

Living with Climate Change: Role of Community Based Adaptation

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Outline

- **Community Based Adaptation: Conceptual issues / critical questions**
- **Drawings from practice**
- **Opportunities and challenges**
- **Way Forward**

Two framings of Adaptation

- UNFCCC- driven: international negotiation, links with mitigation, main actors are national governments. Funding situation is complex and progress is slow
- Development-driven: builds on existing project experience, links with livelihoods/poverty eradication, main actors local communities and NGOs, funding from multiple sources

Both framings are valid

Community Based Adaptation

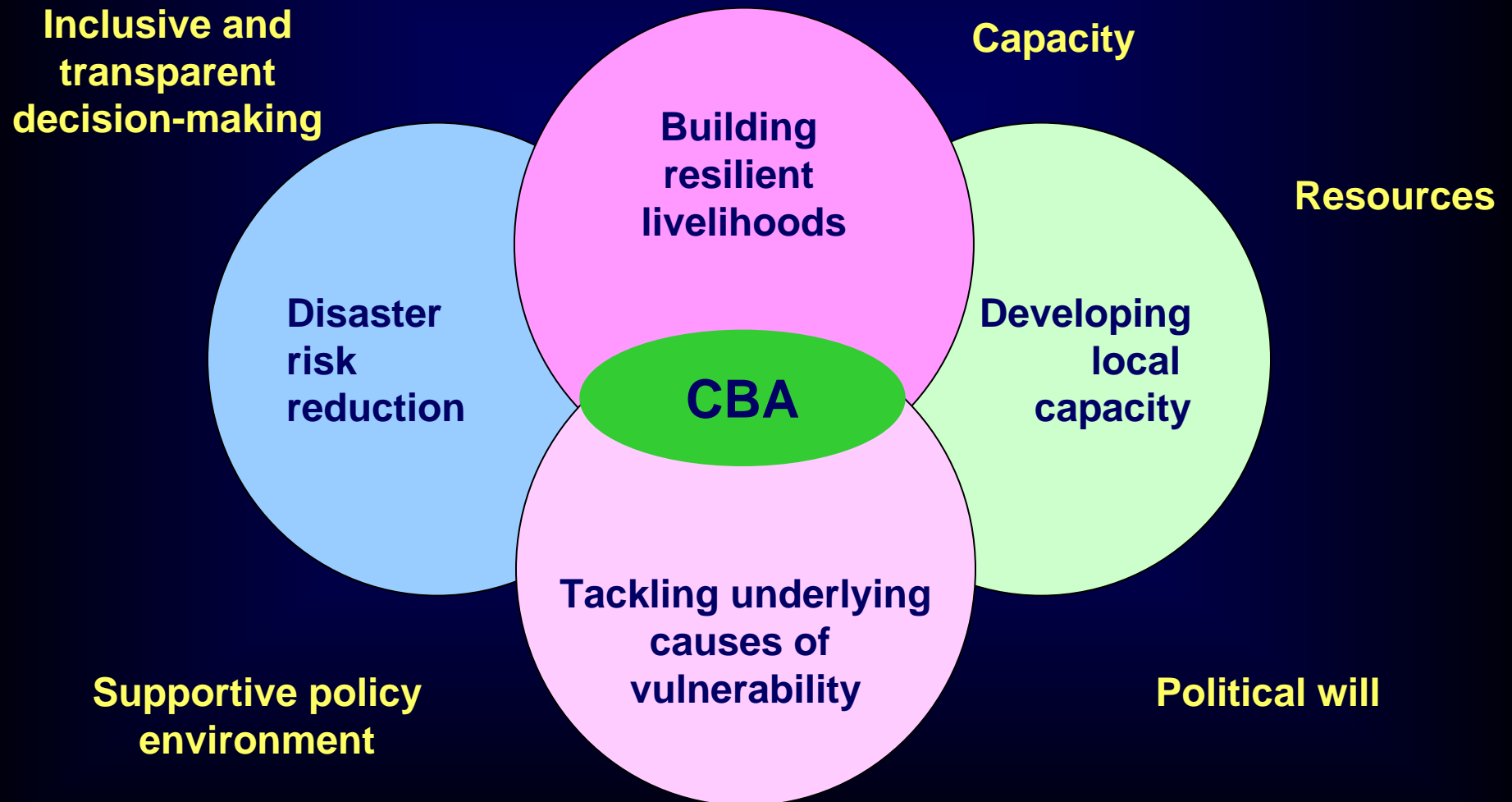
- Climate change is global, but impacts are regional and local: impacts will affect different communities differently based on their specific circumstances

So, solutions must be locally specific

- CBA is community driven
- CBA is the grass roots component of climate change adaptation
- CBA will respond to locally specific needs and develop lessons for global and national stakeholders to further adaptation practice

Community knowledge is fundamental for developing adaptation strategies

Enabling Environment



Key elements of CBA

- CBA as a social learning process – people centric
- Technological solutions must be embedded in the relevant social and environmental contexts
- Treat adaptation as a location specific issue
- Applying a livelihood perspective is helpful to understand and promote community based adaptation (improving access to assets & services)
- Involves support for decision making and capacity building processes

Community based adaptation as an effective tool

- **To assist communities to improve their understanding and assessment of impacts, vulnerability and adaptation**
- **To assist communities to make informed decisions on practical adaptation actions and measures to respond to climate change on a sound scientific, technical and socio-economic basis taking into account the past, present and to some extent the future climate variability at the local level.**
- **To link local evidence to national strategies and global policy**

Four elements for successful adaptation

- **Social mobilization**
- **Skill development**
- **Appropriate technology**
- **Awareness**

Critical Questions

- **How adaptation is best integrated with sectoral planning and development?**
- **How to remove barriers to effective adaptation and whose responsibility is it?**
- **What are the costs of adaptation?**

Four emerging areas of critical learning

- **Climate change communication – including combining local knowledge with scientific knowledge**
- **Community ownership – developing successful adaptation strategies and increasing ongoing adaptive capacities**
- **Integrating gender equality and women's empowerment – promoting gender-equitable adaptation strategies with participation of both women and men**
- **Linking local evidence to national strategies and global policy – creating a space for exchange and learning between different adaptation actors**

Lessons from Community Adaptation Practice

Vulnerability Assessment and Enhancing Adaptive Capacity to Climate Change in Semi-Arid Regions of India

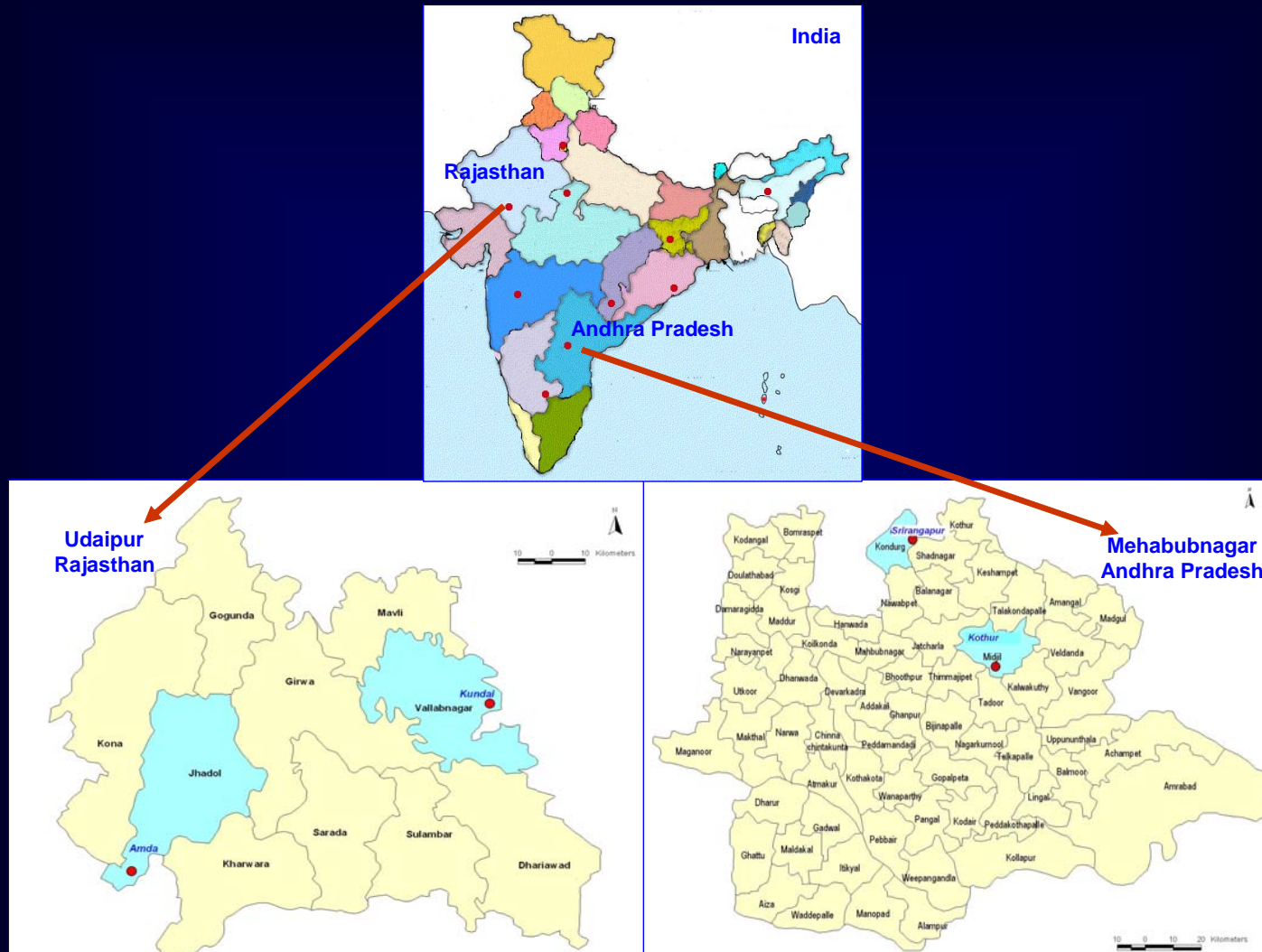
Objectives:

- Enhance the adaptive capacity of the local communities
- Improve delivery systems
- Promote multi-level policy dialogues and general awareness to climate related impacts

Focus Areas:

Agriculture, Water, Livestock & Rural Energy

Project Sites



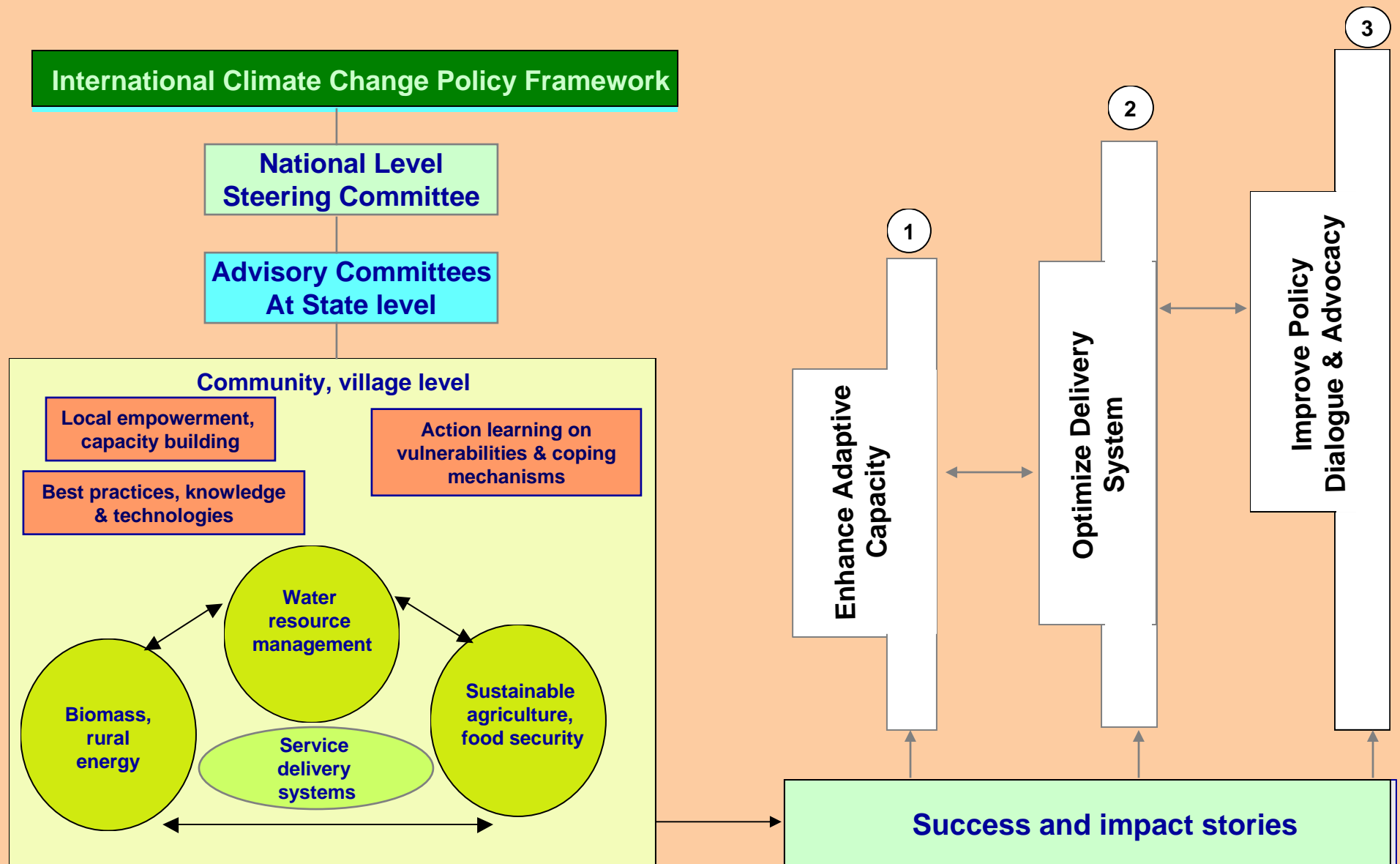
Project Villages



<i>MehabubNagar, AP</i>	
1. Srirangpur	Kondurg Mandal
2. Kothur	Midjil Mandal
<i>Udaipur, Rajasthan</i>	
1. Kundai	Vallabhnagar Block
2. Amda	Jadhol Block



Project Focus: Institutional Structures and Components



Hypotheses

Objective 1: Enhance the adaptive capacity of the local communities

1. Hypothesis on Energy: Energy **Biomass based energy** production offers an **alternative coping strategy** for households vulnerable to climate change impacts in semi arid areas.
2. Hypothesis on Water: Community's access to weather monitoring and prediction data combined with **community managed water resource** systems can **lead to greater water use efficiencies** and improved adaptive capacities.
3. Hypothesis on Land Use: Village level land use maps can provide a basket of options for different rainfall scenarios (drought, normal, excess). They can lead to stabilisation of yields from rain-fed farming, greater food and economic security.
4. Hypothesis on Livestock: Livestock rearing is an important coping strategy in the face of enhanced climate variability. **Buffer stocks of fodder** (including tree fodder) and **good breeds of livestock** can be important **risk reduction strategies** and can enhance adaptive capacities.

Understanding Adaptation

- Energy as an entry point in Kothur village, Andhra Pradesh (abundance of *Prosopis juliflora* > 400 acres)
- Land use change as an entry point at Srirangapur village, AP (Progressive farmers, commercial agriculture)
- Livestock management & migration as an entry point at both the villages in Rajasthan

Catalytic Interventions

- Design of Cropping system for different Weather Codes
- Promotion of locally suitable best practices
- Establishment of Village level Agro-meteorology Observatories
- Training of 'Climate Risk Managers'
- Training of Panchayat leaders / Village Sarpanchs
- Development of a training module for Extension Agents in collaboration with MANAGE, Hyderabad
- Awareness
- Strengthening of Village Institutions (Smart Farmers Club)

Land use based interventions

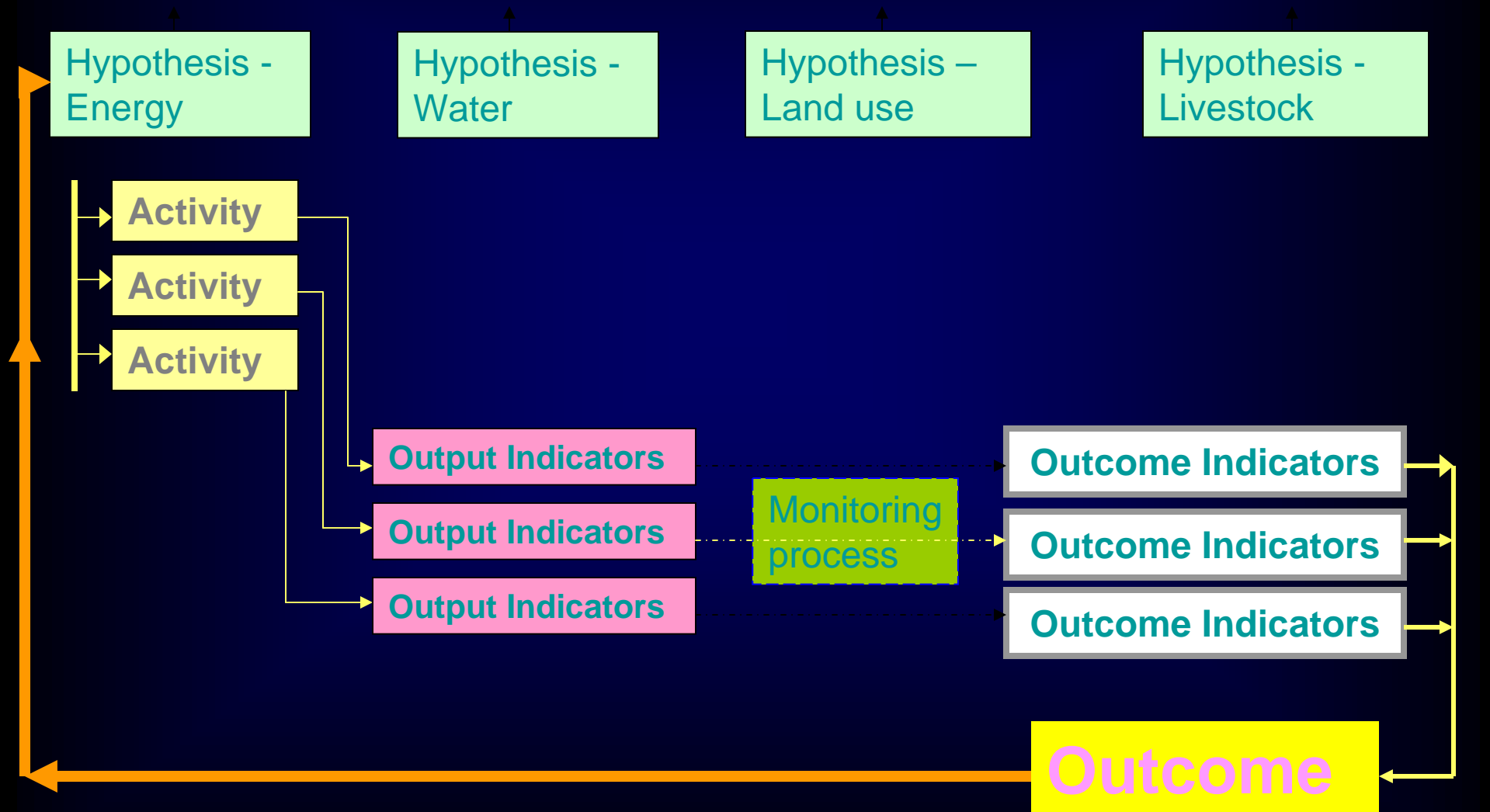
- Control of erosion losses –sloppy land treatment
- Crop advisory based on weather forecast
- Development of cropping systems based on weather codes
- Testing of option sets (SRI, mixed cropping, varietal trials)
- Treatment of alkaline soils
- Kitchen gardens for nutritional security



Monitoring Framework

Objective 1

To build community level capacities with regard to best practices and technologies in the agriculture, water and energy sector



Learning Hypothesis – Land Use: Updated village level land use maps and a basket of option sets for different rainfall scenarios (drought, normal, excessive) can provide information for appropriate agronomic practices that can stabilize yields from rain fed farming thereby providing greater food and/or economic security

Activity

**Best practice –
System Rice
Intensification
(SRI)**

Output

- 30% Reduction in water usage as compared to conventional method
- 20% Increased productivity

Outcome

- 52 Rice farmers (60 acres) adopted SRI against 150 rice growers

Output indicator

- Quantity of water used for crop duration
- No. of productive tillers / hill, no. of grains / panicle and test weight.

Outcome Indicator

No. of acres and farmers under SRI

Benchmark

Conventional submergence rice was practiced

Water based interventions

- Lining of irrigation channels
- Reduction of irrigation intensity
- Groundwater monitoring
- Strengthening water harvesting structures / revival and restoration of traditional / community based water conservation measures
- Revival of traditional harren System
- Formation and revitalisation of water user groups



Learning Hypothesis – Water: Community's access to weather monitoring and prediction data combined with community managed water resource systems can lead to greater water use efficiency and improve adaptive capacities

Activity

**Lining of Harren,
awareness &
capacity building**

Output

Year - 2007
•780m lined channel (Harren) constructed
•24 acre area brought under irrigation
•41 farmers irrigated wheat crop, 6 times/crop

Output indicator

- Length of water channel lined
- Area brought under irrigation and No of irrigation provided

Outcome

- Group of farmers evolved norms for efficient water use

Outcome Indicator

- Ability to manage the irrigation channel by functional group
- Increase in water productivity
- Time saved for irrigation

Benchmark

During 2006, 0 m lining, 39 farmers irrigated wheat crop in 20 acre area by using 6 irrigation

Rainfall 2006 – 1158mm
2007 - 566mm
2008 - 672mm

Participatory Proposal for renovation of wells

दि० १/६/०६

आज दि० १/६/०६ को सांखुवापिठु भवन कायदा में समन २००-७३० वीं हंड रसी किमती अर्थात् ७१ रामाजी १० लाला ने की। जिसमें सभी किसानों ने भाग लिया। इस सेंट्स में सभी किसानों ने पानी पर चर्चा-चर्चा किन कुंओं में अधिक पानी है लेकिन उनकी किमती अर्थात् १०० की है उन कुंओं के सभी बगाने पालव हुई।

प्रस्ताव - १ कुंओं पर चर्चा।

प्रस्ताव - २ कुंओं का चर्चा।

प्रस्ताव - ३ किन कुंओं के दुधवापिठु अर्थात् १०० की पानी को चर्चा।

प्रस्ताव - १ का निर्णय सर्व सहमती से किन कुंओं की किमती अच्छी रही है उन पर चर्चा की है इन्हे सुचारु रूप पर सभी किसानों को पानी मिलेगा।

प्रस्ताव - २ का निर्णय सर्व सहमती से कुंओं की किमती इन सभी किसान उमादातर पानी लेने है उन कुंओं का चर्चा किमती बना। जो निम्न है।

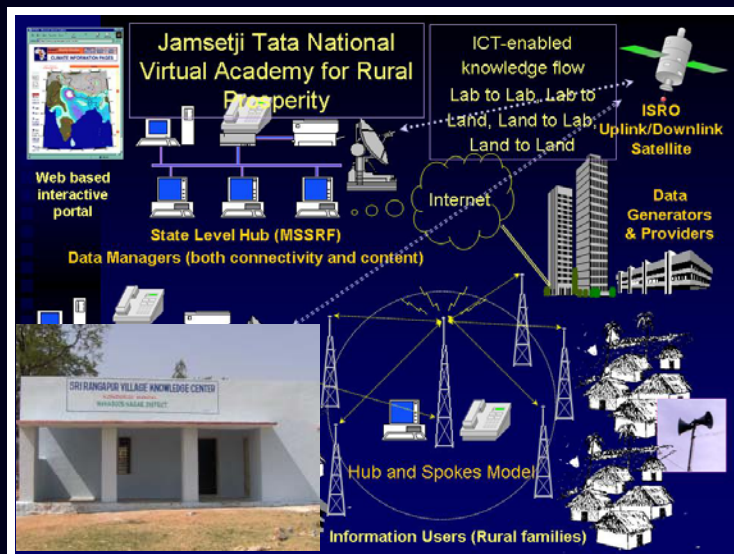
- १) धामाजी १० मोला जी
- २) रामाजी १० लाला जी
- ३) हंकर विट १० विजय सिंह
- ४) लाल विट १० भीम सिंह
- ५) कोरना १० दासजी

उत्तर - 2 का निर्णय किन बुद्धों की स्थिति		सुधारी जा रही है उन बुद्धों के किन निम्न की खेती में पानी जाता है व उन खेती में पानी लुंका वाला देगा और मशीन का खिण लेगा। धोई बाद में भीखेता रहेगा। नई विनियम सर्व सम्मती से लिखा गया।				
कुंको वालों के साथ केनाक व परिवार को		पट्टाकार पानी - पलंगे की खेती की धुनी				
सं.	नाम	सं.	समय वित्त का नाम	पानी लेने वाले की संख्या	मीटर / पैपर	पानी लेने वाले की संख्या
1	दाक	1	दाना जी. प्रेमचंद	5	14	15 कोरी 2 + 1 छत पुरा + ला
2	रामा	2	रामा जी. प्रेमचंद	15	25	25 कोरी 3 + 2 छत
3	हकर	3	हकर सिंह - प्रकाश	7	12	18 कोरी 25 + 1 छत
4	लाल	4	लाल सिंह / बी. राशि	10	18	22 कोरी 2 + 2 छत
5	करक	5	करक / लकी	7	18	25 कोरी 3 + 2 छत
6	लाल	6	लाल सिंह / प्रकाश	40 A	10	20 कोरी 4 + 4 छत
मदद		मदद के लिये धारा सिमेंट + रेती				
मजदूर		मजदूरी, पत्थर खन कर लेगी।				
		53 72 185				

संख्या : १०८४ / २०१३
दिनांक :
कमिश्नर
श्रीमान काबुलिया बहादुर
काठमाडौं
साथी



Knowledge Management



Thumb rules for weather based farming

Farm operations	Influencing weather parameter	Quantified examples	Farm decision making
Sowing, Fertiliser application, Hand weeding and hoeing, Irrigation scheduling	Rainfall	Rainfall >25 mm for 2 to 3 days continuously	Sowings can be attended under dry land
		Rainfall >12 mm	Fertiliser application under dry land
		Rainfall = 10 to 12 mm	Hand weeding and hoeing under dry land
Pesticide spraying, Propping for banana and sugarcane	Wind Speed	Wind speed = < 5 kmph:	Pesticide dusting and spraying can be done
		Wind speed >30 kmph	Propping for sugar cane and banana
Pest and disease outbreak, irrigation scheduling	TMax, TMin, RH	Evening RH = > 90 % and continues for a week:	Possibility of crop disease occurrence
		Maxi. Temp. = > 32°C and continues for a week:	May increase the sucking pest load

Outreach & Engagement

- **District level Workshops**
- **State level Workshops**
- **National Dialogue on “Draft Act for Climate Risk Management at the Local Level”**
- **Road Map for Policy Development**





Community Participation



Key Characteristics

Characteristics	Rajasthan	Andhra Pradesh
Community participation	Strong	Moderate
Energy Use	Low	High
Groundwater Exploitation	Moderate	Very High
Traditional Adaptation Strategies	Many	Few
Market Integration	Low	High
Diffusion of innovation	Low	High

What we learnt about factors affecting adaptive responses to climate change

Socio-cultural factors	Economic-Environmental factors
<ul style="list-style-type: none">➤ Collective memory of events and responses➤ Social networks➤ Community based information diffusion➤ Interaction with state agricultural extension➤ Local methods of data collection➤ Knowledge of local environmental signals➤ Individual experimental responses	<ul style="list-style-type: none">➤ Vulnerability of location➤ Local infrastructure➤ Support service➤ Rural-urban market connections➤ Land-use pattern➤ Household capital➤ Use of technologies➤ Alternate income generating opportunities

Notable Insights

- Community participation is key (Rajasthan experience) to adaptation practices and this is achieved by a variety of facilitations and interactions
- Strategic investments in infrastructure (hardware & software) is key for adaptation
- Defining of indicators and benchmarks of change are important to understand adaptation processes and measure success
- Knowledge of the past experiences are vital in adaptation interventions
- Generation of social capital through network of mutually supportive farmers is important for adaptation (SFC example)
- Right types – and right combination of assessments are needed to move into adaptation actions
- Expanding information, awareness and capacity building is critical
- Alternative crops, livelihoods are key
- Successful technology demonstration and establishing credibility at cluster level essential
- Resource sharing (including labor) is fundamental to community adaptation measures. This is most likely to occur where community relations are good and traditional social institutions are strong
- Meaning of droughts & floods change over time
- People look for long term solutions

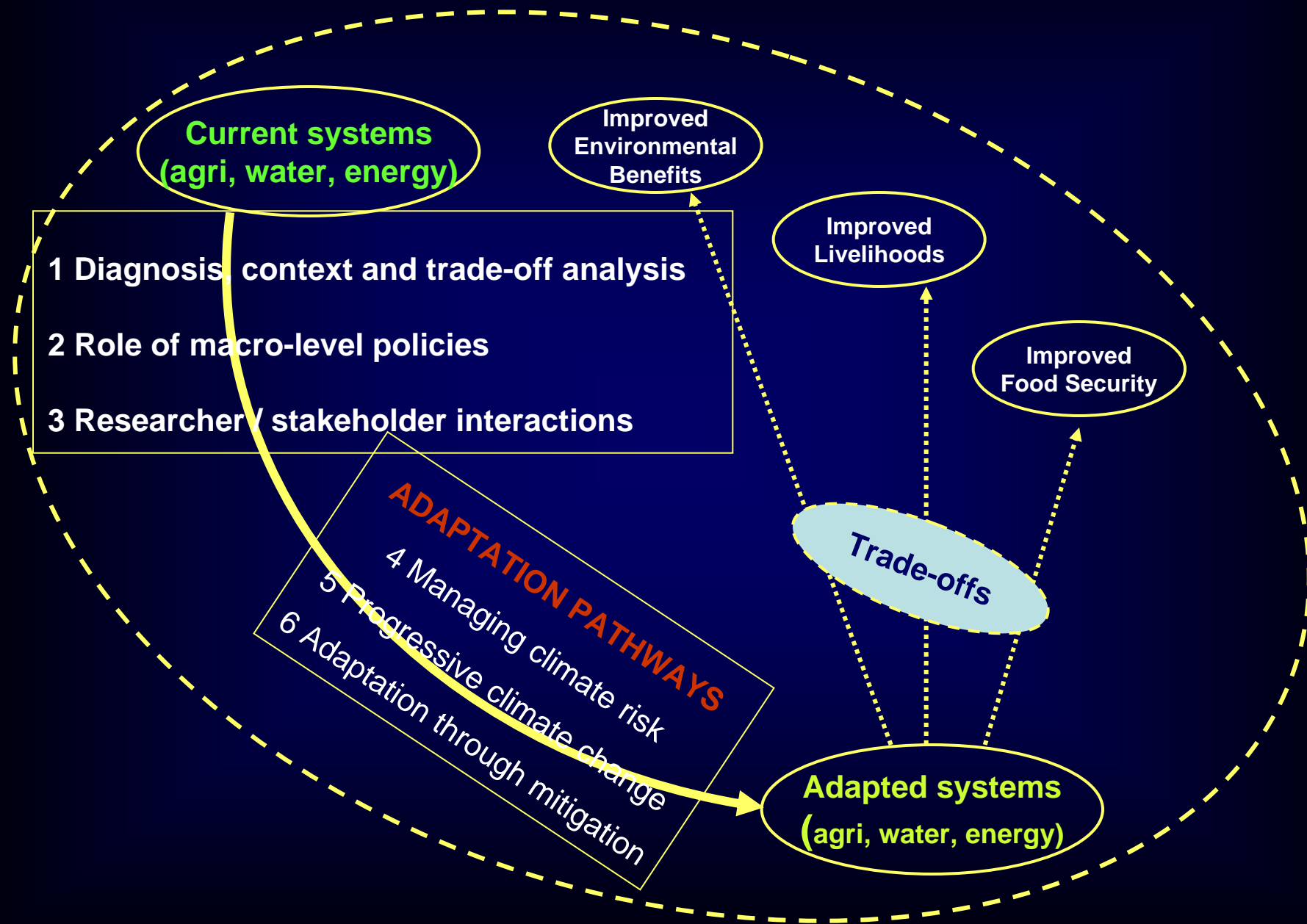
Major Challenges

- Adaptation/Development Dilemma
- Uncertainty in characterization of current / future climate variability / change (Information)
- Sectoral bifurcations
- Deficits in adaptive capacities
- Up-scaling
- Inadequacies in research
- Incoherent policies
- Cost Allocation

Possible Pathways

- Focus on increasing the 'contextual fit' between problem and what we know works
- Enhance efforts to Systematically integrate climate risks in to development priorities and decision processes
- Strengthen micro-level planning to facilitate better adaptation
- Adapting to long-term changes will require a combination of measures at state/national level and changes in the behavioral patterns at local levels
- Sharing of best practices
- Increase local government capacity (Panchayat Raj Institutions) - Build capacities at different levels
- Develop sound integrated assessment criteria & tools
- Identify appropriate research, technology policy options
- Develop climate sensitive research infrastructure
- Education & Awareness

Climate variability and change



Priority Areas for Research

- Conceptual Research: critical analysis of adaptation processes disciplinary framings, the use of scenarios, adaptation metrics, synergies and conflicts between adaptation and mitigation etc).
- Applied Research: characterisation and assessment of climate-related risks and evaluation of potential adaptation options, adaptation costs
- Institutional Dimensions of Adaptation: Consideration of structural driving forces (political, economic, institutional adaptive management, barriers, international agreements etc.,)
- Knowledge Management
- Bridging science-policy interface
- Urban CBA

CBA related Policy questions

1. What are the limitations of local adaptation strategies?
 - what is the adaptation range?
 - Mal adaptation
2. How do we replicate successful or viable adaptation strategies?
 - Diffusion of system innovations (Amul, Grameen Bank)
3. How do we create an environment in which local adaptation strategies will be identified, designed and implemented more readily and effectively?
4. How do we ensure synergies and resolve conflicts between local and regional or national processes and objectives?

Thank You

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