

*Anàlisi de la vulnerabilitat i canvi climàtic*

**Analysis of vulnerability to climate change**

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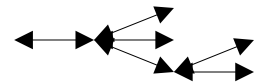
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United Nations University Institute for Environment & Human Security  
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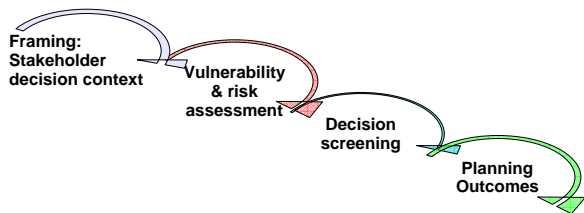


**Adaptation as a social process**

- Framing and context
  - What is the objective: Climate proofing or resilience?
  - Benchmarks of adaptive capacity
- Who are vulnerable?
  - Use of climate information in pathways of risk exposure
- Robust screening of decision making
  - Value of climate information in making a decision
- Planning outcomes



**Cycles in adaptation decision making**

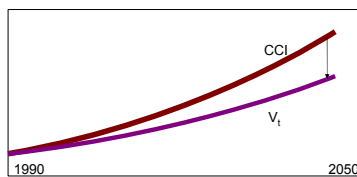


Framing: Stakeholder decision context

- Stakeholder analysis & engagement
- Competence in planning and implementing adaptation as a process of social learning
- From policies to strategies to actions
- Levels of analysis
  - Selecting appropriate methods

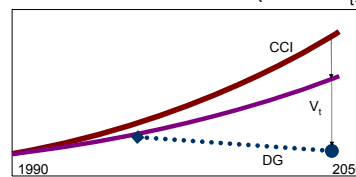
**A conventional view of climate change adaptation**

- Adaptation is a reduction in vulnerability at some future time
- $A = CCI - V_t$



**A conventional view of climate change adaptation: Adding development targets**

- The difference between projected vulnerability and a development target increases the adaptation need
- $A^* = (CCI - V_t) + (V_t - DG)$



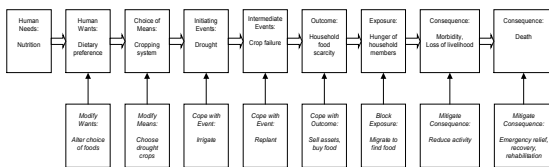
## Policy-action matrix

	Policy	Strategy	Projects	Actions	Outputs	Outcomes
<b>I: Poor</b>	Conflicting sectoral policies		None			Reduction in present and future vulnerability
<b>II: Minimum standard</b>	Political statements	Operational guidelines for each sector & region			Range of effects monitored	
<b>III: Adequate</b>	Declared aims		Pilots in priority sectors and regions			
<b>IV: Best practice</b>	Legislation			Large number of actions available for learning	Good achievement of objectives	

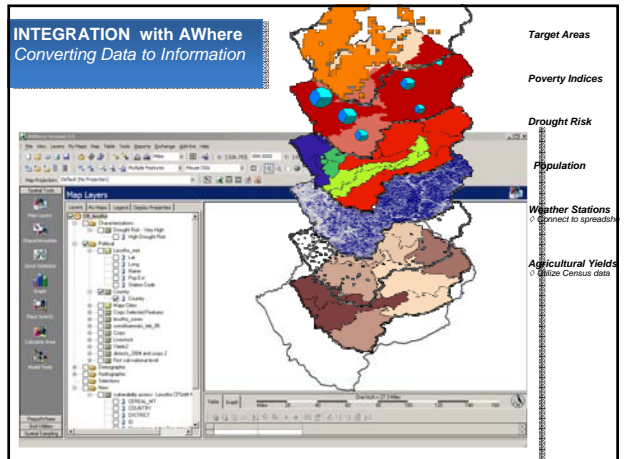
## Vulnerability & risk assessment

- Multi-attribute, social vulnerability
- Vulnerability-exposure
- Use of climate information

- Drought must be located in the causal chain from human needs to consequences

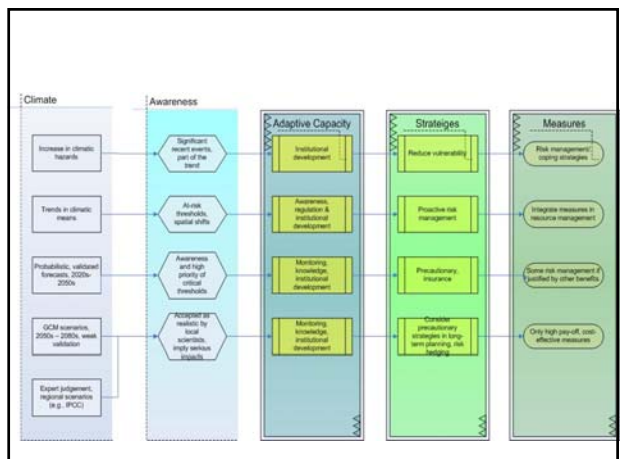


## INTEGRATION with AWhere Converting Data to Information



## Decision screening

- Robust decision paradigm
  - Value of information in reducing uncertainty in making a decision
  - Envelopes of future conditions
- Participatory, learning, social process



## Unpacking outcomes

- Construct full range of plausible outcomes based on underlying vulnerability, climate change and impacts, and response options
- Interrogate the outcome space:
  - What outcomes can be accommodated with present plans?
  - What are intolerable outcomes that must be prevented?
  - What are intolerable futures that cannot be managed?

## Planning Outcomes

- Adaptation as a social process
- Shared understanding
- Risk communication
  - Storyboards, participatory video, templates

## Adaptive capacity is competence and confidence in achieving future outcomes

- If adaptation is a process, capacity to adapt is the expectation of adaptation processes in achieving their desired outcomes
  - Shift from 'predict-and-provide' to adaptive management

## Mangondi village, Limpopo, South Africa

Communal irrigation scheme with 49 households  
Distance from pump adds to variability

## Model elements, Cloud project

Update variables:  
 -> trust  
 -> no/forecast  
 -> cash in hand

Based on WMSI value and thus implicit crop yield, actual weather, the predicted forecast and past weather events, trust in forecast is reassessed depending on whether it was correct regarding which crop is grown, during the next iteration

## CC, no forecast

With no season climate forecast:  
Household income declines  
Poor suffer greater loss of income

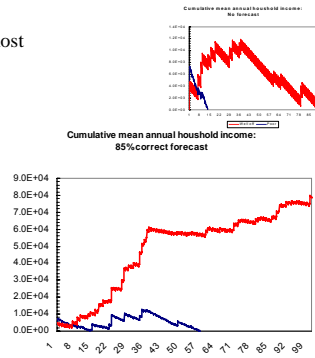
Cumulative mean annual household income:  
No forecast

## CC, forecast mostly correct

With seasonal forecast correct most of the time (85%)

Household income increases

Poor households do better, but still not as good as wealthier households

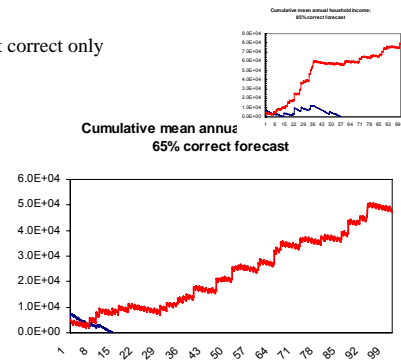


## CC, forecast often wrong

With seasonal forecast correct only 65% of the time

Wealthier household income increases

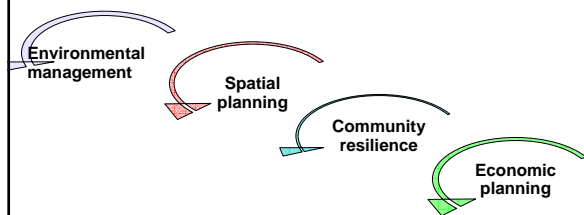
Poor households fail to benefit from forecasts



## Reflections

- We cannot 'predict-and-provide'
- But we do know something about the future
- Beyond 'local' climate responses

## Cross scale cycles



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Pooling expertise to help us adapt to changing climate dynamics

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