

# Science, Poverty and Sustainable Water: Why they will never coalesce unless ...



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You think you see a truck?



Actually, you are looking at DESAKOTA  
but fail to see it!!



National and International  
Development / Water /  
Energy/ Poverty etc.  
Policies = Rain in  
Trans-Himalaya or Colorado  
High Altitude Deserts

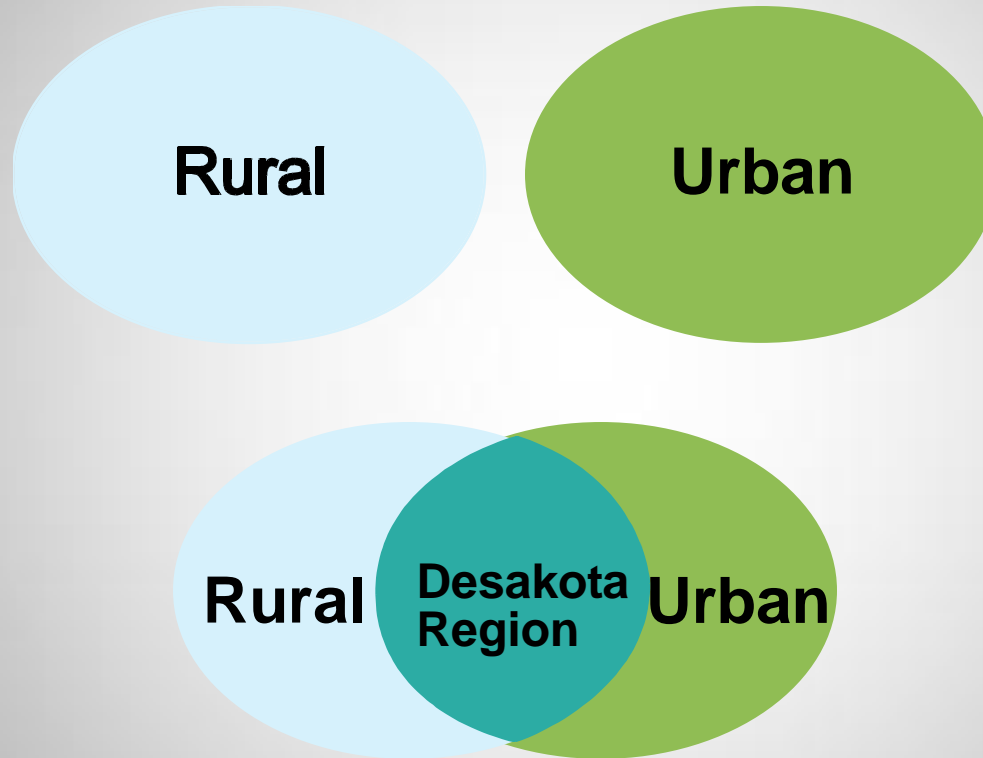
Why?

Too much  
'Eagle Eye' Science

Too little  
'Toad's Eye' Science

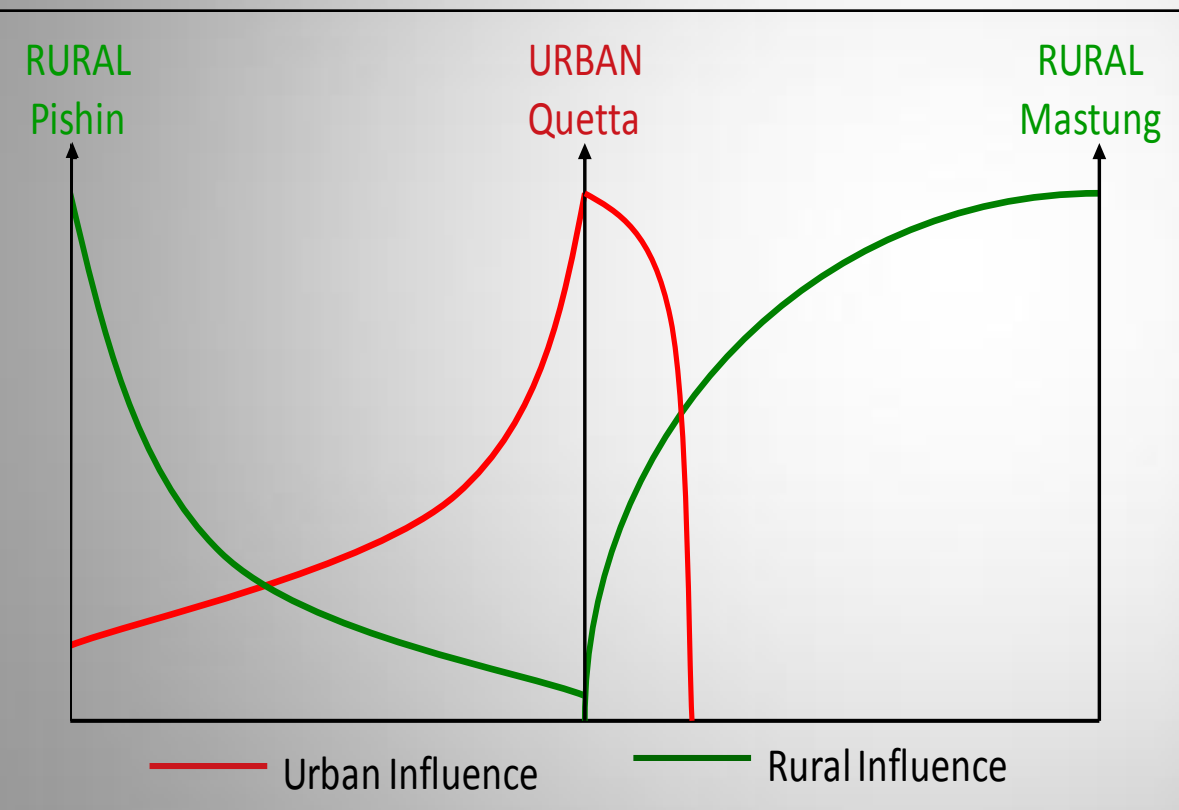
Both are necessary but neither alone is sufficient:  
ES lacks roots while TS lacks perspective

# Desakota: the co-penetration of rural and urban systems



# Institutions in Desakota:

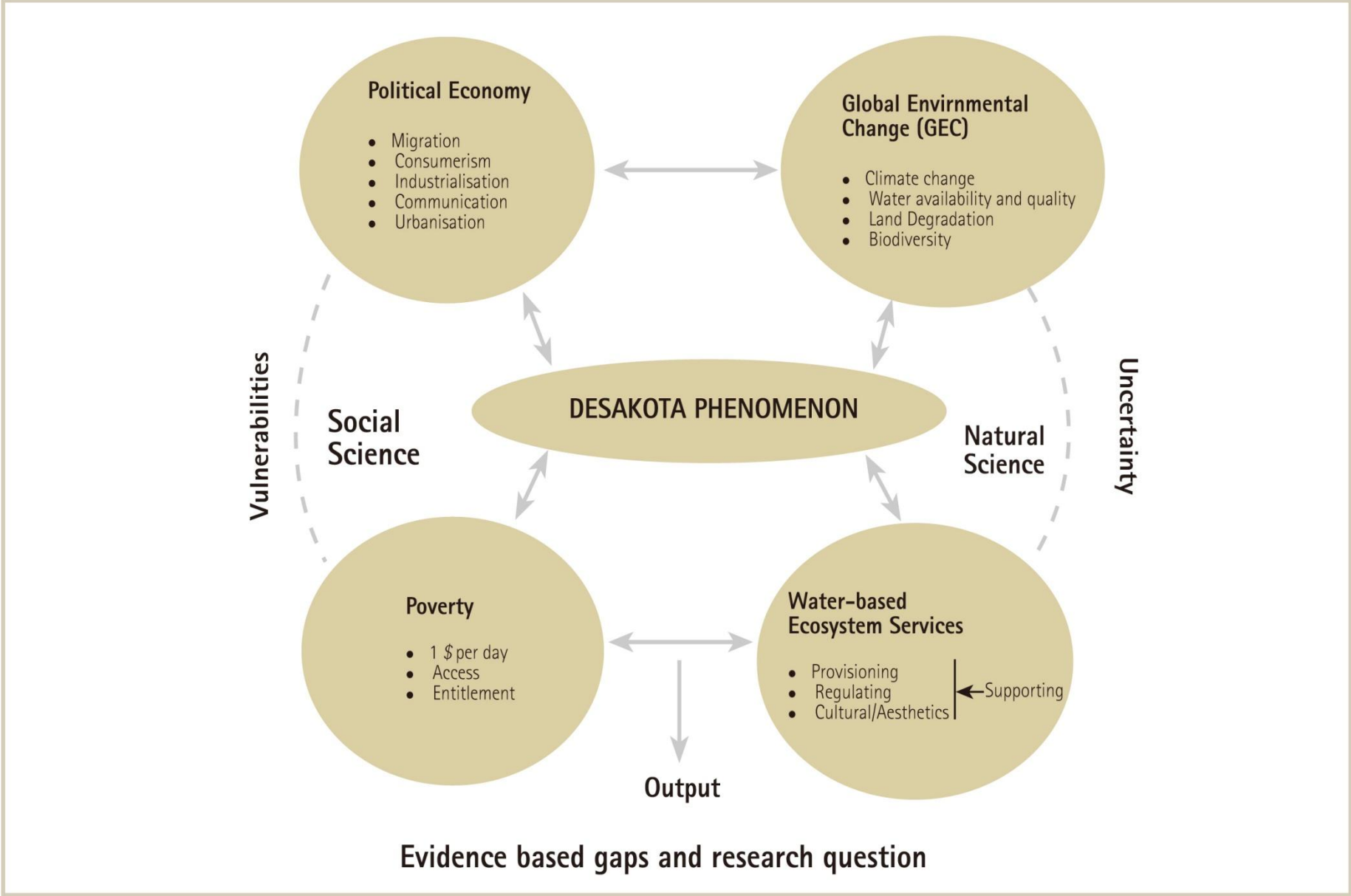
Example:  
Balochistan, Pakistan



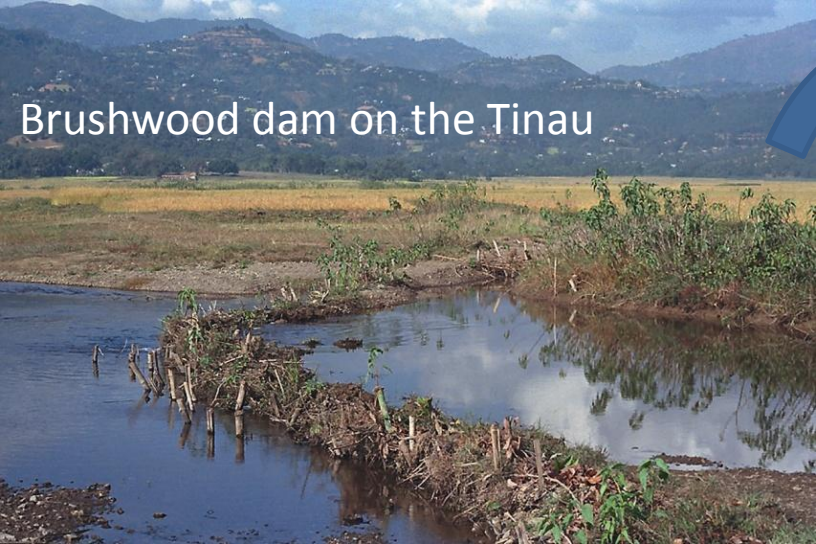
Institutional challenge:

- Rapid, informal development
- Changing livelihoods, less dependency on proximate ecosystem services
- Lack of 'reach' of existing institutions
- Growth of informal markets for provisioning services, but not on management
- Locational disjuncture between "ecosystem" itself and service it provides

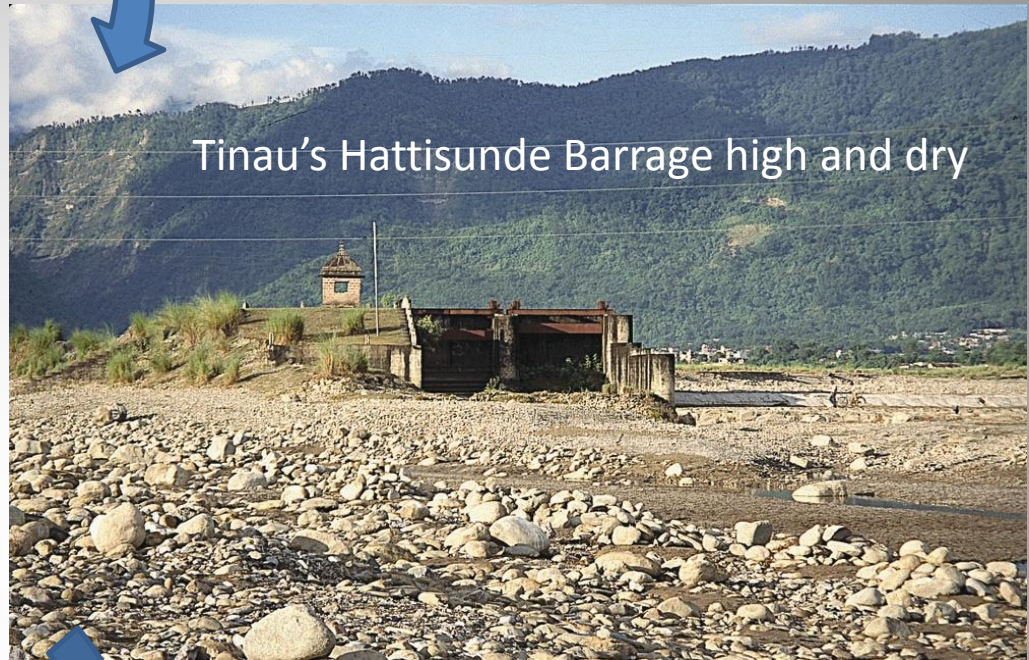
# Conceptual Framework of Interlinkages in the Desakota Phenomenon







Brushwood dam on the Tinau



Tinau's Hattisunde Barrage high and dry



Groundwater pumping in Marchawar

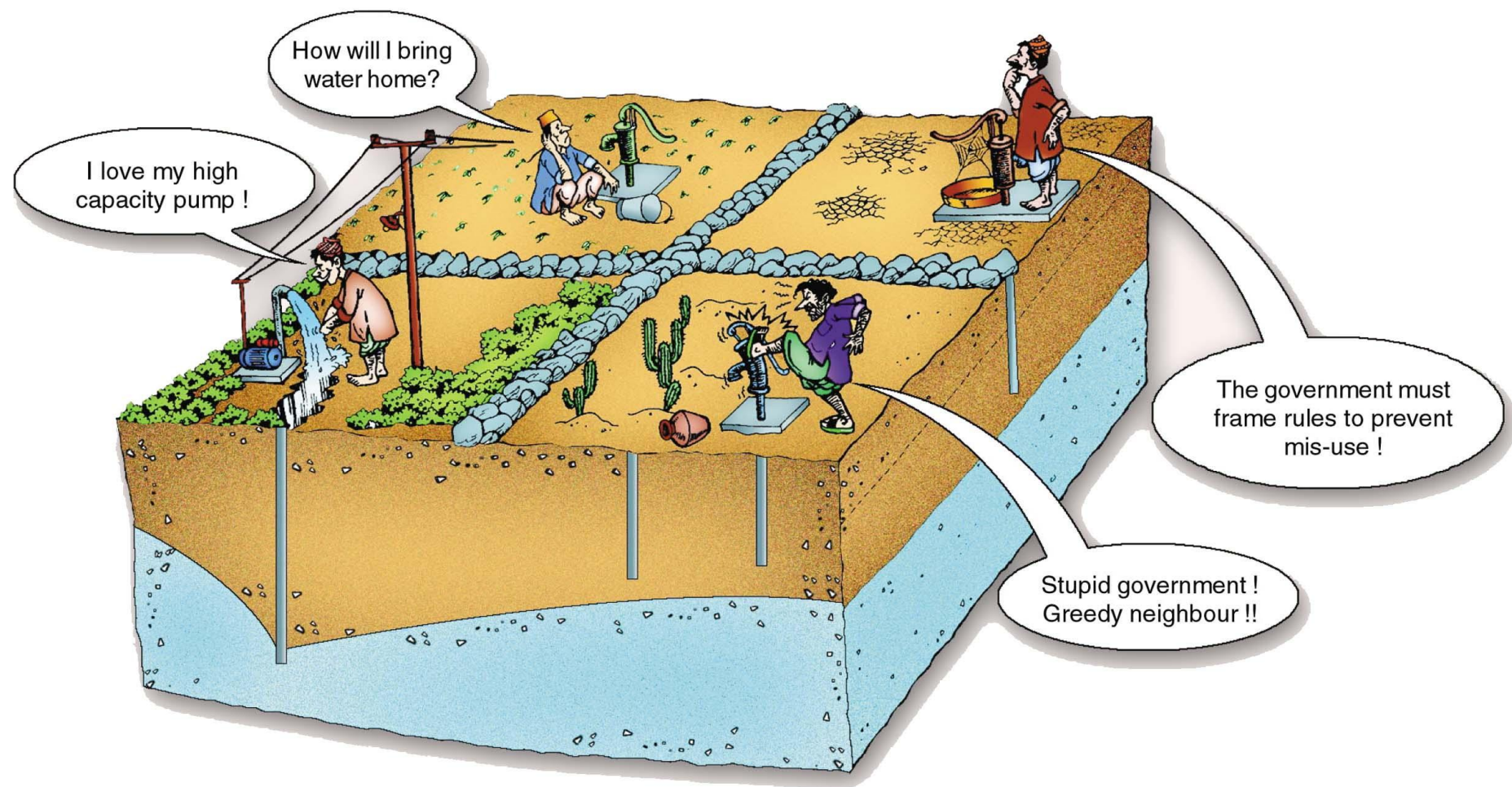
The Cultural Theory of social solidarities and their technological choices.

What technology? Whose technology?  
What are the risks and who bears them?  
Who is resilient? Who sinks under?  
Hegemony of Runaway Technology??!!



Mass (Voter/Consumer)  
Fatalism

State  
Hierarchism



Market  
Individualism

Activist  
Egalitarianism

# Social Response to Groundwater Overdraft



# Resources: Abundance, Scarcity or Depletion?

## Asymmetrical Transactions

### FATALISM

*believes in*

### RESOURCE LOTTERY

*that produces*

### CLUB GOODS

*from which they are excluded*

Water as 'mirage' in ads?

### HIERARCHY

*argues for*

### RESOURCE SCARCITY

*to produce*

### PUBLIC GOODS

Water as regulated 'municipal or utility supply'.

high  
↑  
excludability  
↓  
jointness

low ←

→ high

Competition  
Unfettered and  
Unaccountable

Competition  
Fettered and  
Accountable

### INDIVIDUALISM

*argues for*

### RESOURCE ABUNDANCE

*to produce*

### PRIVATE GOODS

Priced, glamourized bottled or tanker water, individual hand or or motorized pumps.

### EGALITARIANISM

*argues against*

### RESOURCE DEPLETION

*to produce*

### COMMON-POOL GOODS

Accessible to all, 'common pool' Water.

## Symmetrical Transactions

# Plural Definition of the Water Problem (and the origins of innovation)

**Coercive Power for Control** - too many people is the problem: Solution is to manage it through rules and regulation.

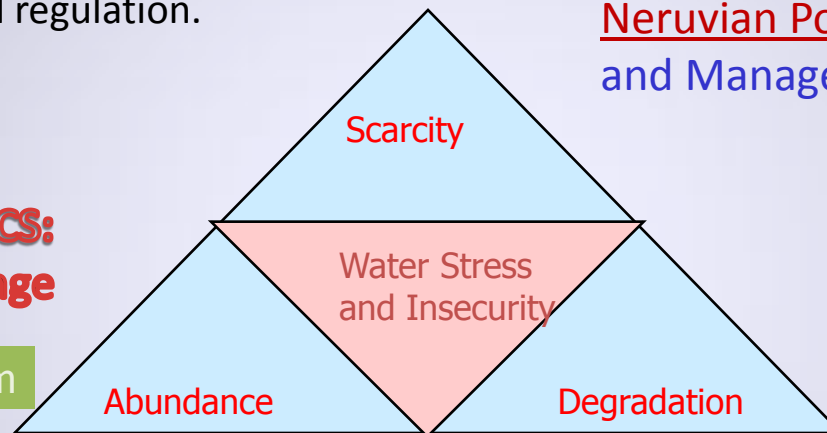
Bureaucratic Hierarchism

**LAW: redistributive balance**

Neruvian Politics: Regulatory and Management Solutions

**LIBERAL ECONOMICS: efficiency of exchange**

Market Individualism



Egalitarianism of Social Movements/Greens

**Regulatory Restrictions** are the problem: **Freedom** to network, the solution to scarcity brought about by too much control and scare mongering.

**CRITICAL ANTHROPOLOGY: reciprocal equity**

**Profligacy** is the problem: **Taboo** is the solution to reign in our greed.

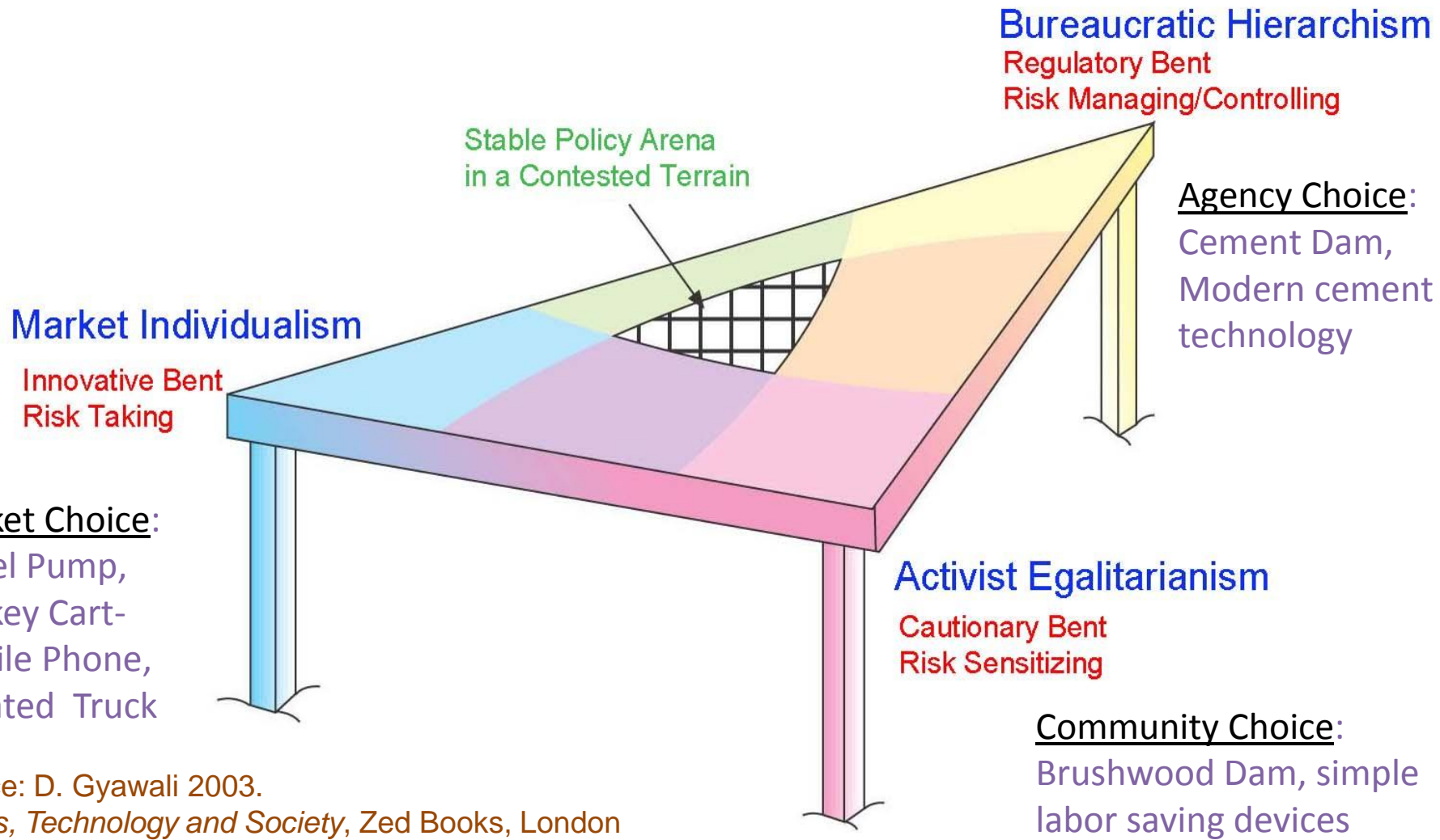
Regano-Thatcherite Politics: Technical creativity and solutions

Answer is:  
“Many 10%  
Solutions”!!

Gandhian Politics: Ethical Behavioral solutions



# Constructive Engagement of Plural Social Solidarities



- Hierarchism: Coercive Power (*Tamasik*), Strategy of Codes and Procedures
- Individualism: Persuasive Power (*Rajasik*), Strategy of Networking Freedom
- Egalitarianism: Moral Power (*Satwik*), Strategy of Critique



# Poverty and Water Security:

Balancing 'eagle-eye' and 'toad-eye' sciences for semi-arid South Asia

These people think they are poor!!

to house  
here

????

Have you wondered  
how you get water  
from the spring

?????

located  
here

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Pragya, Nepal Academy of  
Science and Technology.  
Maldives, 2<sup>nd</sup> June 2014



# People Pauperized by Water: Whither social science of water?



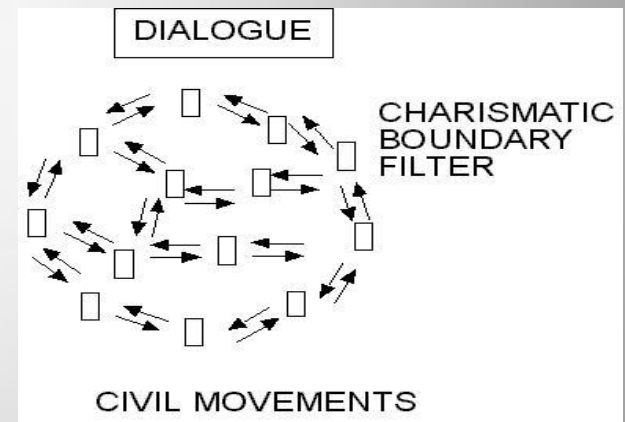
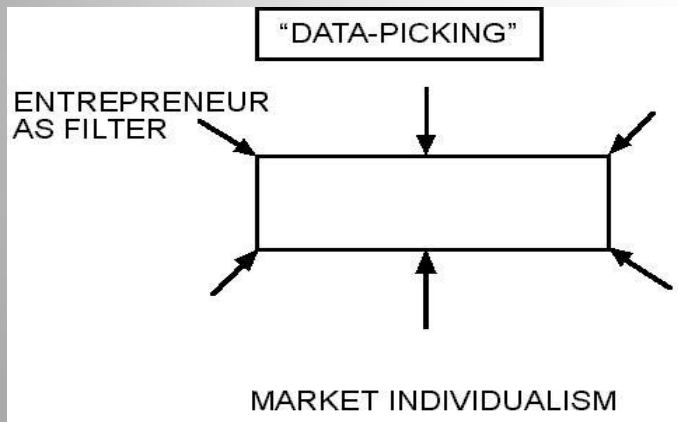
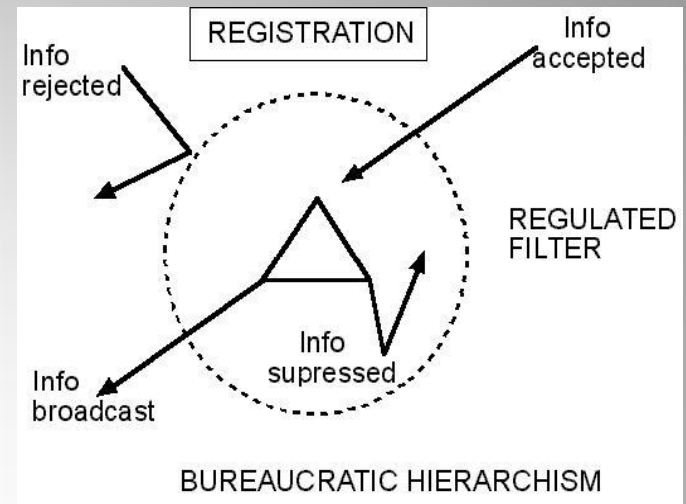
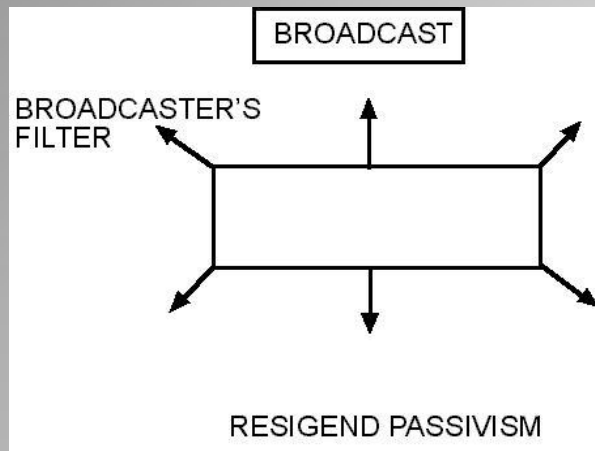
August 2008 Kosi Embankment Breach

# Not Climate Change and Not a Flood? What??

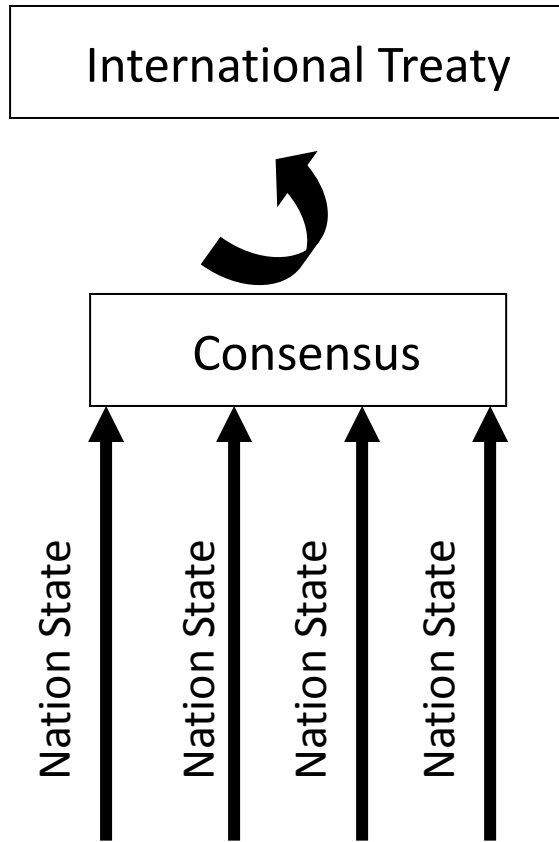
**Answer:** River only at 60% of average flow for that time of the year; 65 thousand displaced in Nepal; 3.5 million in Bihar, negligible loss of life, severe and long-term sand casting and farm loss; previously eight other similar breaches in Bihar unreported. Garden Variety Corruption, Faulty Treaty and Mismanagement



# Institutional Filters: Social Response to Information and Noise



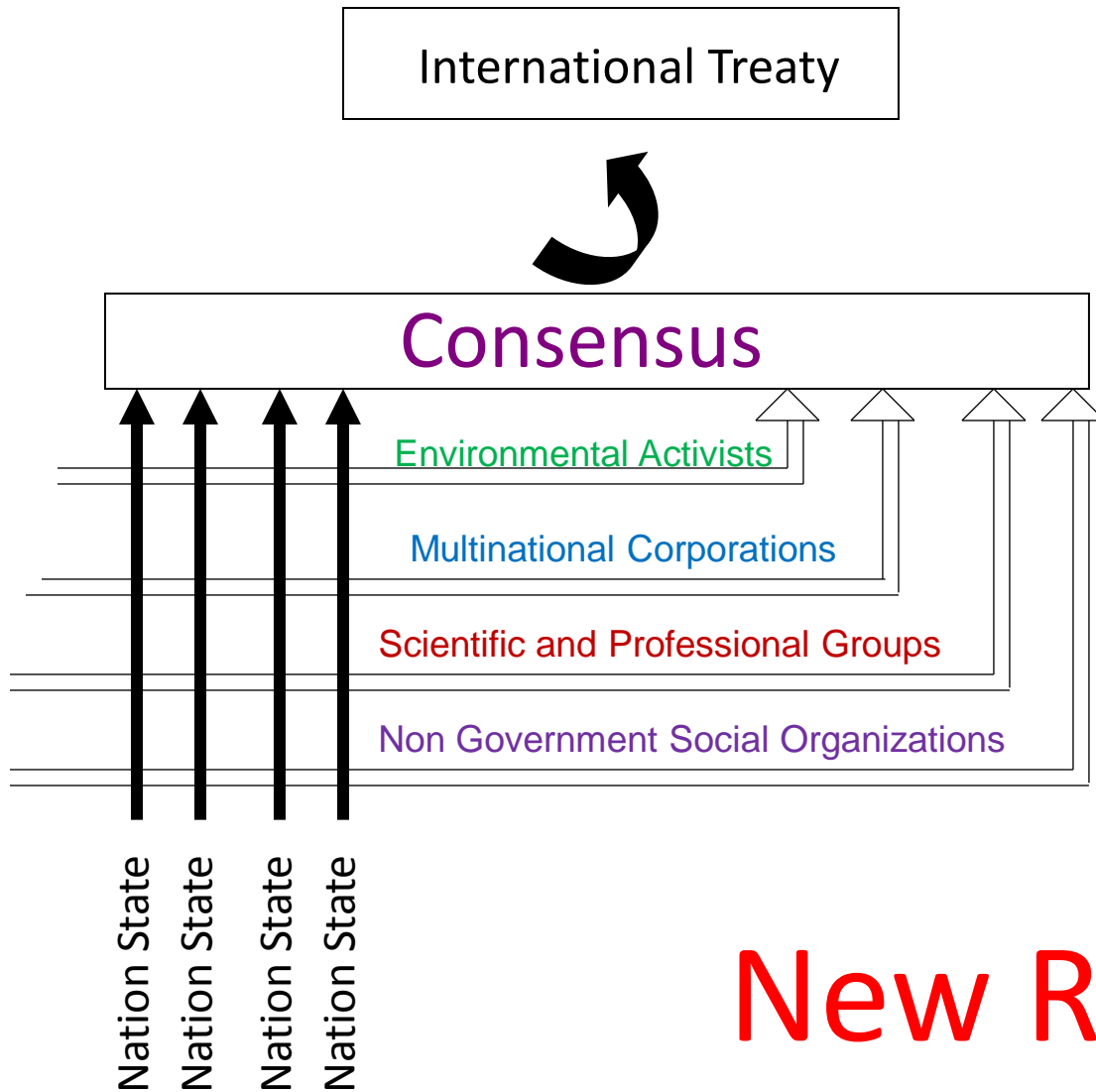
Gyawali, D., J.A. Allan et al., 2006. *EU-INCO water research from FP4 to FP6 (1994-2006) – a critical review*. Luxembourg, Office for Official Publications of the European Communities.  
EU website <http://europa.eu.int/comm/research/water-initiative>



## Old Assumption

Based on S. Rayner and E. Malone 1998: *Social Science Insights in Climate Change*, in *Human Choice and Climate Change*, Pacific Northwest National Lab, Battelle Press, Ohio.





**New Reality**

# Coalescing Science, Poverty and Sustainable Resource Stewardship

- Water science, poverty, sustainability and development – they are all **wicked problems** in a dance of **entwined predicaments** that won't go away anytime soon
- They can be dealt with only by **uncomfortable knowledge** generated also from a missing “**toad's eye view**”, where
  - ✓ **sustainability** is seen **dynamically** and not statically;
  - ✓ **involuntary poverty** is not only relative but socially constructed and structurally maintained but is **coping through the informal economy** (which eagle-eye science has hitherto been blind to);
  - ✓ **development** has been **hijacked** to mean what the hegemons mean it to be; and water and development science have not shown more Popperian humility under conditions of growing natural (climate change) uncertainties and social vulnerabilities.
- A way out requires **rethinking development** and the concept of sustainability needs to be understood as a **clumsy process** of informal sector households define it over generations, and act accordingly (and not as per someone else's) MDG/SDG goals