Overview of WLE initiatives on floods and drought in South Asia

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Framing WLE’s Water Risks and Building Resilience Strategy

Governance, policy and institutional arrangement

Risk Identification
- Historical hazard data, analysis and changing hazard trends
- Exposed assets and vulnerability
- Risk quantification

Risk Reduction
- Preparedness: early warning systems, emergency planning and response capacities
- Mitigation and prevention: Medium to long term sectoral planning (e.g., building resilient infrastructure)

Risk Transfer
- CAT insurance
- Weather risk management
- Bundled solutions
- Other emerging products

Capacity building and gender, youth and inclusiveness

Knowledge products and advisory services
Partnership for transformation

...and many, many more.
Identifying vulnerability hot spots for climate change

Some areas will be more affected than others. IWMI design locally relevant adaptation measures

Main Users: World Bank, ADB, CG Centres and academics
South Asia Drought Monitoring System (SADMS) strengthens three drought pillars

- Monitoring and early warning
  - Accurate and efficient monitoring and early warning
  - Long-term drought records for unified impact and risk assessment
  - Guiding warning, emergency and relief efforts
  - More efficient response before and during drought
  - Support in quick recovery and better preparedness

- Vulnerability and Impact assessment
  - Remote sensing drought indices / indicators
  - Understanding drought risk using long-term SADMS analytics
  - Feeds into the development/delivery of information and DSS

- Mitigation and Response Planning
  - Identify who and what is at risk and Why?
  - Monitoring the impact of resilient development
  - SADMS to identify actions to reduce risks (short and long-term) and contingency plans
  - Safety net and social program, research and extension
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**
- Drought response strategies integration information and knowledge products for decision making process
Seasonality of drought and food insecurity vs monitoring and triggering

Drought and food insecurity seasonality

- Lean season – no coupling strategies
- End of winter - spring rains
- High food prices
- Crop failure, reduced productivity, reduction in livestock health

Monitoring, detection and triggering

- Bi-weekly DEWC Drought Outlook (focus on met & Agri drought)
- Drought Early Warning
- Drought declaration
- Early response triggering

Monthly DEWC Drought Outlook (focus on Agri & Socio-Econ Drought)

Source: World Bank
Flood Inundation Modelling in Sri Lanka (Basin scale)

Simulated extents of flood inundation by the models

- Able to complement discrete-time results of satellite images (and also in cloudy periods);
- Applicable to hazard prediction and vulnerability evaluation;
- Able to assist NRT simulation for early alert framework, even in poorly gauged basins.

Satellite Observation

Simulated with the RRI model

The RRI model

Numerical model for simulation of two-dimensional flood inundation distribution which was developed by ICHARM.

Merit of the RRI model
Combination of slope flow and channel discharge: this helps to apply to areas which have hills and flood plains.

Free of charge; this could help decision making in developing countries.

Amarnath et al. 2015

RRI model (Sayama et al., 2012)
Insuring the uninsured

Pilot trials in India and Bangladesh since 2017

+10,000 Households

$170,000 USD Total payout

125k HH Scaling
De-risk through bundled solutions
Build resilience to supply chains and improve productivity

• Smallholder farmers are among the most vulnerable to climate shocks

• Lack of education and technical skills, poverty, agricultural investments, limited assets and financial capital are major reasons for low investments in enhancing adaptive capacity.

• Technology could be the key to improving smallholder resilience to disasters and their opportunities for recovery.

• IWMI and its partners offers
  • Weather based weather insurance with
    • Seed inputs
    • Weather forecast and
    • Agriculture advisory services provided to insured farmers
  • Grain procurement
  • Credit link (sooner)
BICSA in Sri Lanka

Better seeds, Weather Index Insurance and agroclimate advisories

• WII developed uses satellite data
• Developing aggregator model with value-chain partners

Scaling in 5 Districts
PPP Model

+15,000 Households

Sunday Times (18 April 2021)
IWMIs ongoing drought resilience projects
Southern Africa Drought Resilience Initiatives (SADRI)

Vulnerability and Impact Assessment

The above maps (Fig 5a-c) depict regional drought hazard areas (a), areas of vulnerability (b) and drought risk (c) for southern Africa during the El Nino event in October 2015. Among the drought-prone areas in SADC, the NDRI shows that the western and southern parts of the region, as well as the north-eastern parts, are more vulnerable and at a higher drought risk (maps generated by IWMI/WASA).

https://geowb.maps.arcgis.com/apps/MapJournal/index.html?appid=cb0fc8aa450f4b35a018f7e0115867be
WLE Outcomes and Key messages

- Preparedness through monitoring and early warning is an important step towards proactively enhance disaster resilience among communities (SADMS, WASA)

- Promoted institutional coordination and disaster risk governance are critical in responding to climate shocks

- WLE knowledge products and information services helped in achieving resilient society (AF-DEWS)

- Build capacity among stakeholders and promote innovation for empowering communities (e.g. SAARC, UNOOSA)

- Integrated adaptation focus in achieving sustainable development and Sendai framework for Disaster Risk Reduction
Thank you

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