Spanning the Science-Policy Chasm for Sustainable Water Management

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Outline

- Aim of policy and science
- What are science policy boundaries and interactions?
- Case study: Climate change adaptation of Water Resource Management
- Science-policy framework: Lessons learned

Policy aim

Universal premise of policy and planning:

- Policy has to do with human's problems with coping with its future; e.g. there is something that can be done
- Public policy is an attempt by a government to address a public issue by instituting laws, regulations, decisions, or actions pertinent to the problem at hand.
- Usually more than one policy alternative

Policy and Science

Science is a structured pattern of inquiry that can be:

- **Curiosity driven**: *adds to the reservoir of knowledge (supply driven)*
- **Problem driven**: *knowledge for action (demand driven)*

Overall water resources policy aim:

- **Linking knowledge and action to meet the needs of human development while protecting fundamental water resource systems**
- **A perennial problem:**
  - Decision makers not getting information they need
  - Scientists producing information that is not used

Behaviours and attitudes

Science	Government
Probability accepted	Certainty desired
Anticipatory	Time ends at next election
Flexibility	Rigidity
Problem oriented	Service oriented
Discovery oriented	Mission oriented
Failure and risk accepted	Failure and risk intolerable
Replication essential for belief	Beliefs are situational
Clientele diffuse, diverse, or not present	Clientele specific, immediate, and insistent

Bradshaw & Borchers, 2000

Science-policy gap: Difference in levels of confidence for a given scientific finding expressed by the scientific community and by society

Boundaries & barriers

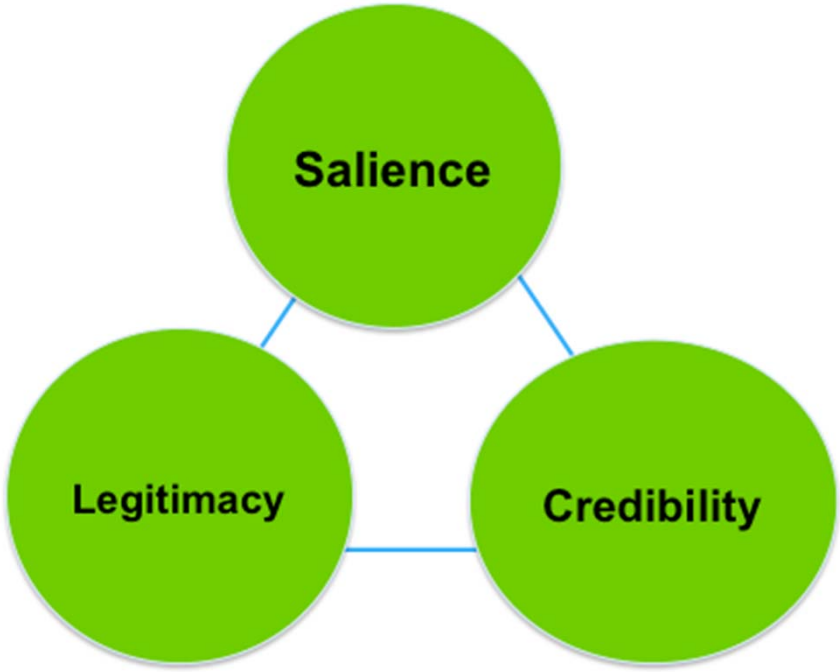
- Traditional assumption: **Credibility,** authoritative, believable, trusted.
- Two additional attributes: **Salience & legitimacy** are equally important.

Boundaries

- Science and policy
- Between disciplines
- Geography and jurisdiction scales
- Forms of knowledge

Barriers

- Communication
- Collaboration
- Integrated assessment



Cash et al, 2002

Overcome barriers by managing boundaries and multiple audiences

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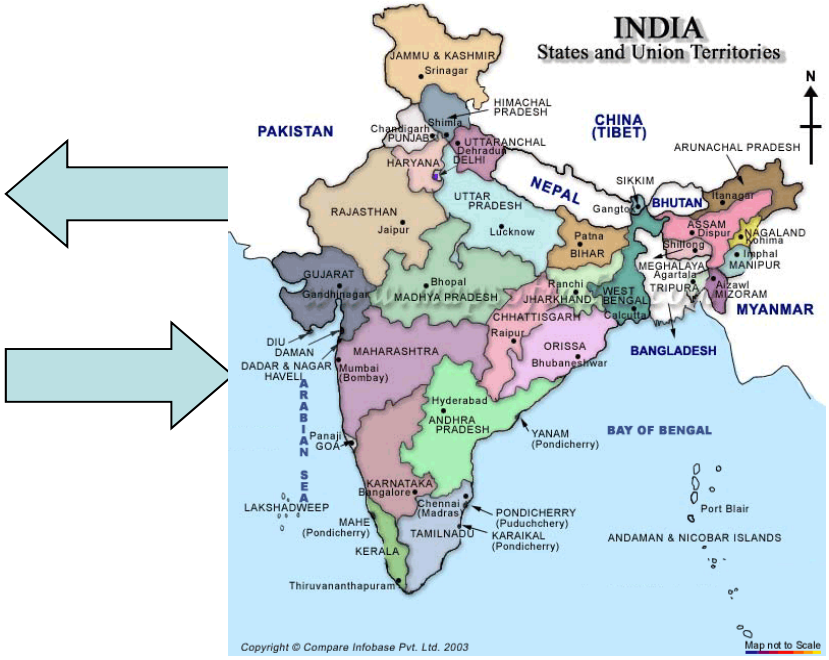
Case Study

A Comprehensive Interdisciplinary Climate Adaptation Framework for Water Resource Management

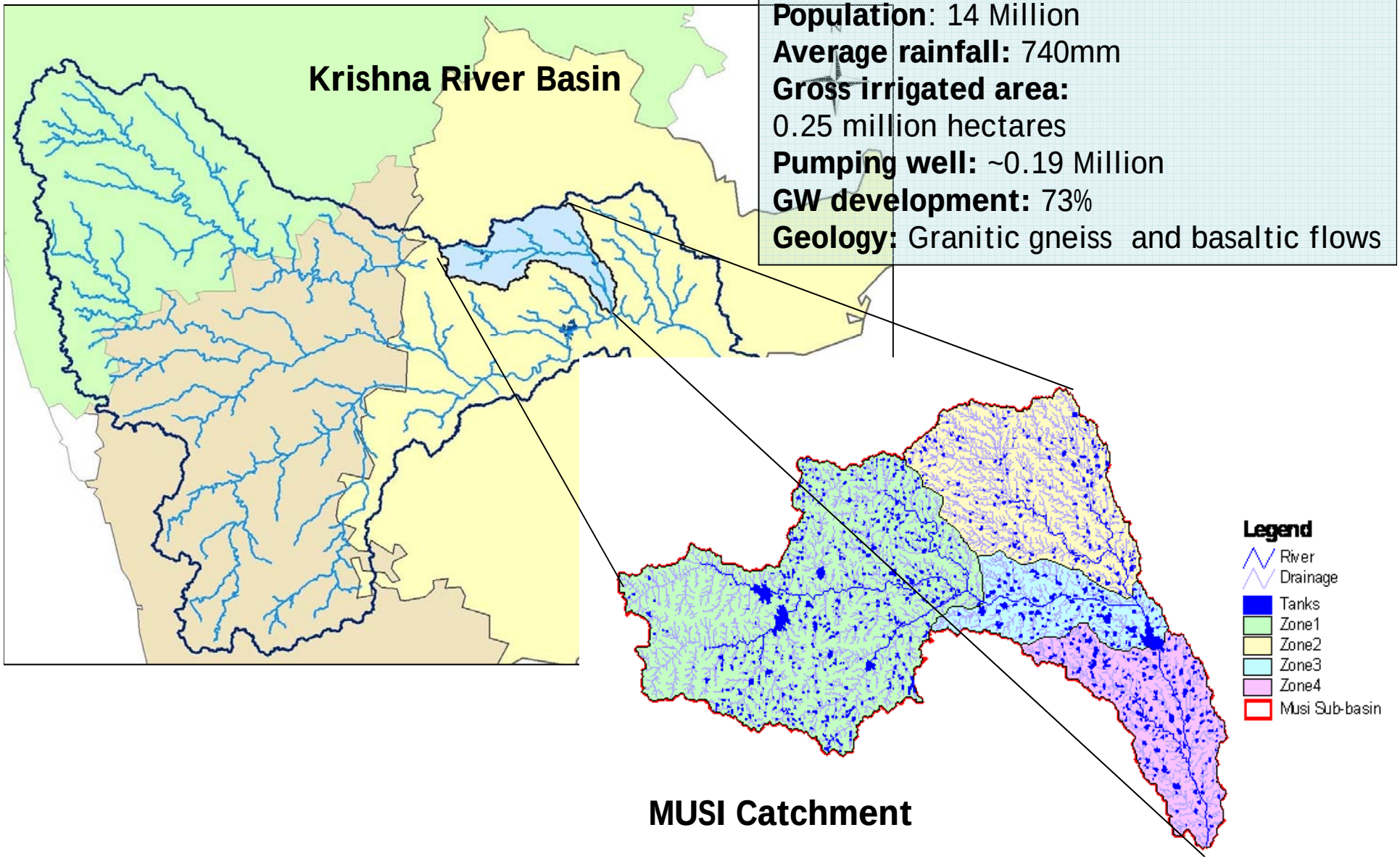


University of Melbourne

Indian Institute of Tropical Meteorology, Pune
The Energy Research Institute, N Delhi,
International Water Management Institute (IWMI)

Focus on the MUSI Catchment

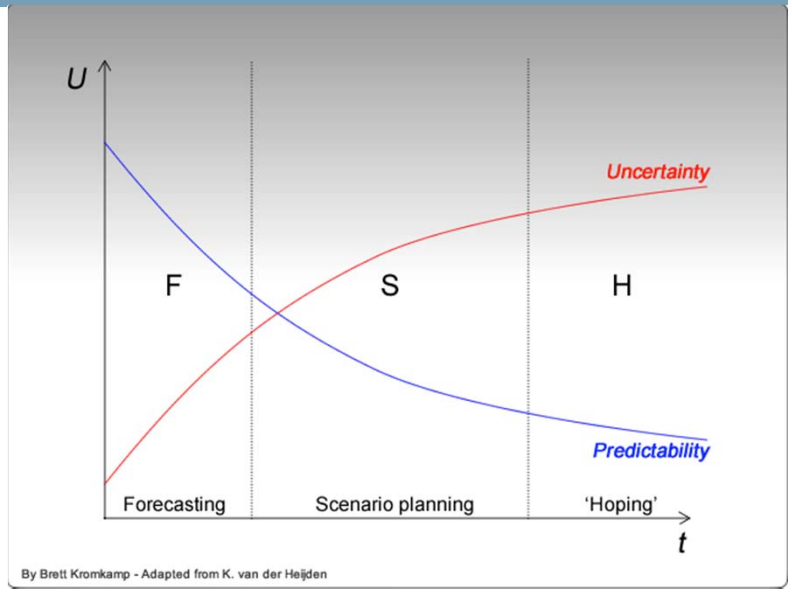
Area: 11,257 Sq.km
Population: 14 Million
Average rainfall: 740mm
Gross irrigated area:
0.25 million hectares
Pumping well: ~0.19 Million
GW development: 73%
Geology: Granitic gneiss and basaltic flows



Guessing the future = uncertainty

- Typical **wicked** problem
- Uncertainties deeper into the future
- Adaptive approach – flexibility
- Trans-disciplinary approach

Leading to the adoption of a Scenario Analysis approach



Water Management Uncertainties

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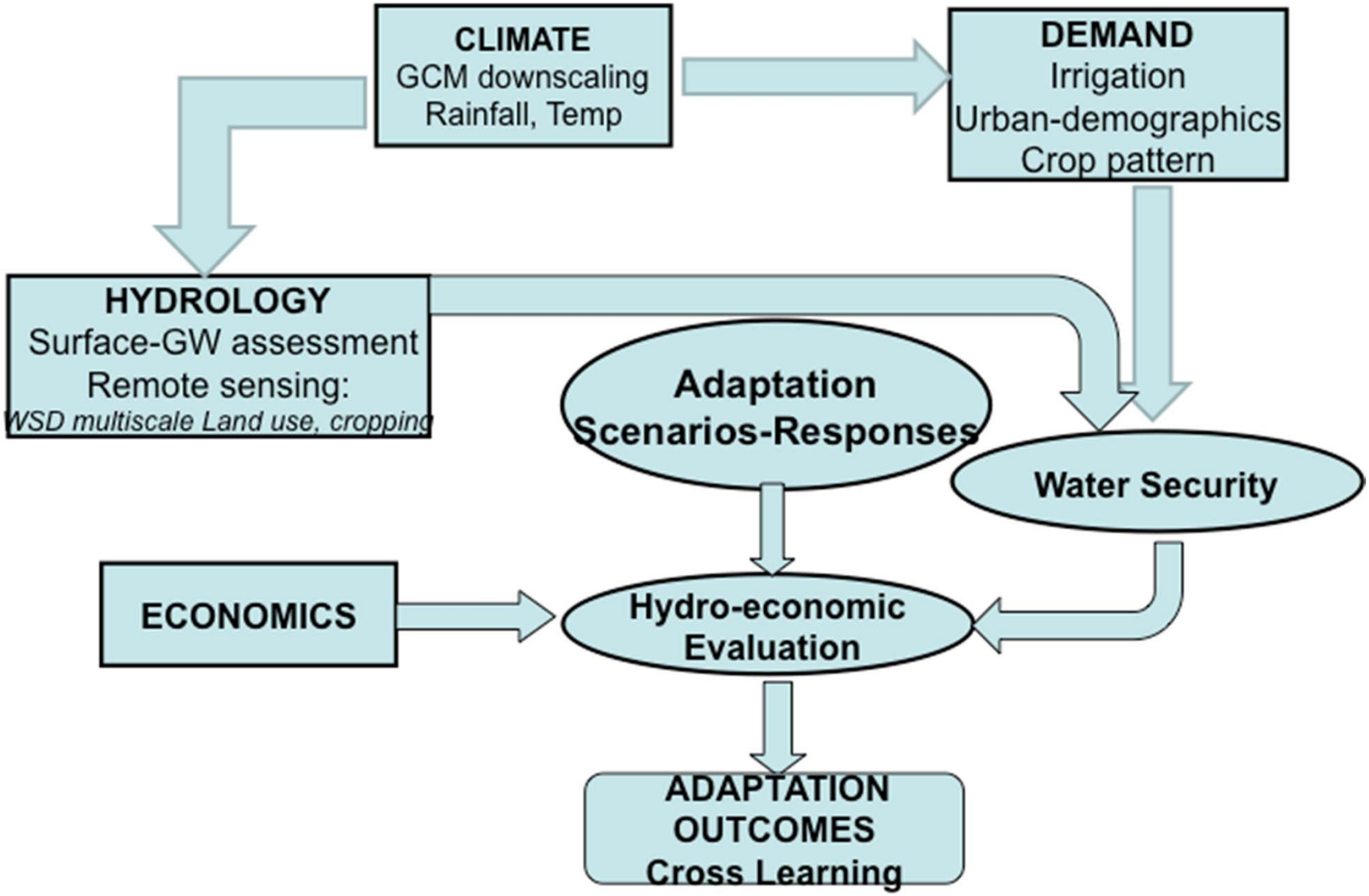
Climate change adaptation: Conceptual Research Framework

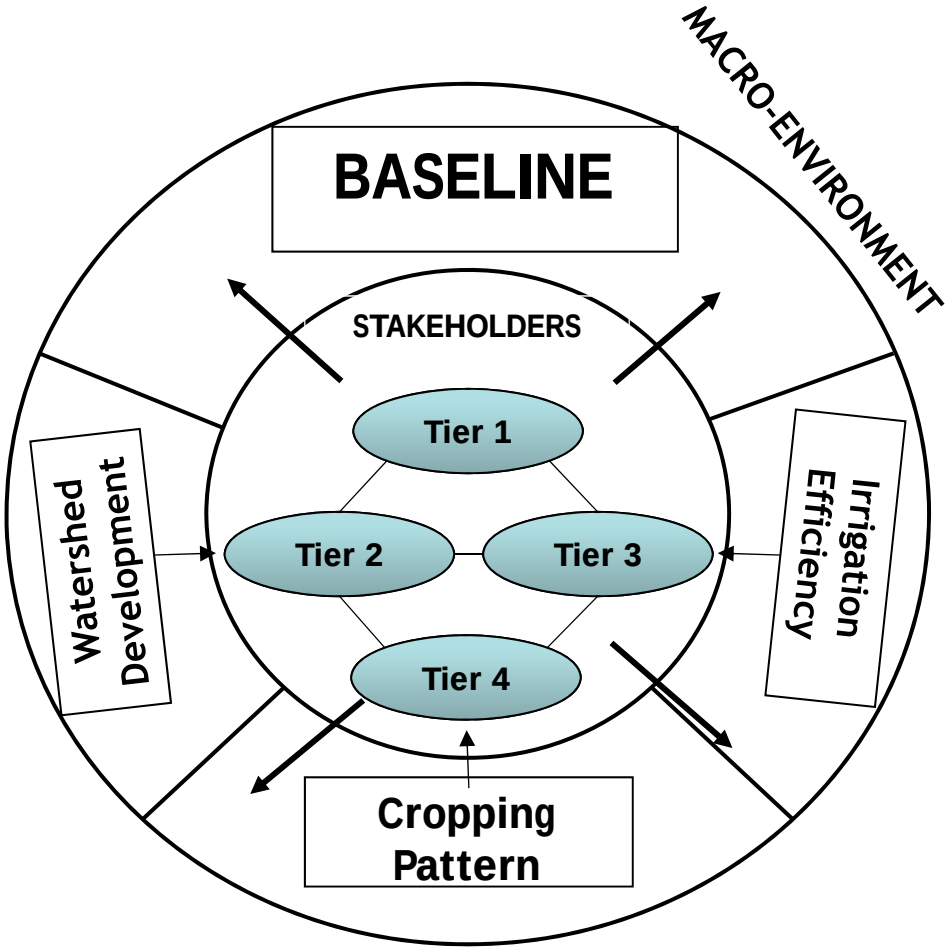


Response development

Stakeholder consultation yielded a large number of potential responses

The selection of responses driven by:

- *How likely is to enhance water security*
- *How feasible is to subject the response to modelling representation*



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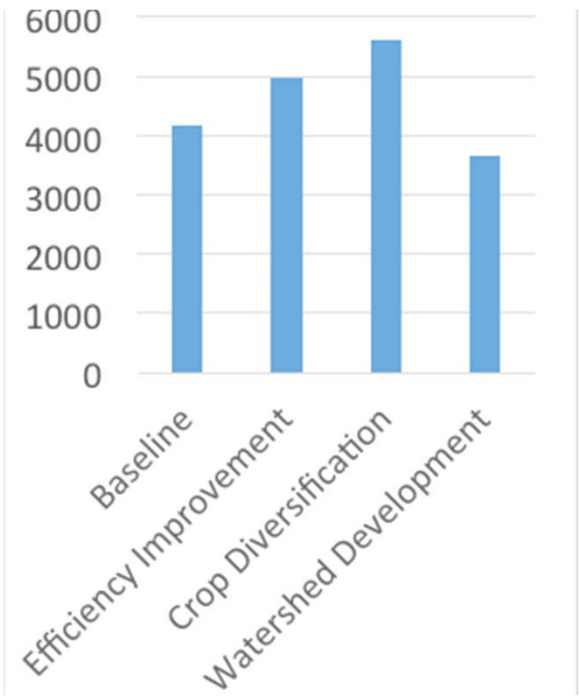
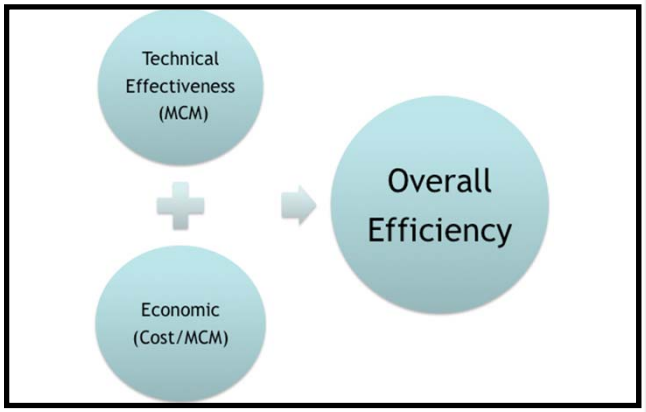
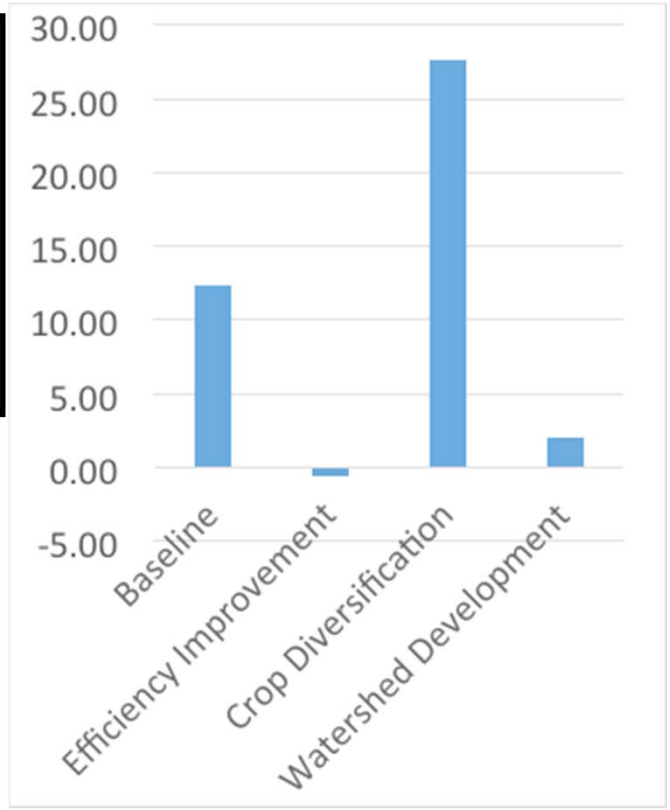
Assessing Efficiency of Responses





Dual evaluation Criteria

- Technical efficiency measured as water available under each scenario-response combination
- Economic efficiency measured as Rs/m^3 of water



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Spanning the gap: Lessons learned