

**Good Practices in Addressing Climate Change
Adaptation Deficits due to Extreme Climate
Events**
Perspectives from Asia

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Hazard and Vulnerability

- Asian region accounts for 40% of the total disaster occurrences and 80% of the total affected population (176 millions/year) over the past 10 years.
- Vulnerability of the rural population to hydro-meteorological hazards is very high
 - population density
 - living in hazard prone areas
 - over exploitation of resources
 - poor infrastructure and
 - lack of awareness

Addressing Climate Change Adaptation Deficit

- Addressing existing climate risks and reducing the adaptation deficit (Type I Adaptation) and costs
- Broadening the activities with new developments (Type II adaptation) to manage future risks
- Introducing and/or improving the long-lead forecast products customized for local use is the entry point:

Gaps and Needs

- Insufficient network of climate stations, inadequate data on climate and impact (damage and loss) for developing DRM plans;
- Climate information are generic in terms of space and time and seldom matching end user needs at local level;
- Timing often does not match user needs and language not clearly understood;
- Lack of technical capacity to interpret, develop impact outlooks and communicate to the end users within the extension departments;
- Need to customize information that is understandable and usable by policy, decision makers, intermediary service providers and at risk communities
- Need to explain the uncertainty of the information to take ownership of the decision outcomes by the users

Addressing Climate Change Adaptation Deficit

Key elements

- Assessing **user needs** and existing capacities – demand driven
- Assess **relevance** of existing climate information to meet needs
- Institutional networking and **partnerships**
- Improving forecast products – facilitate linkages with **global centers**
- Capacity building for effective application - Agriculture, livestock
- Broadening risk management options at local level (**multi-hazard context**)
- Community participation in risk assessment, preparedness/ contingency planning
- policy attention and **up-scaling**
- Promoting mainstreaming showing measurable improvements

Development of local risk reduction plans

Agricultural Risk Management Schools

Indonesia – Indramayu

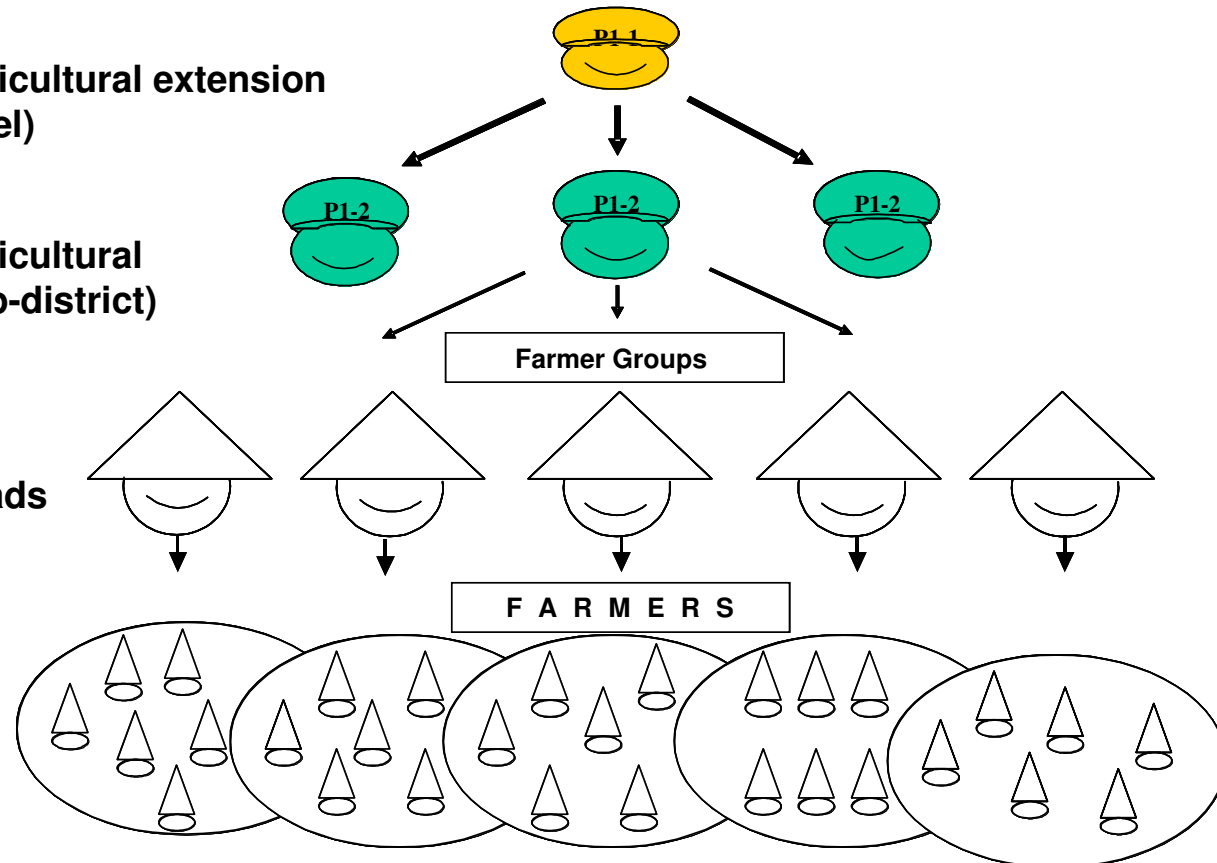
Agricultural Risk Management Schools: Indonesia

Stage 1: training of agricultural extension specialists (district level)

Stage 2: training of agricultural extension workers (sub-district)

Stage 3: training of heads of farmers groups

Stage 4: training of farmers

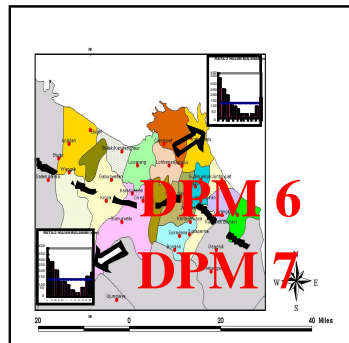


Delivery of locally-relevant climate information: Indonesia

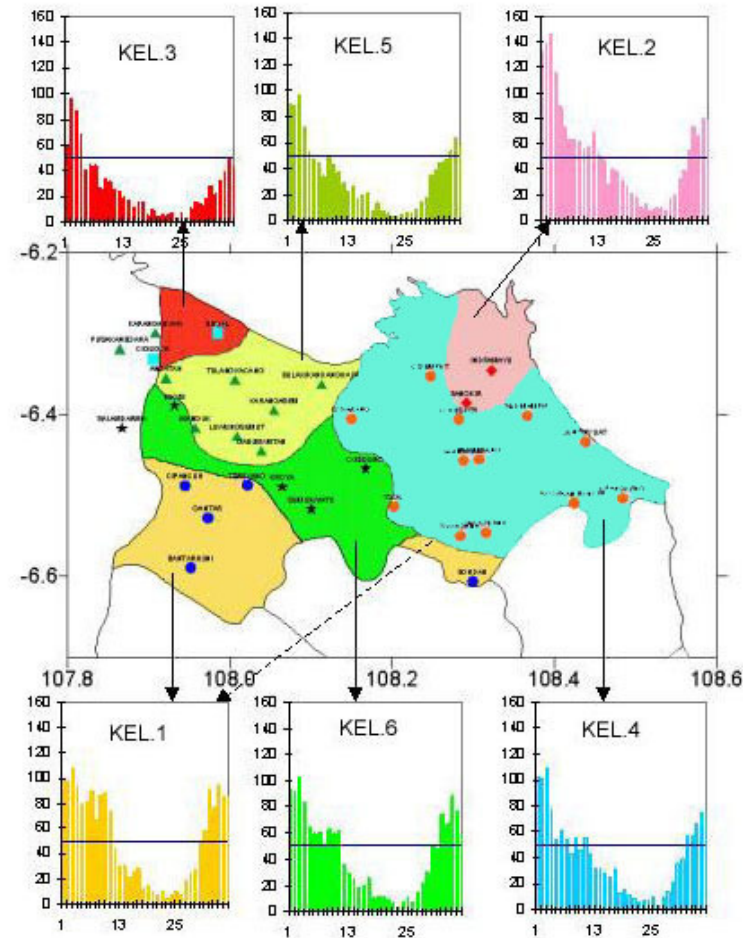
Indramayu District, West Java, Indonesia

Step 1 : Revised climate forecast regions

New Climate Forecast Region (DPM) for Indramayu

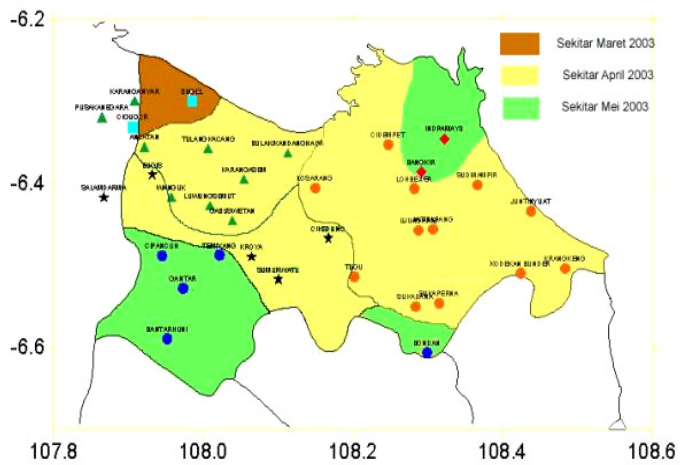


Old Climate Forecast Region (DPM) for Indramayu



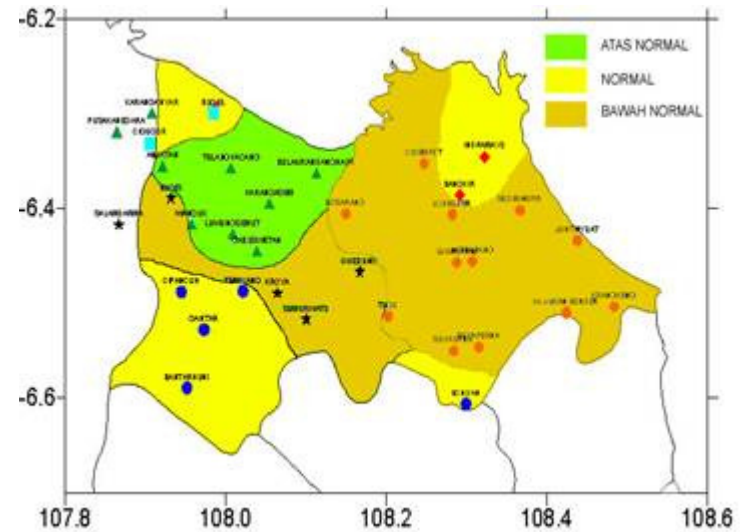
Step 2: Preparation of forecast maps

Indramayu District, West Java, Indonesia



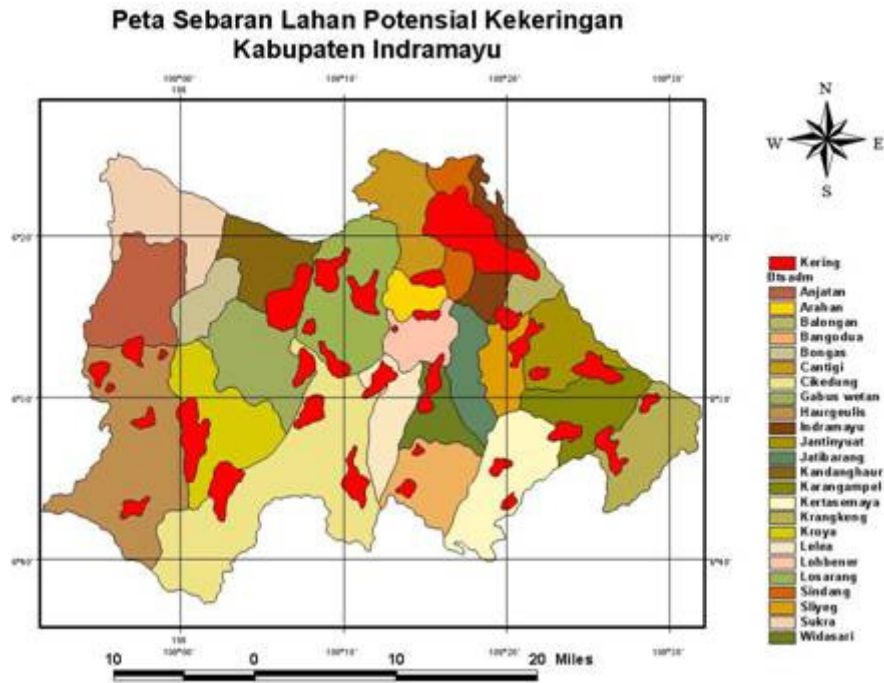
Onset of dry season

Dry season rainfall



Step 3: Preparation of forecast response plan

Indramayu District, West Java, Indonesia



Impact outlook



Farmers' response plan

Institutional support – local government initiates and facilitates

- ❖ **Contacting agriculture inputs distributors to provide enough fertilizers, seed stocks for supporting early planting and accelerating planting**

- ❖ **Revolving fund (loan without interest and pay back period within 2-4 seasons) for assisting farmers to implement management options in DS2007 (planting non-rice crops)**
 - Funding for 950 ha (700 ha for soybean and 250 ha for maize) – local government budget
 - Seeds supply (1000 ha for maize and 2150 ha for soybean) – central government budget

- ❖ **Establishing agreement with cooperatives to arrange market for the farmers products (soybean and maize)**

Key messages

- ❖ **Forums for climate information providers and users increases awareness and improves risk/opportunity management**
 - **National climate forum – Customized sector specific forecasts**
 - **Sub-national – Impacts outlooks for local crops**
 - **Agricultural Risk Management Field schools – Lateral dissemination of information and preparation of preparedness and response plans**
- ❖ **Engaging agribusiness and farmers cooperatives for agricultural inputs and marketing**
- ❖ **A new sub-division on climate analysis and mitigation within the Ministry of Agriculture was facilitated to take ownership of the agriculture risk management school approach**
- ❖ **At decentralized level department of planning supported the programme from local development fund**
- ❖ **IPM field schools would be streamlined to incorporate climate risk management**

Drought Risk Management

Farmer Participatory Decision Making

Southern India

Participatory Farm Decision Making

- Engaged with local farmer groups to understand their climate risks and their needs
- Considered their local practices and rules of thumb as part of risk analysis framework
- Developed options and discussed risks, opportunities and consequences
- Encouraged farmers to make informed decision



Building Knowledge and Skill for Climate Risk/ Opportunity Management

- Climate education and awareness
- Village level monitoring system helps to improve the understanding of the extreme events
- Linking farmers groups with local service providers and extension agents
 - Farmer discussion groups



Key Messages

- Climate knowledge is more than just providing forecast;
- Indigenous knowledge on climate is random;
- Existing extension system and farmers networks is the potential entry points;
- Decisions are controlled by market, input availability and several other factors;
- Support services at decentralized level are required to influence decisions

Emergency Preparedness

Local Stakeholder Networking

Bangladesh

The problem, need and challenge:

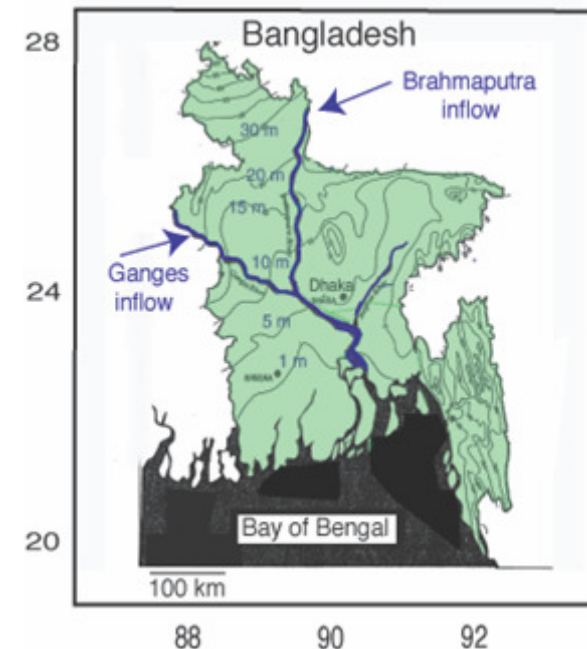
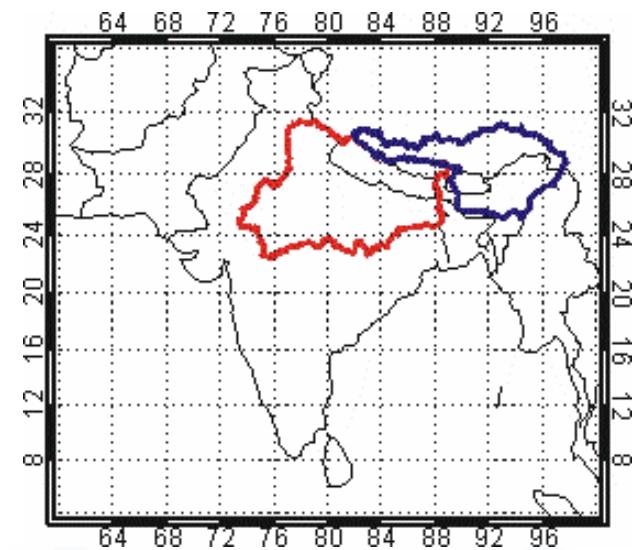
Catchment is very large and the different phases of the monsoon “feed” the river basins and discharge into Bangladesh

Need to provide overlapping forecasts that allow overlapping strategic and tactical decisions:

- Seasonal : 1-4 months: STRATEGIC
- Intra-seasonal : 20-25 days: STRATEGIC/TACTICAL
- Short-term : 1-10 days: TACTICAL

The challenge is that no upstream data is available in near real time to Bangladesh for both the Ganges and the Brahmaputra.

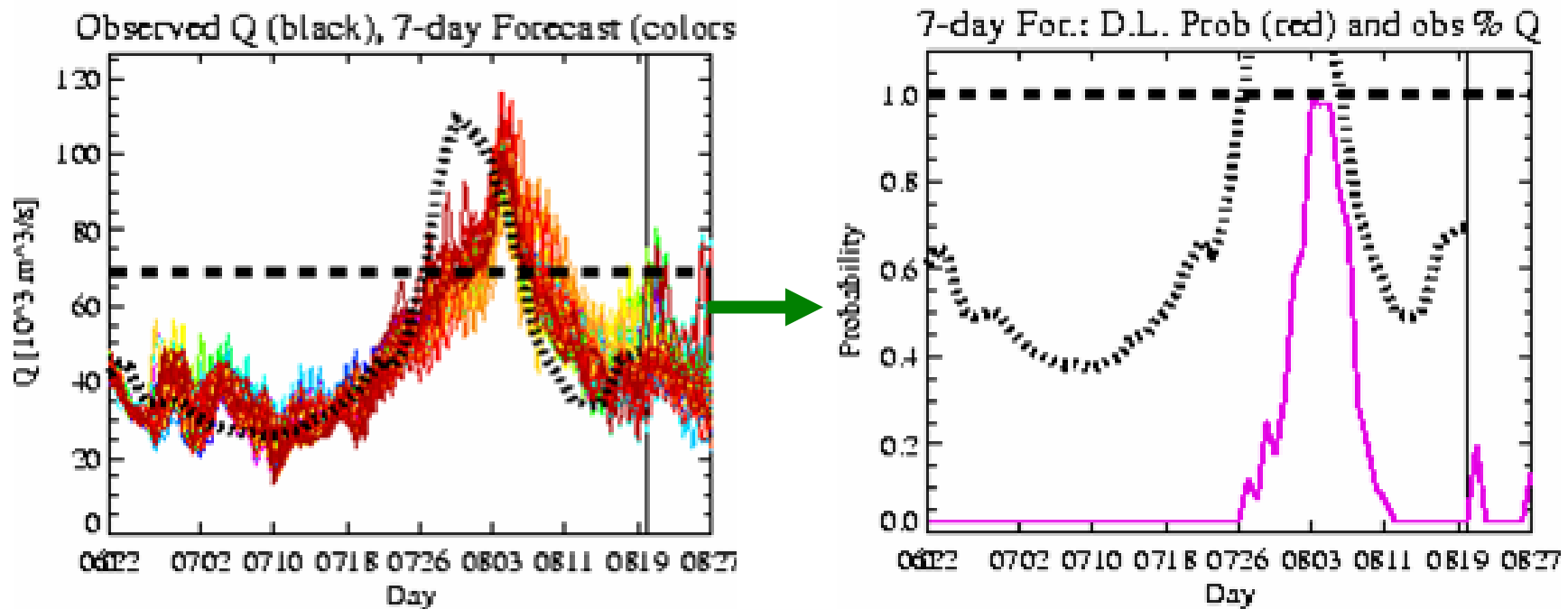
Climate Risk management



Crops, agricultural practice, disaster risk and management plan matrix for applying flood forecasts (eg. Kaizuri, Sirajganj district)

Crop	Agricultural practices	Decision window ^[1] (time)	Type of disaster risk and impacts	Information requirement for preparedness	Time lag (days)	Management plan to reduce risk
Aus	Planting	May 1 – Jun 15	Early flooding causes submergence	Chance of early flooding	10	Protection from floods
	Harvest	Jun 15 – Jul 30	High flood causes heavy damage to crops and submergence	Chance of high floods and warning	10	Advance harvest after physiological maturity
Broadcast Aman	Harvest	Aug 15 – Oct 31	Late season flood causing submergence, low quality grains and loss of investments	Chance of high floods	10	Advance harvest
T. Aman	Transplanting	Jul 1 – Aug 15	High floods affects early seedling	Chance of high floods	15	Planning for extra seedlings
	Fertiliser application (split)	Sep 1 – Sep 20	Inundation reduces the efficiency of applied fertilizers	Chance of late flood	15	Skipping first split application
Boro	Sowing/seed bed	Nov 15 - Dec 31	Inadequate rainfall during Nov/Dec affects establishment	Chance of rainfall	15	Early sowing of boro coinciding with rainfall during October
			Flooding in low lands affects establishment	Chance of late flooding	15	Delayed sowing in late December
	Harvesting	Apr 1 – May 15	Flash floods or hail storms	Flash floods/hail storms	10	Advanced harvest to reduce yield loss

Short-term 7-days Flood Forecasts for Brahmaputra and Threshold Probabilities



Summary of forecasts and exceeding of danger level

Communication of flood forecasts 2007



Community responses to flood forecasts



Key lessons from 2007 flood forecast application

- Community level risk maps to prepare localized impact outlooks
- Development of preparedness plans require capacity building initiatives
- Flood Risk Management Plan matrix for all the flood prone districts
- Response in low lying areas and “char” - saving lives and small household assets (dry food, drinking water, fire wood, animal fodder, barrowing credit from micro - financing institutions)
- Response in high lands - reserving seedlings for double planting, protecting fisheries, early harvesting, abandoning early planting, protecting livestock and preserving fodder
- Local level infrastructure facilities (high lands, flood shelters, sanitation etc.,) play a major role to improve efficiency of preparedness and response actions