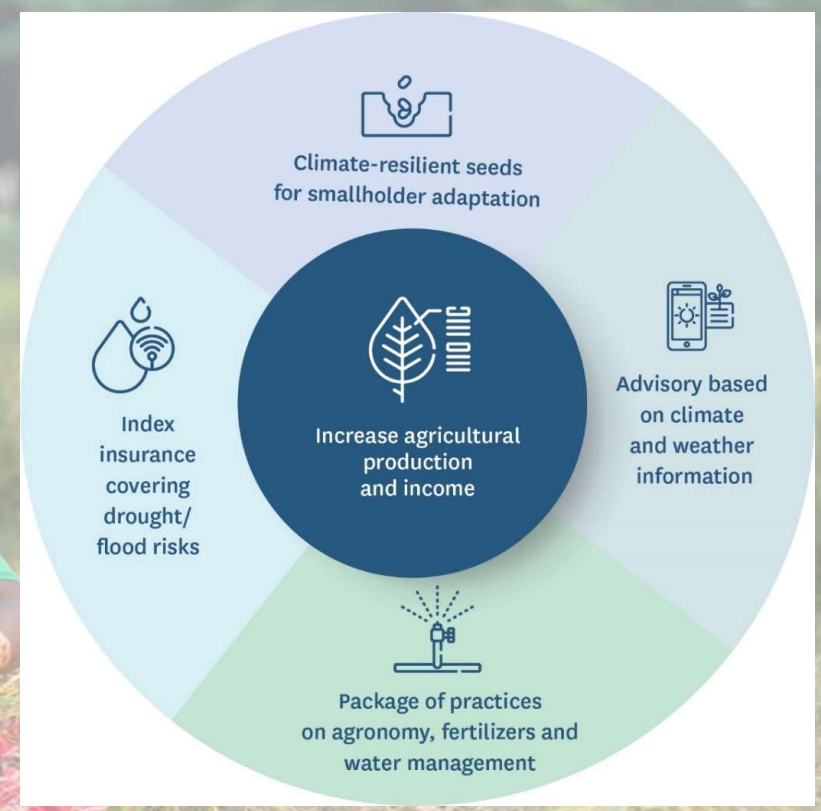
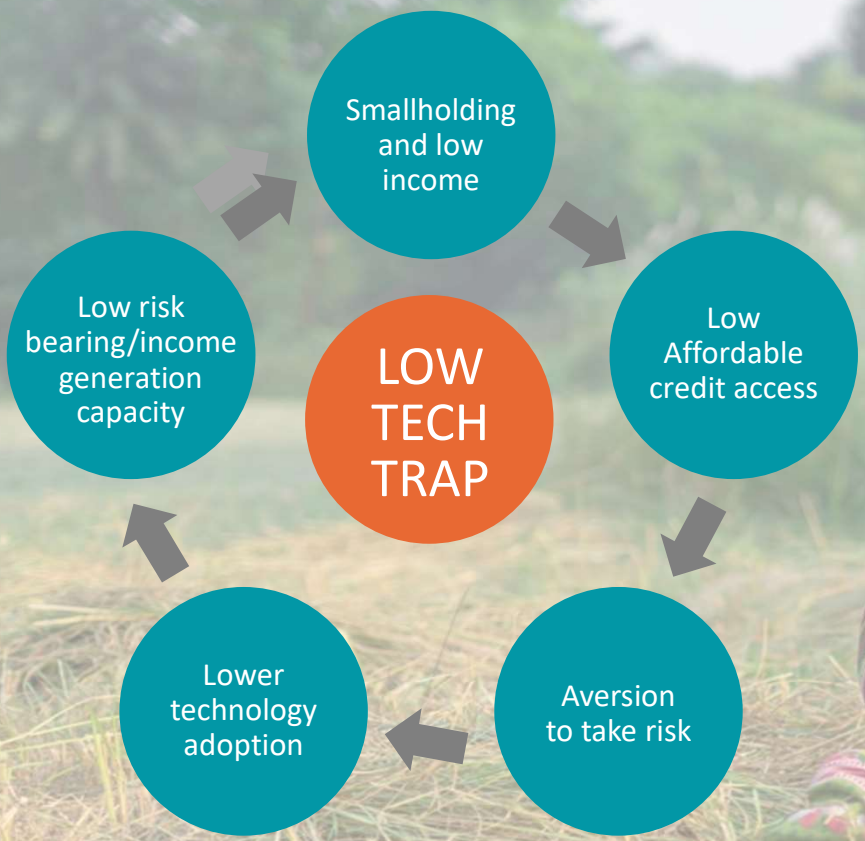
Preparedness and Mitigation

<https://eo4arm-demo.iwmi.org/home>

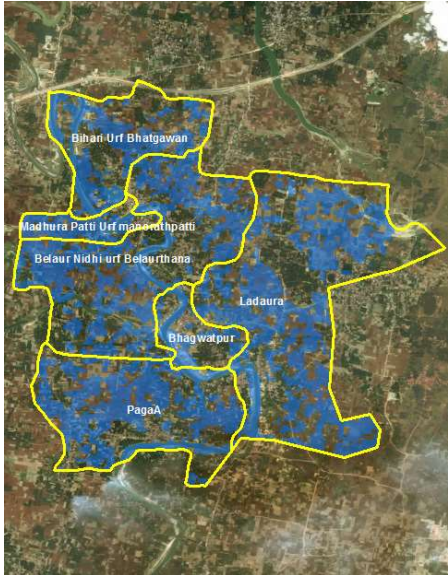
Priority 2: Strengthening disaster risk governance to manage disaster risk



# Bundled solutions of Index Insurance with Climate Information and Seed Systems to manage Agricultural Risks (BICSA)

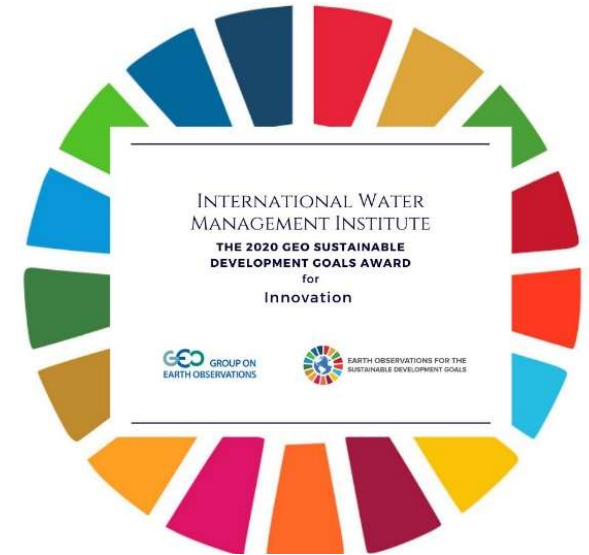


# Disaster Risk Financing - Index based flood insurance (IBFI)



Open access earth observation data and modelling tools strengthen scaling risk solutions in protecting poor and vulnerable people in developing countries.

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.



**Pilot trials**  
In India and Bangladesh since 2017



**+7,000**  
Households



**\$150,000 USD**  
Total payout



**125k HH**  
Scaling



# Enabling Responsiveness: AWARE Platform



The screenshot shows the AWARE Platform homepage. At the top, there is a green header with the CGIAR logo and 'INITIATIVE ON Climate Resilience'. The main title 'AWARE Platform' is followed by 'Early Warning | Early Action | Early Finance'. Navigation options include 'Development Version', 'Sign in', 'Register Now', and 'English'. The main content area features six cards: 'Early Warning', 'Early Action', 'Early Finance', 'Sectorial Climate Risks', 'Online Bulletin', and 'User Guide', each with an icon and a brief description.

The screenshot shows the AWARE Platform navigation menu. It features the CGIAR logo and 'INITIATIVE ON Climate Resilience' at the top. The menu items are: 'AWARE Home', 'Dashboard', 'Early Warning', 'Early Action', 'Early Finance', 'Sectorial Climate Risks', 'Crop Yield Prediction', 'Market', 'Population Displacement', 'Online Bulletin', and 'User Guide'. Each item is accompanied by a small icon.

- Collaborative platform **across institutions**, scales, sectors
- **Near real-time data for climate risk preparedness and rapid responses**
- Promotes inclusive governance
- **Ability to integrate with existing platform**

# Enabling Responsiveness: AWARE Platform

IWM



AWARE Platform

Development Version

English

Niran...



AWARE Platform

Early Warning | Early Action | Early Finance

Development Version

English

Niran...

[AWARE Home](#)

[Early Action](#)

Proceed Next

## Early Finance



### Dashboard

The Early Finance Phase transforms into an interactive dashboard, giving stakeholders like governments, NGOs, and funders easy access to the meticulously crafted AAP. This fosters transparency, collaboration, and the generation of insightful reports for sharing, propelling proactive disaster preparedness and uniting efforts to mitigate potential crises.



### Alert Report

Our tool streamlines reporting by merging data from all stages—Early Warning, Early Action, and Early Finance—along with supplementary inputs like media reports and remarks. This feature produces comprehensive reports for easy sharing, facilitating informed decision-making and collaboration in disaster management.



# Thank you

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