Climate Information and EWS (CIEWS) in Asia Pacific: What and Why?

State of Global Disaster Losses in 2024

Source: Munich Re, NatCatSERVICE, 2025

ADB

State of EWS: Sendai Framework on DRR Mid-Term Review

SFDRR 2015 – 2030, Target G: *Substantially increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to people by 2030*

On target G:

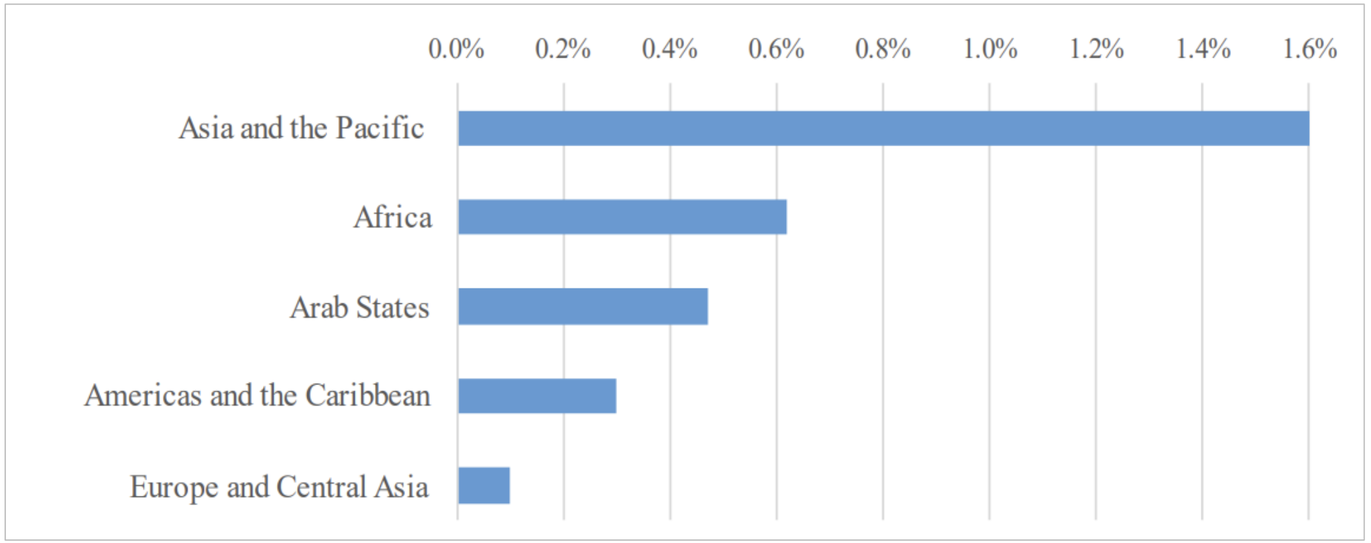
- **108 countries reported having MHEWS**, compared to only 52 in 2015

Target G	As of March 2024		
	Number of countries reported having access to multi-hazard early warning systems (MHEWS)	Percentage of countries of each country group that reported having access to MHEWS	Number of countries that reported having access to MHEWS **(Global)**
LDC	20	44%	108 (55%)
SIDS	14	38%	
LLDC	20	59%	

- On other targets:

Target A: Reduce global disaster mortality	Target B: Reduce the number of affected people	Target C: Reduce disaster economic loss in relation to global GDP	Target D: Reduce disaster damage to critical infrastructure & disruption of basic services
Average disaster-related mortality has a decline of 49% from 2005-2014 to 2014-2023	Number of disaster-affected people increased to 71% from 2005-2014 to 2014-2023	Economic loss in global GDP exceed $131 billion per year in 2015-2022.	94,428 critical infrastructure units were damaged each year from 2015-2023. More than 1.6 million basic services were disrupted.

State of EWS: Sendai Framework on DRR Mid-Term Review

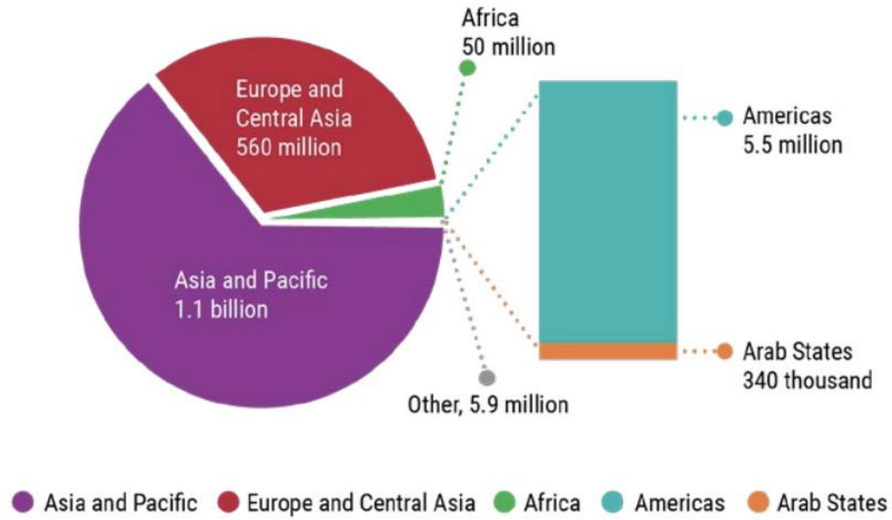


Average economic loss from disasters as share of GDP by region, 2005-2020 (UNDRR 2022)

Annual disaster losses in Asia-Pacific could reach $1.4 trillion (about 5% of GDP) by mid-century (ADB, 2022)

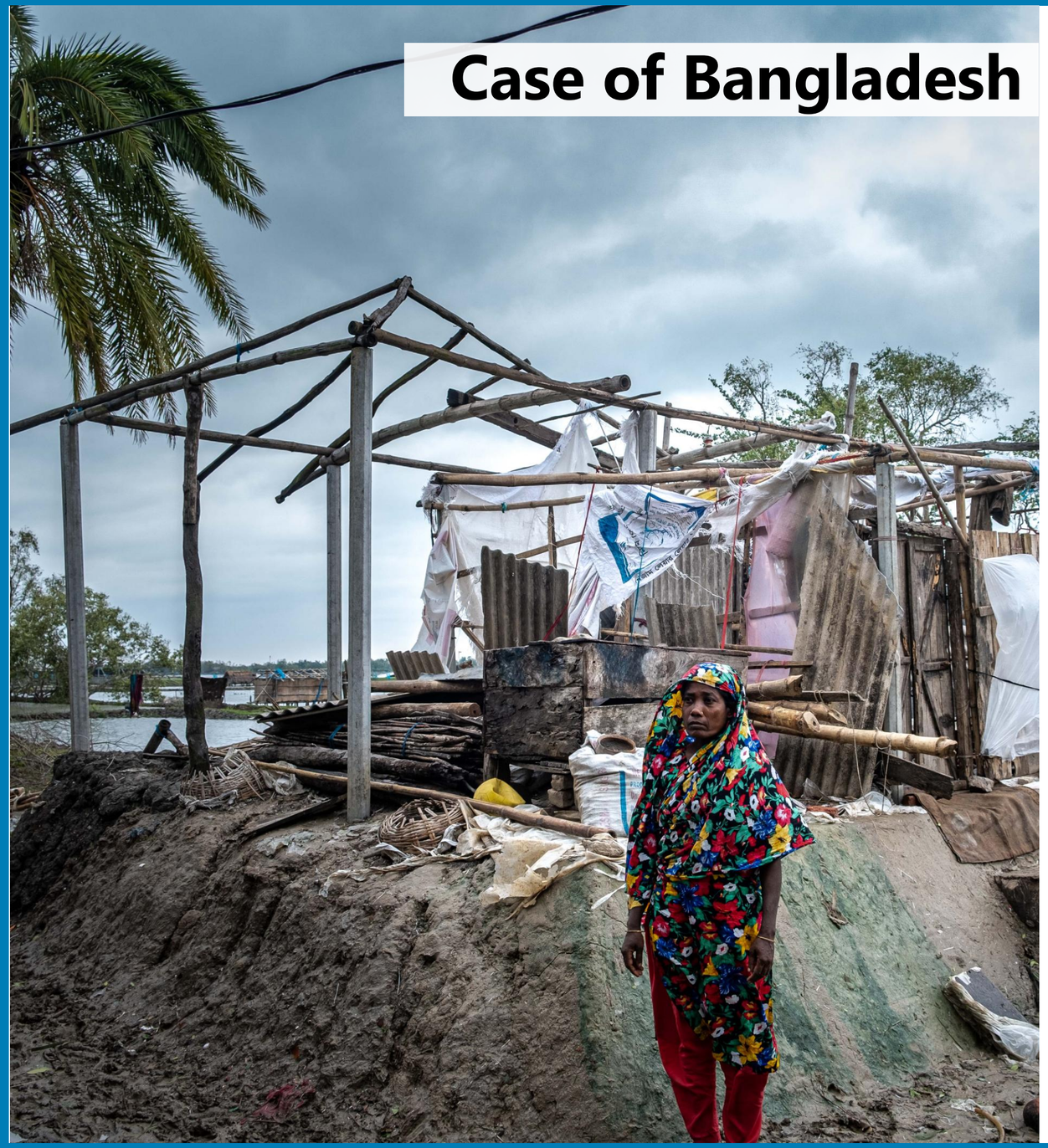
Mortality reduced –6.74%
During 2013 – 2022 compared to 2005 - 2014

People Affected –15.36%
During 2013 – 2022 compared to 2005 - 2014



Number of people protected through evacuation, 2015–2022 (UNDRR, 2023)

Case of Bangladesh



Bangladesh has reduced cyclone related deaths by **100-fold** since 1970

From live-saving EWS to the need for CIEWS

1 Billion

But now average tropical cyclones cost Bangladesh about **$1 billion** annually

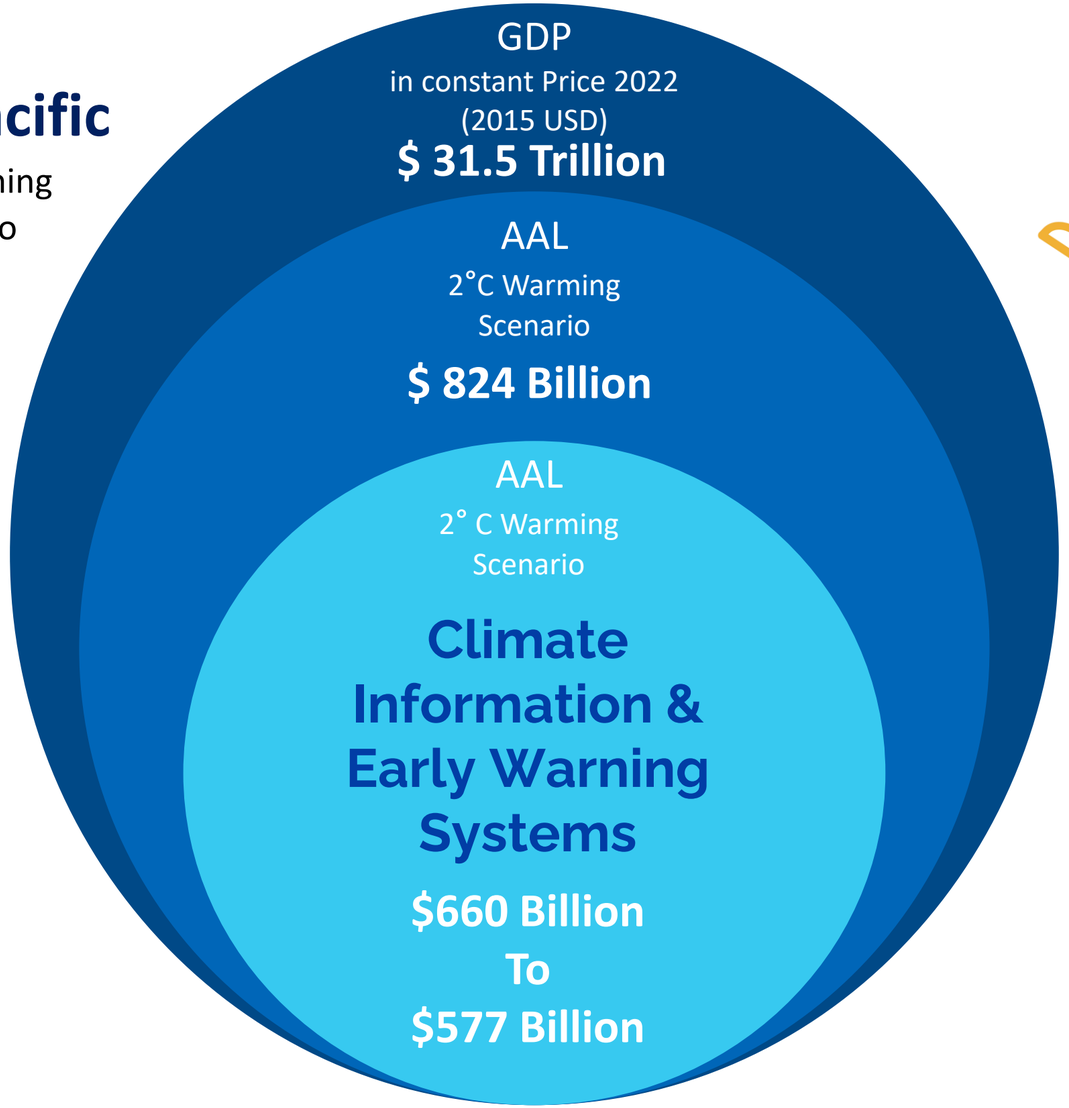
Potential Value of Climate Information and EWS in Reducing Economic Loss

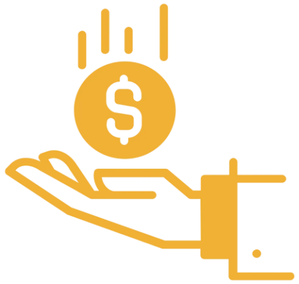
48.2% power plants capacity in the energy sector

47.2% agriculture production value

Asia Pacific

2°C Warming Scenario





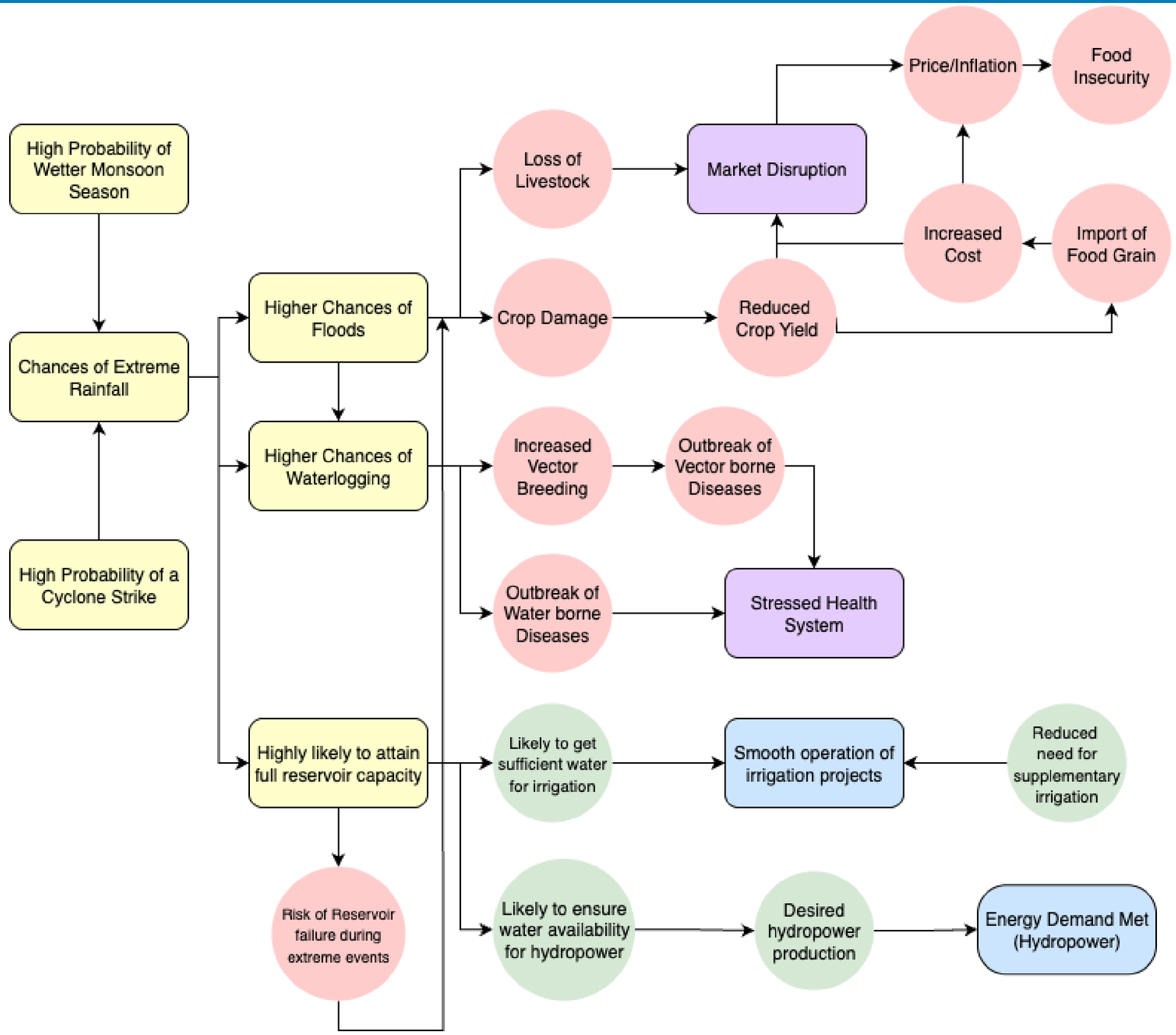
Preventable AAL

$247 Billion To $165 Billion

Asia-Pacific Disaster Report 2024, UNESCAP

ADB

Causal Loop: Climate Hazards and Their Socio-Economic Consequences



Value Addition Through CIEWS: A Multi-Hazard Multi-timescale Approach

Protective measures, Anticipatory Actions

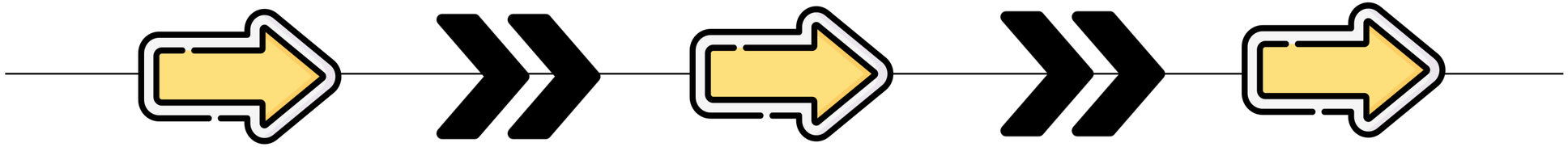
Safeguarding Livestock, harvesting, seeding, watering, insurance, health

Operational planning of water/electricity demand/supply

Seasonal Management and Maintenance

Determining Energy potential

Sustainable Climate-proofing of infrastructure, IWRM, DRM



Short-term Forecasts

Sub-seasonal to Seasonal Outlooks

Long-term Projection

Case of NAVIGATE DSS (Department of Roads, Nepal)

Weather & Climate Visualization – Uses ECMWF forecast data (10-day outlook, 6-hour timestep)

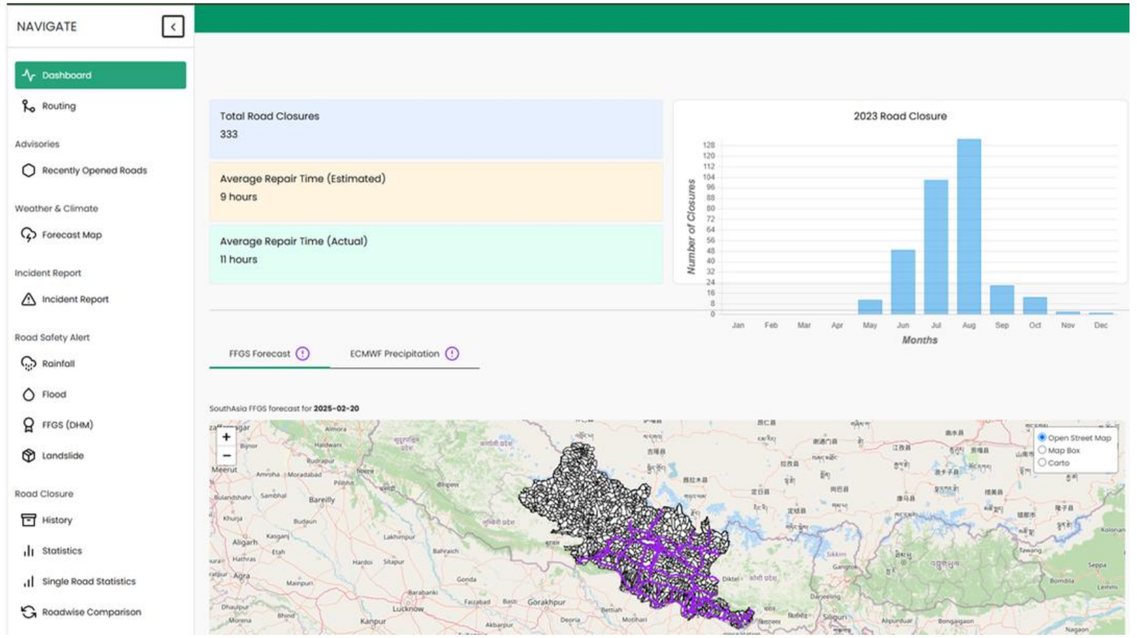
Computation integrated with road closures

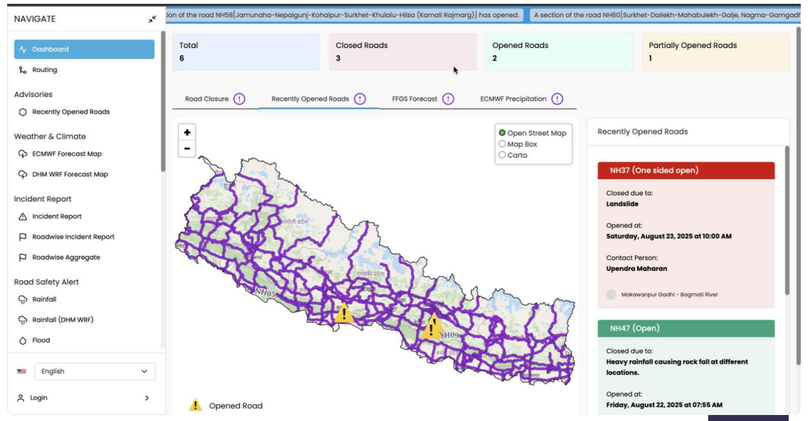
Flash Flood Early Warning – Based on the HEC-HMS model (Madhesh province, Bagmati & Koshi basins).

Road Closure, bridge closure with statistics

Advisories; Road Safety Alerts (Flood, Landslide)

Incident Report; Alternative Route; Equipment History





National Vehicular & Transport Resilience Gateway Decision Support System (NAVIGATE)

Application of CIEWS in Mongolia for Livestock Management

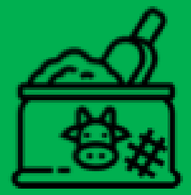
Forecast of heavy snow and localized Dzud for January to March 2018

November 2017
National Hydrometeorological Service of Mongolia and IRI

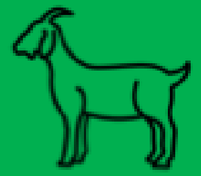
Release of early action fund

FAO, National Emergency Management Agency (NEMA) and Ministry of Food, Agriculture and Light Industry

Animal health equipment distribution



Feed distribution



Small livestock destocking

Cash vouchers for feed

7.1$

Return of Investment

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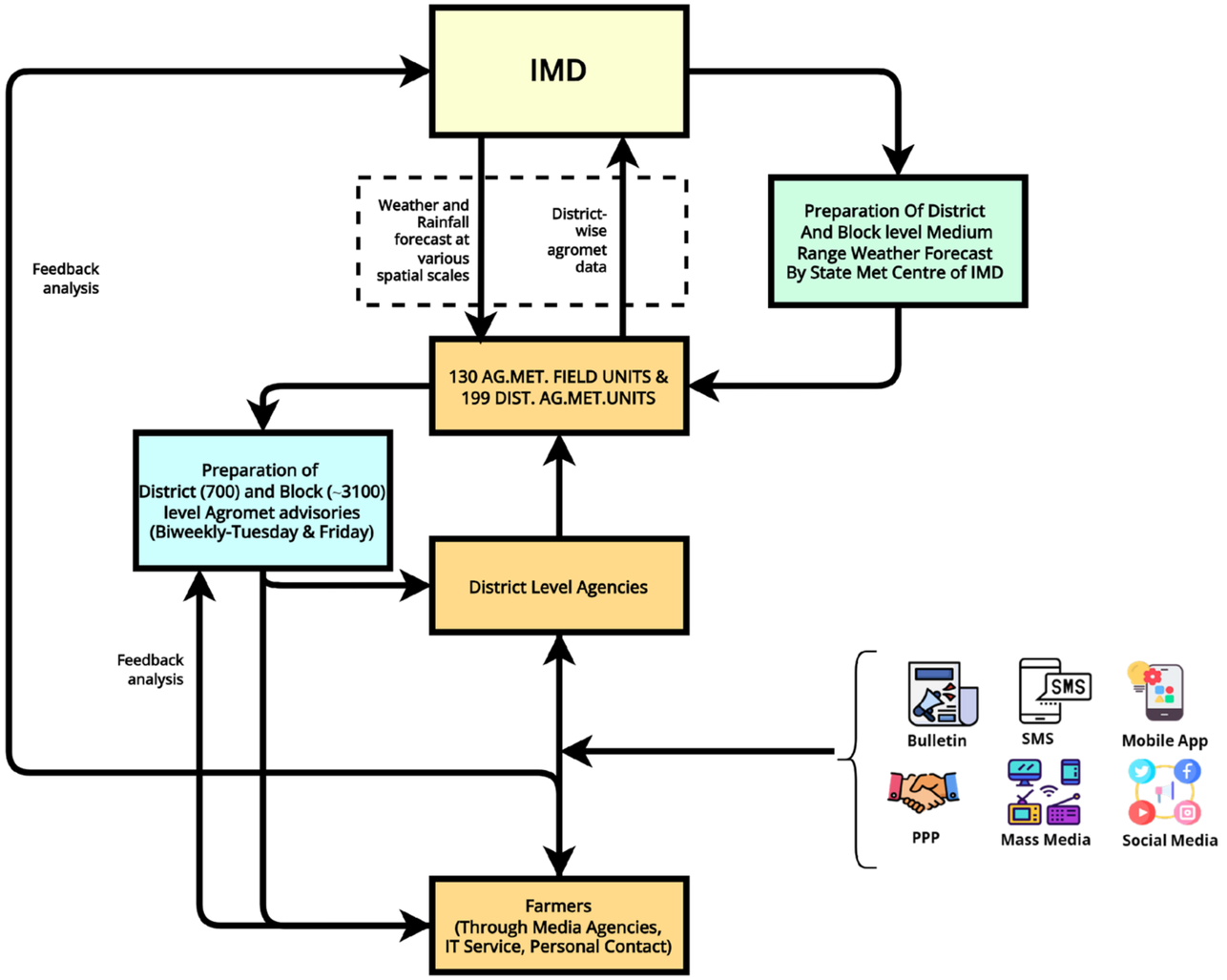
CIEWS for Agriculture in India



98%

Farmers adopted at least 1 practice based on forecast and advisories

Additional $150 per household belonging to Below Poverty Line category in rain-fed areas

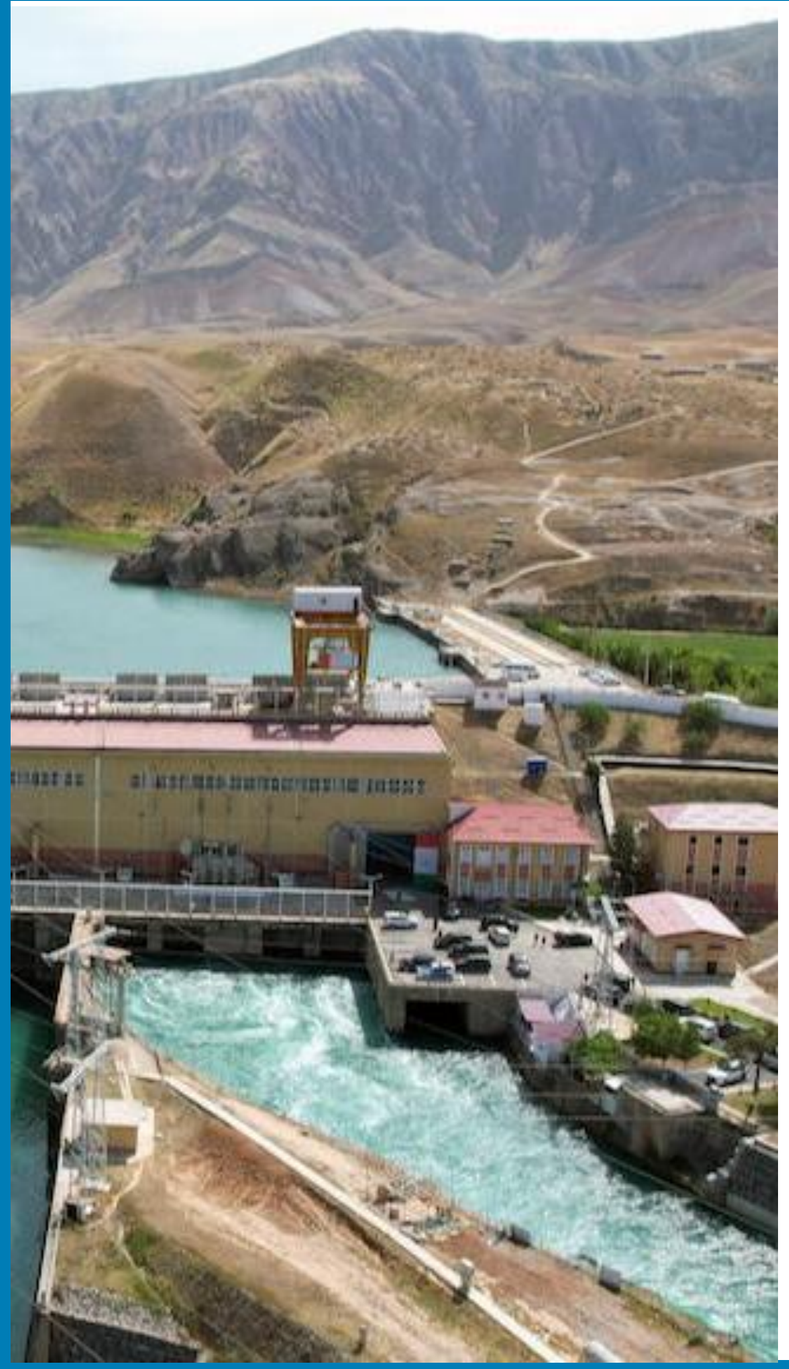
$1.6 Billion

Total income gain per annum in rain-fed districts.

Around 80% farmers reported reduced losses who received early warning

Economic Benefits

Study by National Centre for Applied Economic Research (NCAER), New Delhi conducted in year 2019 by. Salient findings- (interviewed 3,965 farmers across 121 districts of 11 states of India)



CIEWS for Hydropower in Tajikistan

Rehabilitation and capacity enhancement of hydropower infrastructure

Integrate climate risk assessment, seasonal forecast in hydropower operations

Modify hydropower dam operation rule based on improved weather & flood forecasts

Knowledge sharing among stakeholders & transboundary actors

Capacity building of professionals from hydropower & hydromet institutions

Energy security, resilience of the infrastructure to climate change

Improve flood responses & response procedures

Transboundary cooperation for river basin management

Partners: *Barki Tojik (state owned national energy company of the Republic of Tajikistan)*
Agency for hydrometeorology
European Bank for Reconstruction and Development, CIF, GCF

Key Gaps in Climate Information and EWS (CIEWS)

Impact forecast has not been operationalized in most of the countries, risk knowledge is often not integrated in decision-making.

Limited availability of tailored climate information services and their application to key economic sectors.

Uneven financing across different components of EWS, thus, development gains made in a single pillar is not translated into improvement of the overall EWS.

EWSs are often **not sustained or scaled up** due to lack of institutional mechanisms, funding, and technical support for operation and maintenance.

Public-Private Partnerships are minimal compared to its full possible extent and potential.

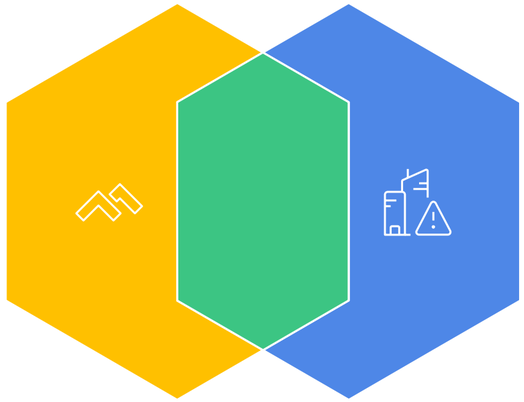
Unlocking the Potentials with Climate Information and EWS (CIEWS)

Holistic Climate Risk Management

Saving lives and strategic investments for reducing economic loss

National Framework for Climate Services

Institutionalizing climate risk-informed decision making



Early Warning for All Initiative

Alerting at risk communities to imminent hazards for early action

Adopting a holistic, systems-based approach and utilizing cutting-edge technologies

Information and financial product, resilient infrastructure development for climate sensitive sector

Sendai Framework for DRR, Sustainable Development Goals, Global Framework for Climate Services (GFCS)

Institutional framework for enabling environments

Private sector engagements to introduce innovation, expertise and resources

ADB

Thank you!