Drought Adaptation in Asian Monsoon Region:

Some Critical Observations

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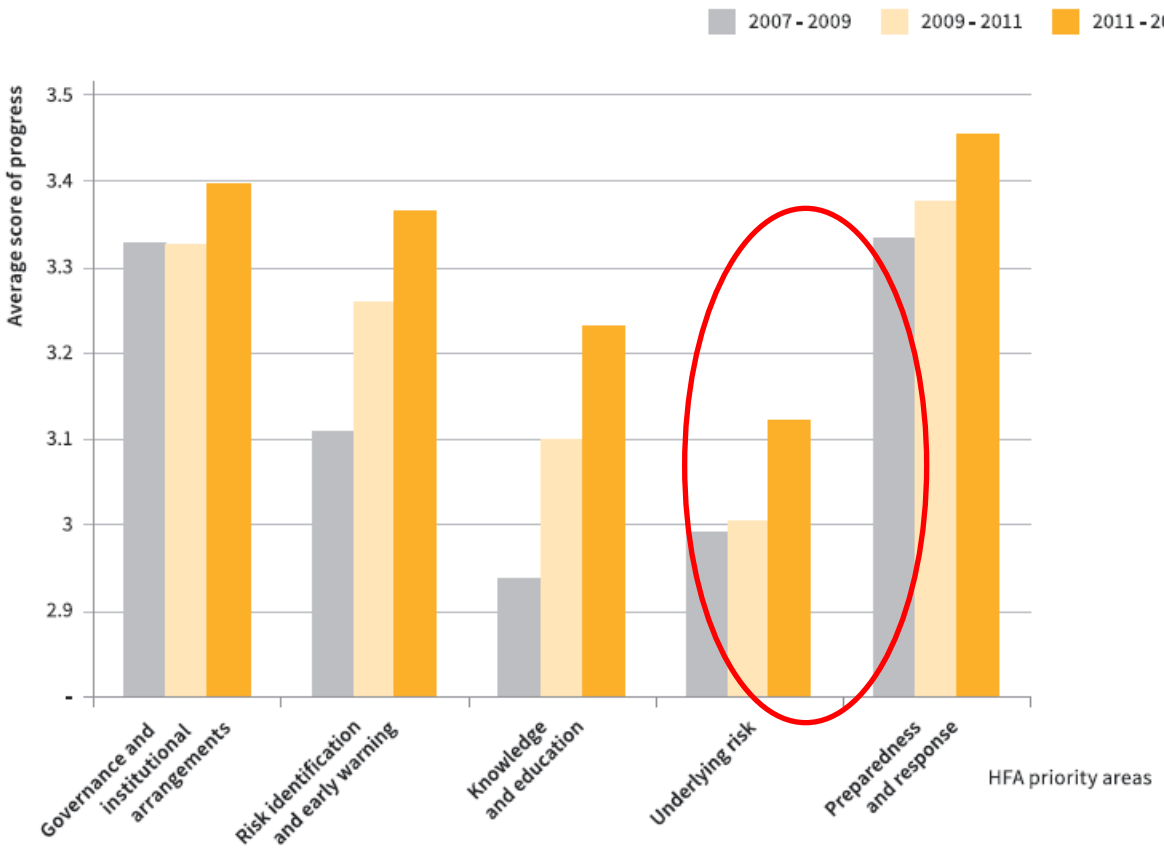
Outline

- Monsoon Asian region drought characteristics
- Patterns and trends of different types of droughts
- Strategy, policy and implementation options

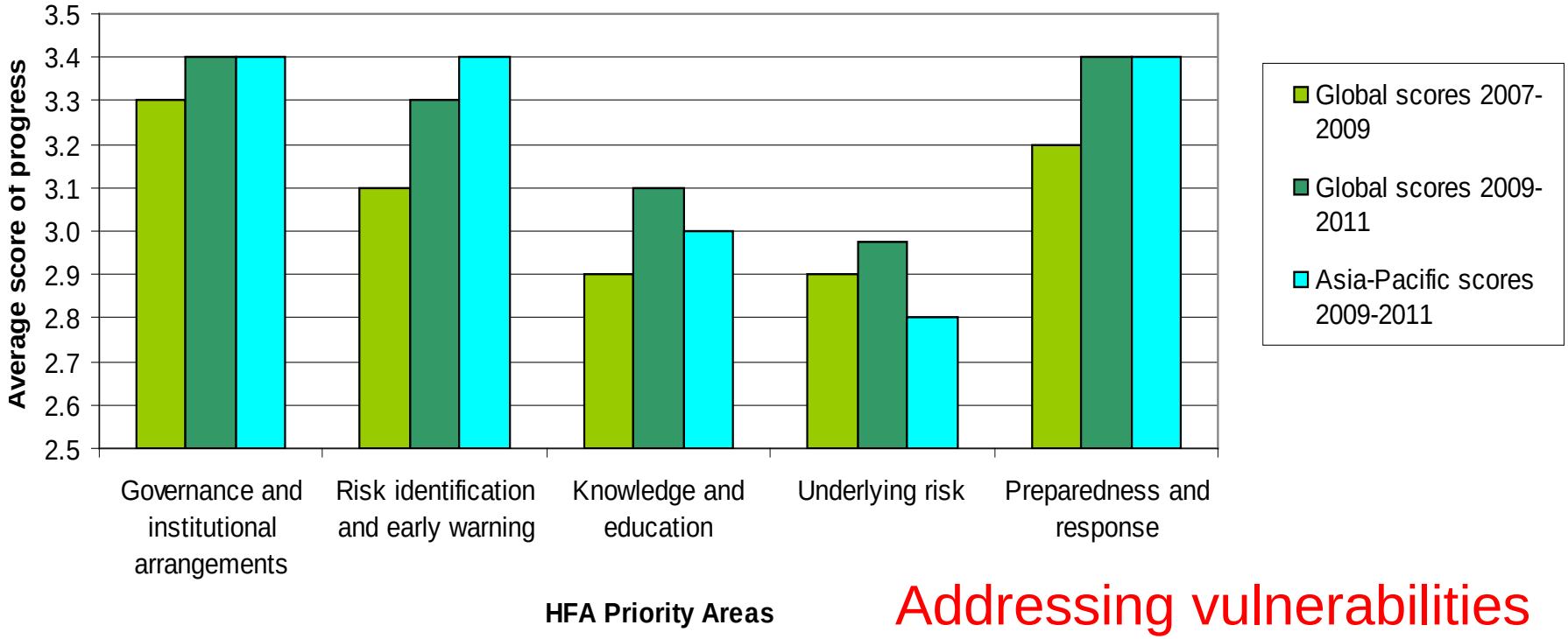
HFA [Hyogo Framework for Action] Priority Progress



Source: GAR 2013, p. 213

HFA Mid-Term Review

Asia and Pacific Regional and Global Progress



Addressing vulnerabilities
Root causes

Source: GAR 2009, 2001, and HFA Asia and Pacific Regional Synthesis Report 2011

Monsoon Asian Region

- Rainfall distribution much more than other regions of the world
- Mostly characterized by flood and typhoon
- Monsoon Asian countries are all characterized by high biodiversity around rice fields
- Drought is more a water resource management issue (average 1,000 mm annual rainfall)
- Impacts of droughts are more prominent on agriculture, rural livelihoods sectors
- Drought gets less priority in national DRR [disaster risk reduction] policy

Gaps and Challenges at National and Regional Level (1)

1. Forecasting and Early Warning

- Drought forecasting plays an important role in the planning and management of water resource systems
- Many drought index are applied for drought forecasting:
  - Palmer Drought Severity Index (PDSI), the Crop Moisture Index (CMI), the Standardized Precipitation Index (SPI) and the Surface Water Supply Index (SWSI)
- The SPI and SWSI have been applied successful in some countries but still has its challenges
- Last Mile Communication is often a major problem
- Drought often becomes a political agenda

Gaps and Challenges at National and Regional Level (2)

2. Drought Policy

- Low priority in many countries, and not a separate drought policy
- No legal framework for managing and protecting public infrastructure
- Institutional mechanism often creates conflict (drought being the key agriculture issue, irrigation issues)
- Construction projects do not consider maintenance and post-construction management properly
- Damage assessment focus on agriculture and livestock but not on health or social impacts

Gaps and Challenges at National and Regional Level (3)

3. Perception and Capacity

- Awareness of policy makers, local authorities and communities are lacking
- Sector based departments lacks capacity
- Indigenous or local knowledge is at challenge due to climatic variation and 2-3 years of consecutive drought
- Slash and burn cultivation in many areas, especially in the MRB is a major contributing factor

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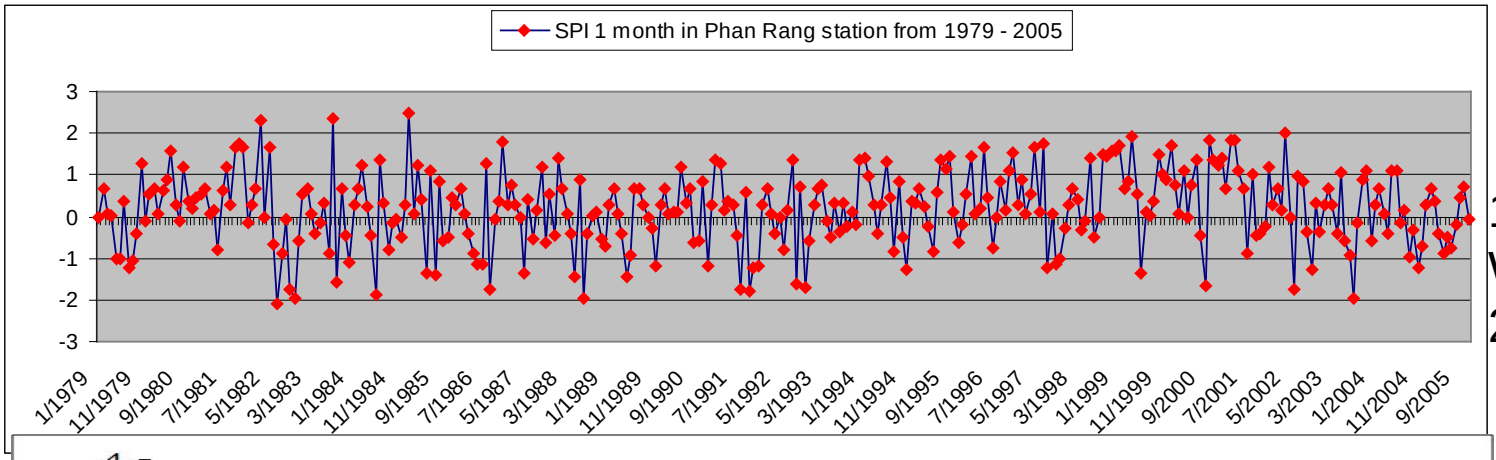
- Patterns and trends of different types of droughts
- Patterns of agricultural drought and hydrological drought
- Strategy, policy and implementation options

Meteorological drought in Monsoon Asia

- Drought occurred both in the high rainfall regions and low rainfall regions
  - Drought in Ninh Thuan province, Vietnam with annual rainfall is 780mm
  - drought in Svay Rieng, Cambodia with annual rainfall is 1560mm, and in Luang Prabang of Laos is 1300mm, 1200 mm in Rajshahi in Bangladesh)
- Drought occurred in a large area at the same time
  - Drought in 1998 in Vietnam, Laos and Cambodia in the same time
  - Drought in 2004 in Vietnam, Cambodia and Thailand in the same time
- Drought occurred by the variation of rainfall
  - Changing of rainfall pattern in Laos, Vietnam and Cambodia
  - In Bangladesh rainfall recorded in 1981 was about 1,738 mm, but in 1992 it was 798 mm

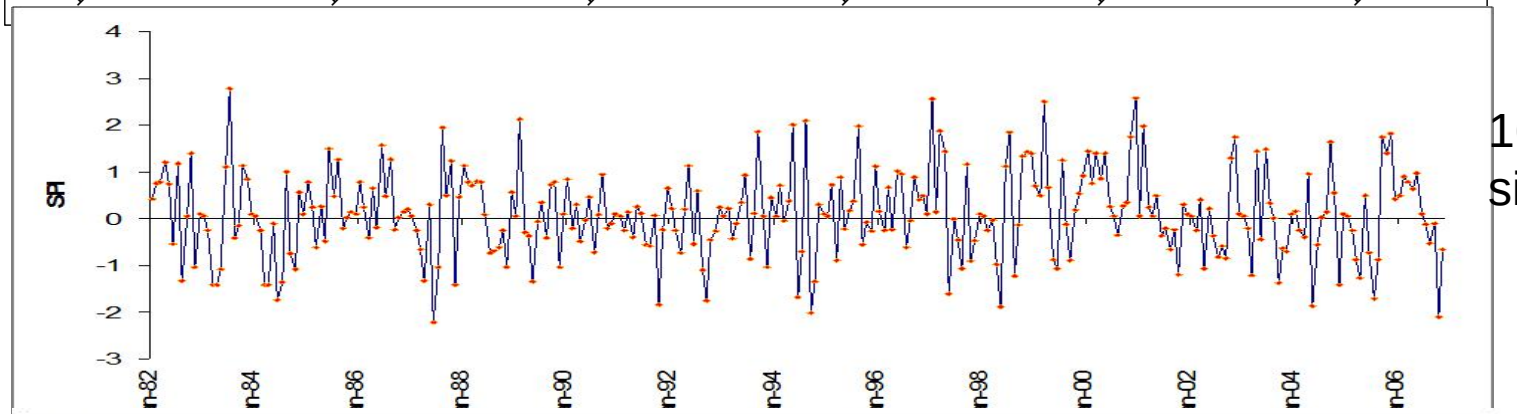
Meteorological drought (based on SPI)

Vietnam



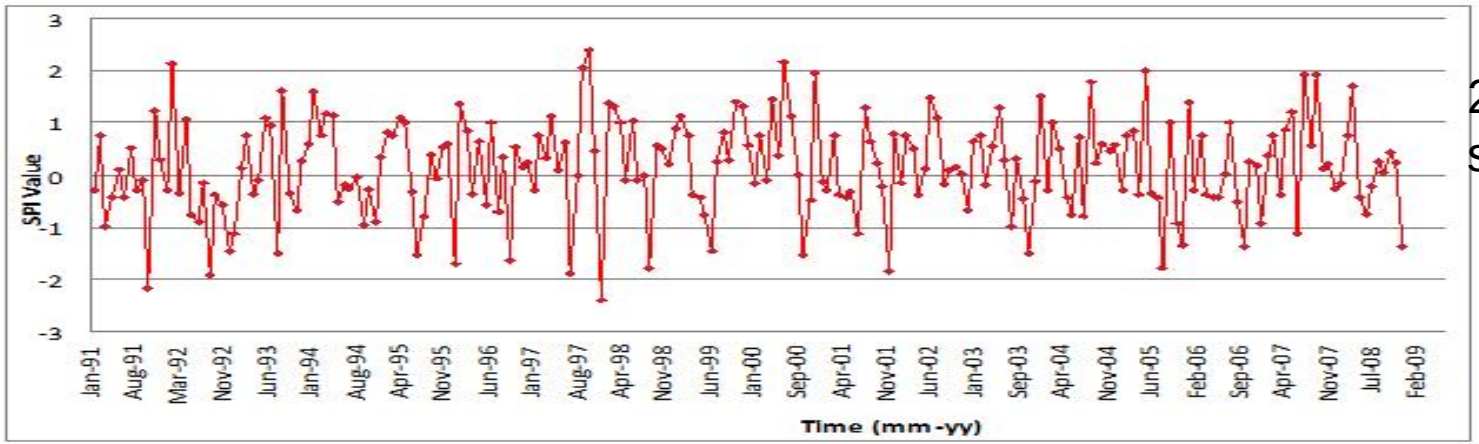
19 years
Within last
26 years

Cambodia



16 years
since 1982

Bangladesh



22 events
since 1991

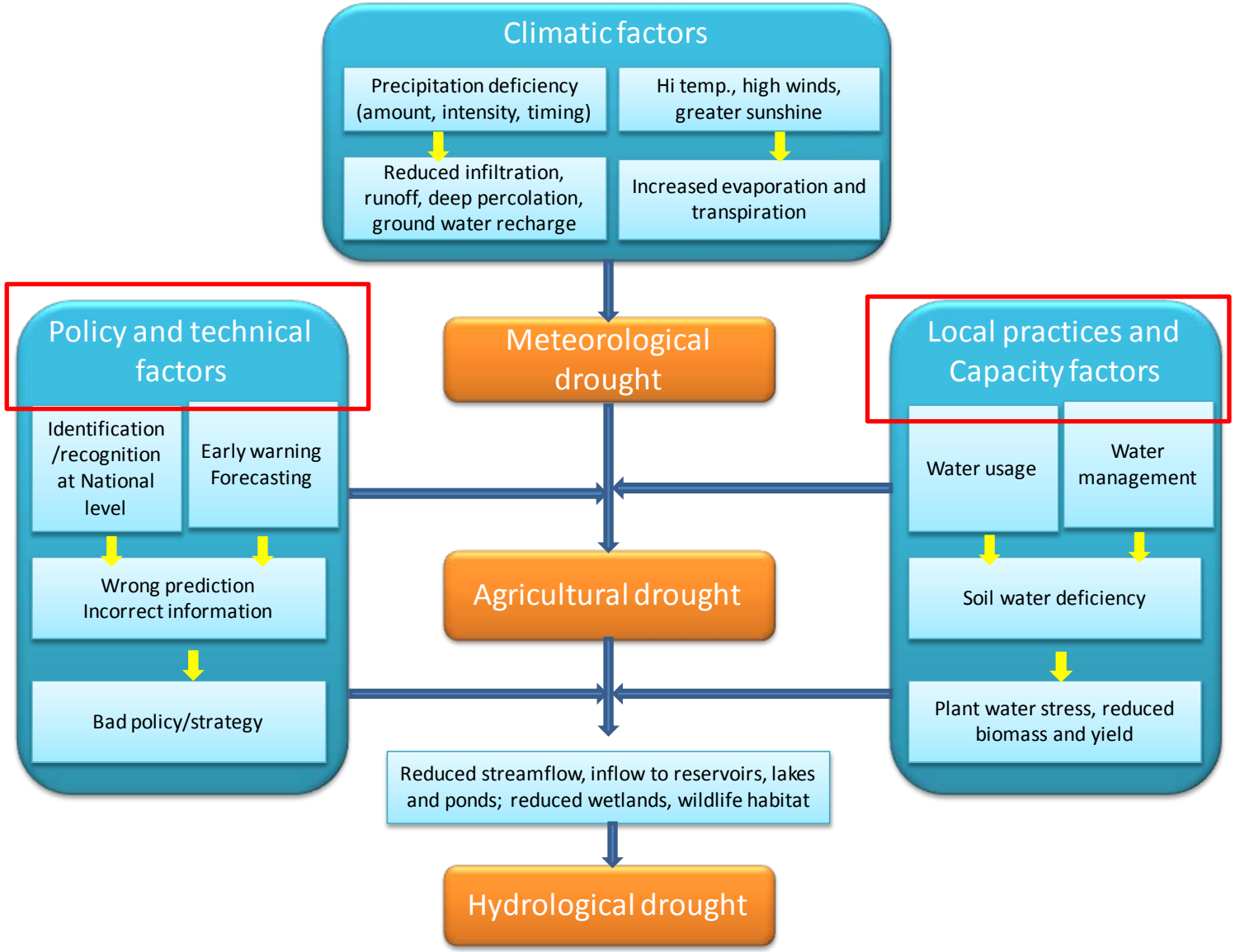
Agricultural and Hydrological Drought

- These are the products of inefficient water resource management, and lack of appropriate policy
- Balance between water demand and supply
- Effective early warning plays an important role for decisions on water usage and control for less rainfall years
- A moderate rainfall years can also turn to drought years
- Affects agriculture, animal husbandry, aquaculture and forest products

Agricultural and Hydrological Drought

- Two years of meteorological drought may cause consecutive three years of agricultural drought
- Areas with no irrigation system are the most affected
- In irrigated areas, over usage of ground water causes secondary disasters
- Local crop practices and agriculture patterns may also enhance agriculture drought

Factors affecting drought types



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Strategy at National Level

- Establish a specialized drought task force
- Establish National forum on drought risk management (DRM)
- National disaster management plan needs to incorporate drought
- Make proper risk assessment for drought, and enhance damage assessment tools
- Monitor and assess drought mitigation and response measures
- Promulgate drought plans and awareness campaigns, and issue timely public information
- Enhance participation in actions for drought mitigation and response processes

Slow versus rapid onset disasters

Role of local governments

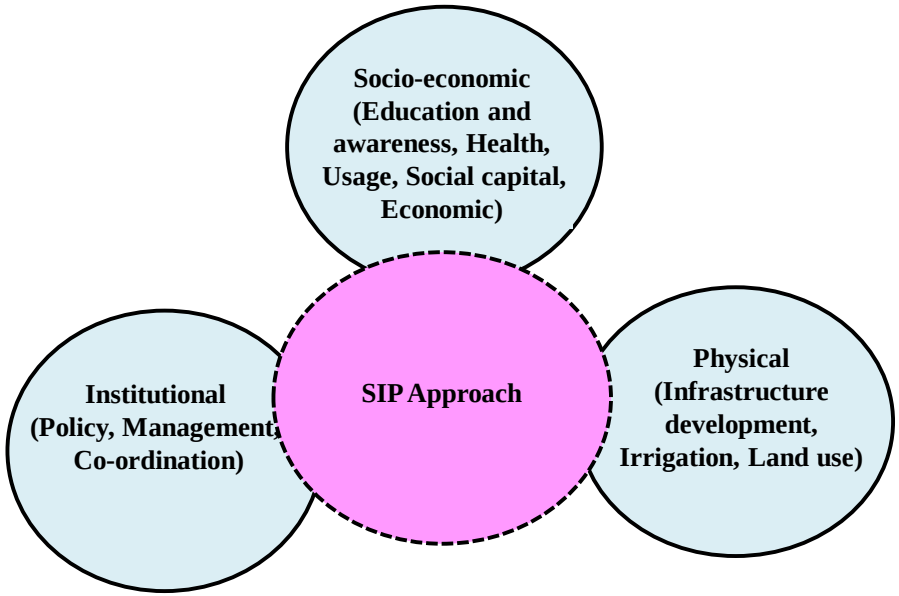
- Assist with planning
- Implement drought responses
- Drought identification and respond at local level
- Mainstreaming sustainable land management into provincial frameworks

Planning and Actions

Drought Planning versus Rural Development Planning

Resilience Mapping

SIP [Socio-economic, Institutional, Physical] Approach



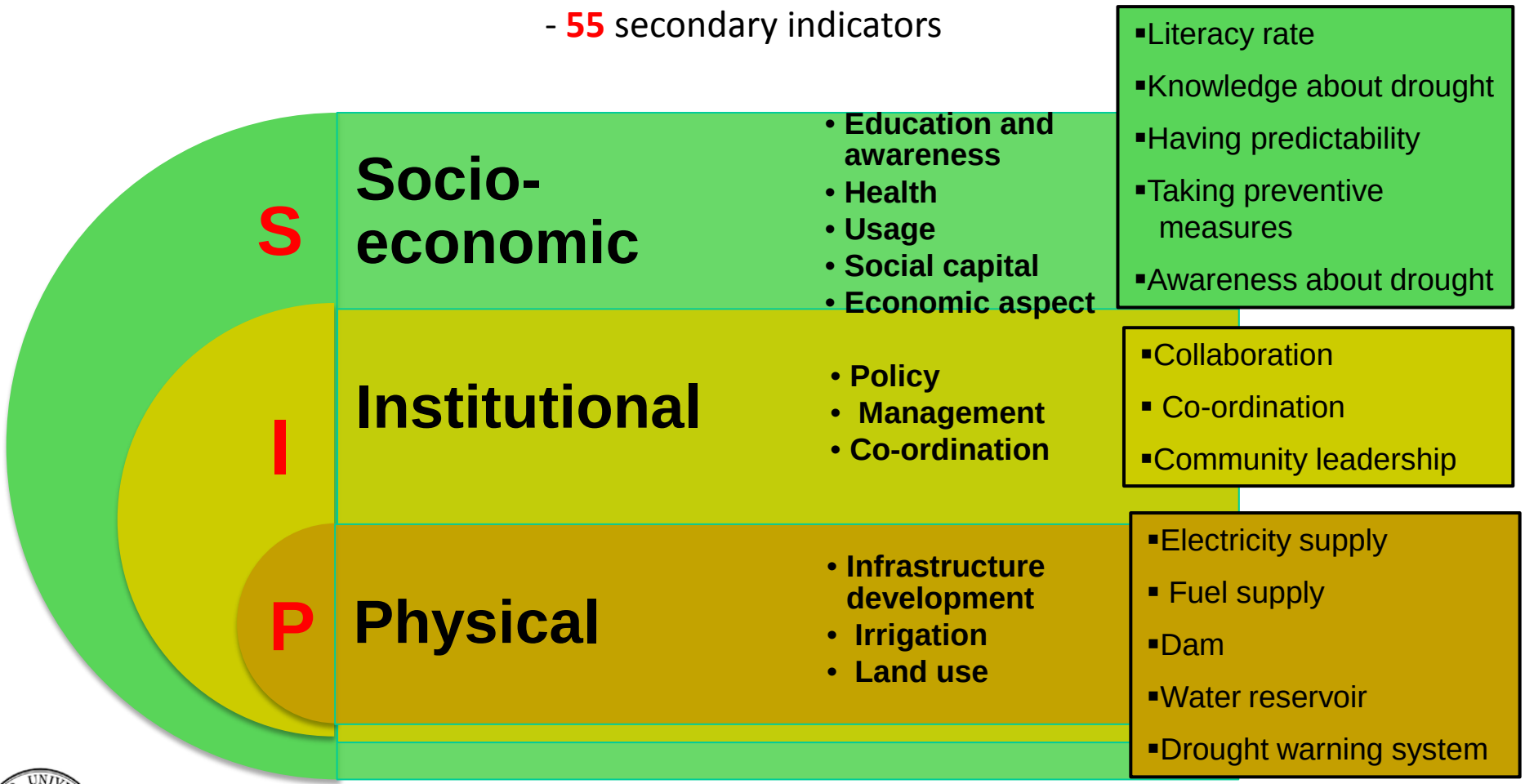
11 primary indicators
55 secondary indicators

- SIP is derived from three dimensions namely Socio-economic, Institutional and Physical. Each dimension has several primary indicators and each primary indicator has five secondary indicators.
- With regard to drought resilience issue, SIP approach was developed to determine different SIP aspects of a targeted area and provides an overview of drought resilience of that area.

Development of SIP Approach

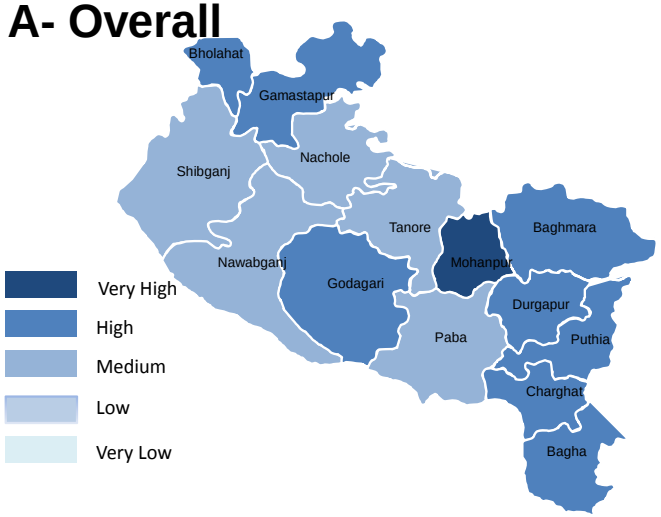
➪ **SIP approach consist of**

- **3** dimensions
- **11** primary indicators
- **55** secondary indicators



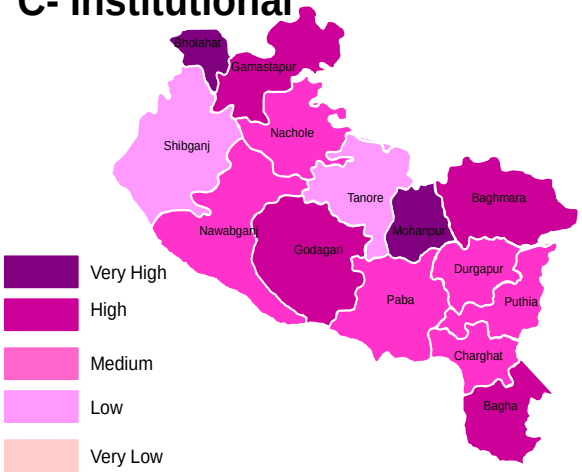
Local Level Resilience Assessment

A- Overall

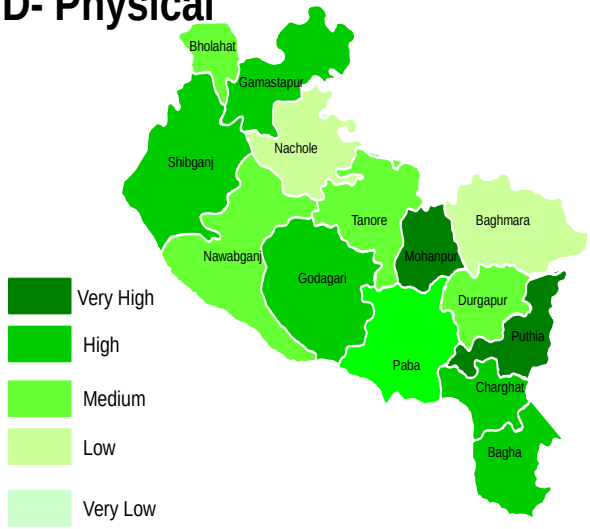


B- Socio-economic

C- Institutional

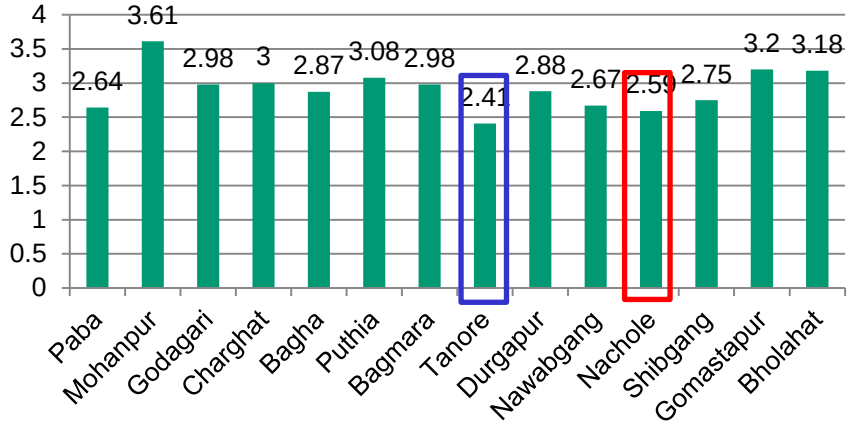


D- Physical

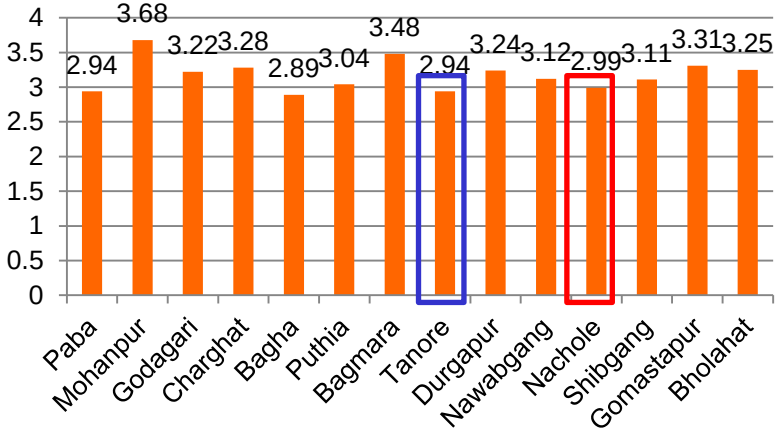


Drought Resilience Indexing

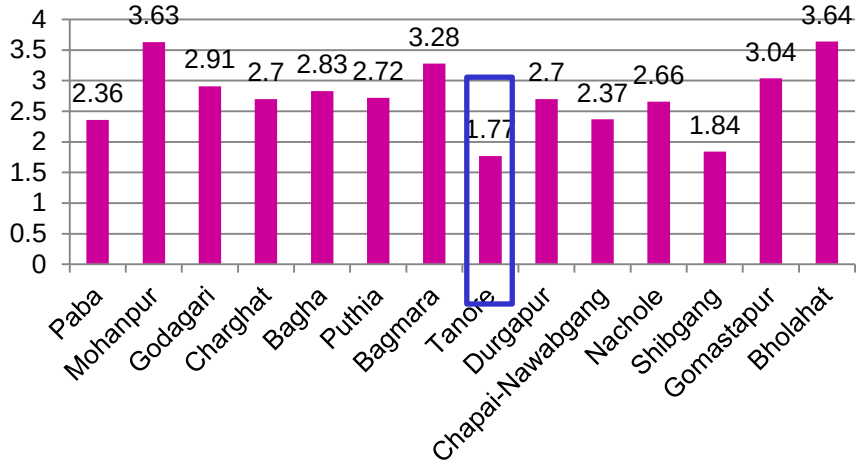
Overall



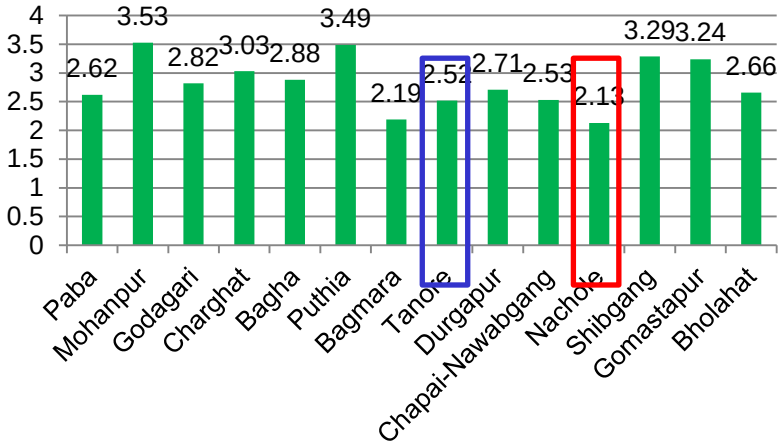
Socio-economic



Institutional



Physical



Role of local community

Drought Forecasting and Early Warning

Contribute to the process of drought early warning and forecasting:

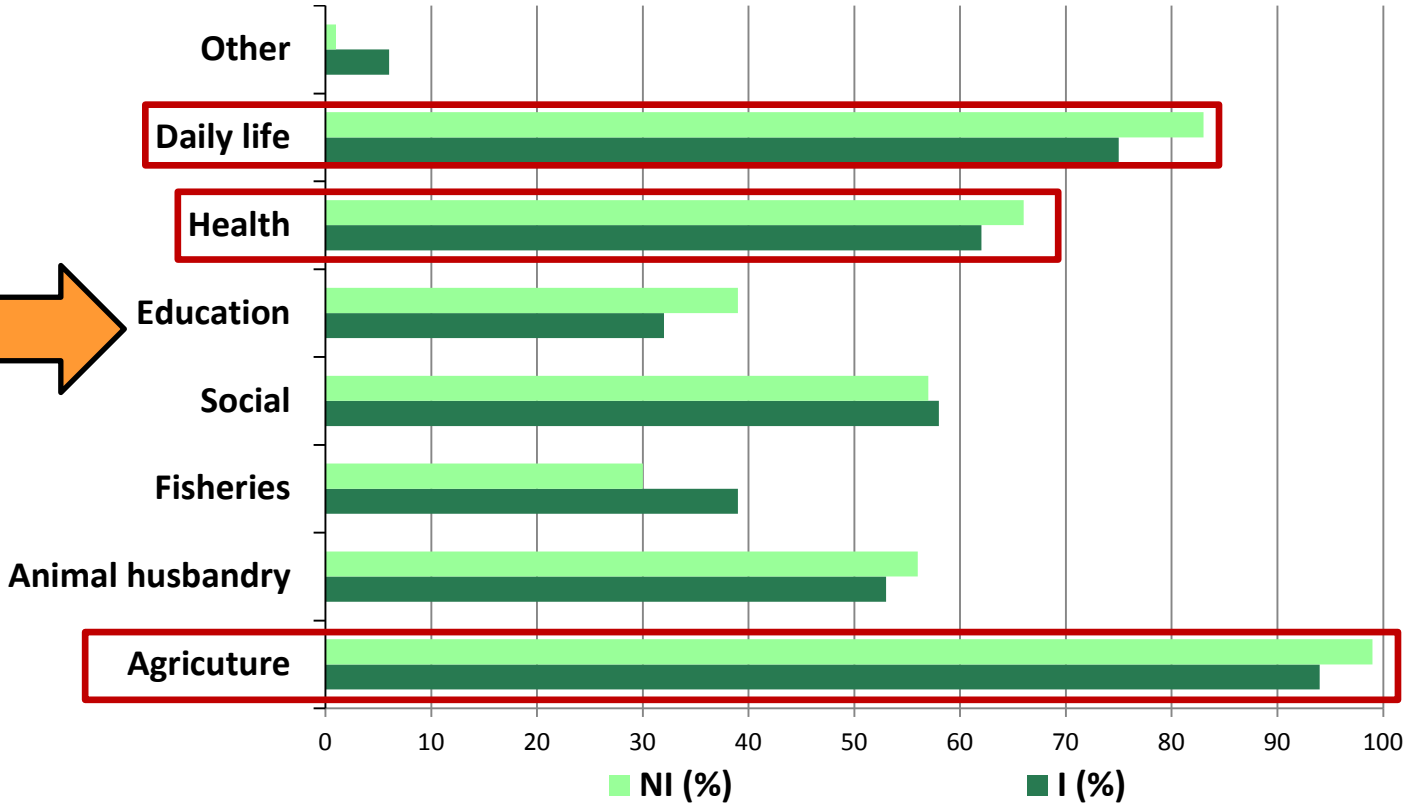
- Local people can observe and predict weather by their traditional knowledge and report to forecasting center
- Local community can play role on providing information of what they observed from the field such as the changes of plants, animal, the Moon, the Sun and the dry-up progress of their fields

Identify Planned Responses

- Identifying trigger-points and associated responses.
- Cooperating with local governments on conflict resolution
- Participatory local risk and resource assessment and planning

Impacts of Drought on Communities

Impacts of Drought



Sample no:
Irrigated village: 358
Non-irrigated village: 360

Key points:
Agriculture as well as daily life and health were badly affected by drought

Local Level Drought Proofing Options

Possible measure for each aspect	Individual	Community	Local government
Environment impact	- Water usage practices	1 Community based plantation - Community based water management	- Reforestation - Land use management
Social impact	- Local lifestyles	- Local lifestyles	- Heath care service - Education
Economic impact	- Livelihood diversification	2 Fodder bank 3 Micro credit 4 Livelihood diversification	- Irrigation system - Water management - Livelihood diversification

Specific Measures for Drought Risk Management

1 Community Based Forest Plantation

- Shifting the areas those could not cultivated crops into plantation area
- Plant trees with harvestable their products without cutting the trees

Figure A Trom garden in Ninh Phuoc district

Figure A jackfruit garden in the mountainous

Figure A Neem forest in the coastal area in Ninh Phuoc district

Specific Measures for Drought Risk Management

2 Establishing Fodder Banks for Animal Husbandry

- Shifting uncultivated areas of agricultural into grass field for planting grass for animal
- Saving rice straw and dried grasses for animal

Rice straw for cattle and sheep
at a household in Ninh Thuan province

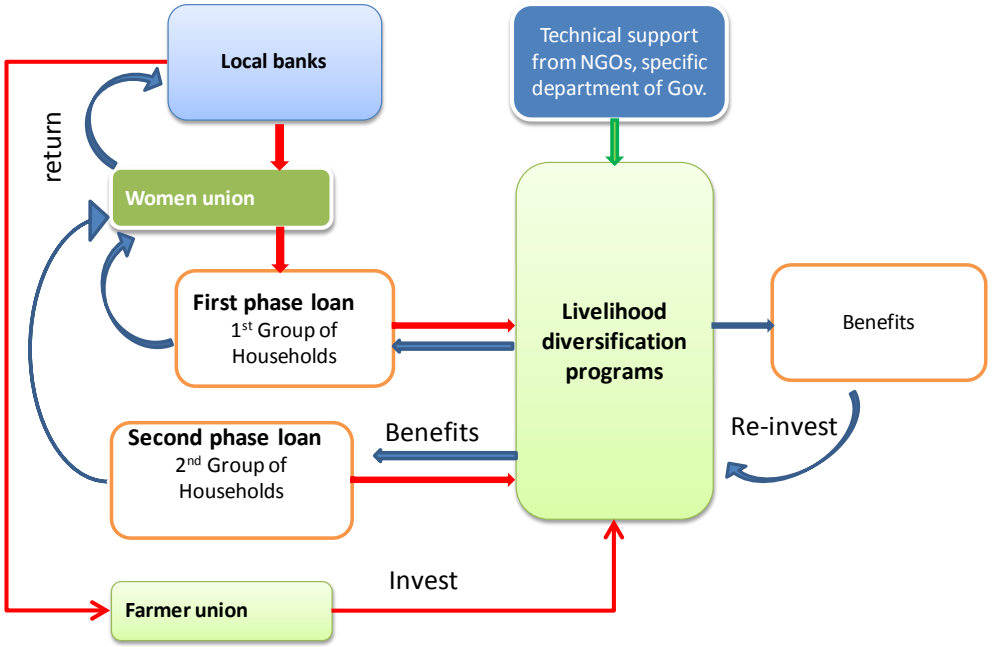
Planted grass field for animal
husbandry

Specific Measures for Drought Risk Management

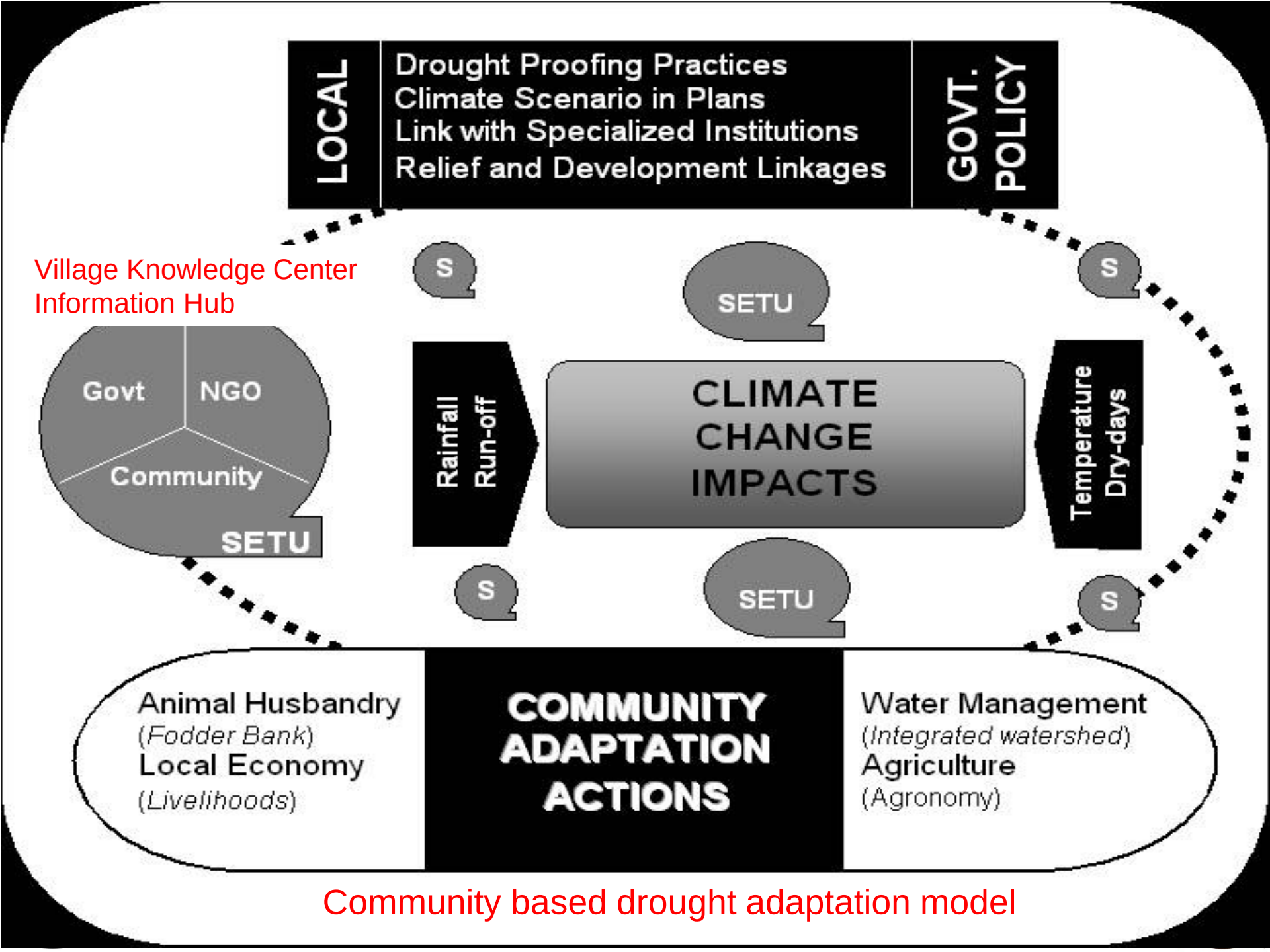
3 Livelihood Diversification together with

4 Micro Credit Programs

Imperial edict in the rural area of An Hai commune, Ninh Phuoc province



Proposed a "cycling credit" for livelihood diversification

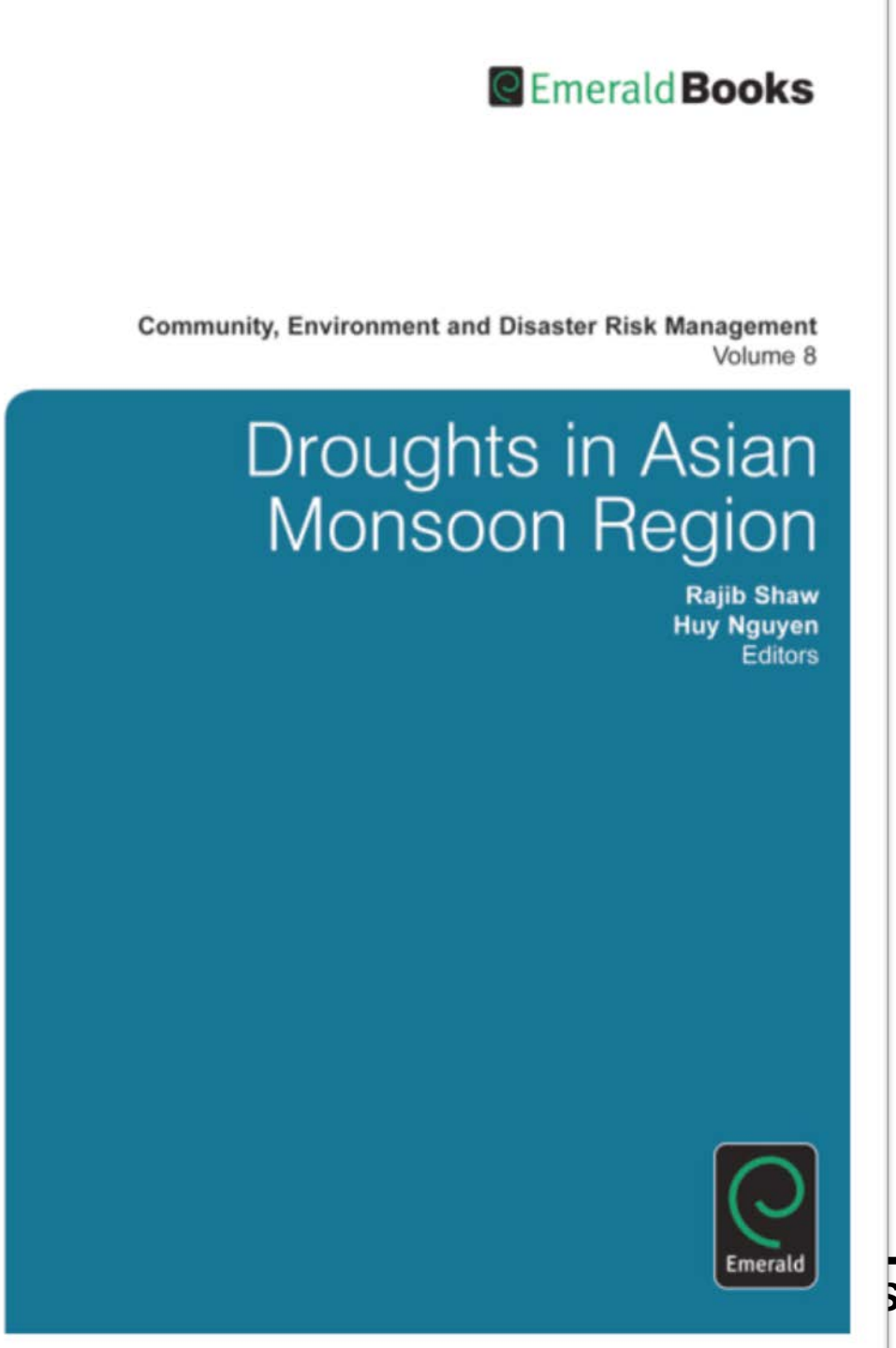


Community based drought adaptation model

Concluding Remarks

- Political and priority issues: cross / multi disciplinary mind set
- Last Mile Communication: linked to multi hazard EWS
- Water resource management: balance of quality and quantity
- SIP resilience mapping: decision making tool for local governments
- Implementation oriented measures: linked to development practices

- Drought in Post 2015 Agenda
  - Sustainable Development Goals
  - Hyogo Framework for Action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