

FRAMING WATER SCARCITY Reconciling Water Demand for Food Security

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Introduction

Worldwide efforts to address water scarcity has focused on water-centric demand and supply based options. This narrow understanding is a result of inadequate understanding of the interactive nature of socio-economic, ecological and institutional factors.

Aim of the Study

To understand the interactive nature of socio-economic, ecological and institutional factors, over a period, in framing water scarcity in a remote and fragile village Rajana, in the Indian Himalayas.

Methods – Focus group discussions, oral-history, semi-structure interviews, secondary documents and structured interviews. The information is collected and analysed in a Bayesian belief network to understand the inter-linkages and probability of their relation in framing water scarcity.

FINDINGS (Fig.1)

- 1.The Hamlet is being transformed from predominantly agrarian to market-oriented economy.
- 2.External public agencies introduce water-centric solutions - 'more crop and cash, per drop of water'.
- 3.Socially embedded organisation (caste) exploit these through 'elite capture' - land holding and social leadership.
- 4.In an market economy, the hamlet is vulnerable to competition from national and international market.
- 5.A Combination of these has led to 60% of households to perceive 'high' water scarcity in the hamlet.
- 6.This has given way to cash crops (for 20% of households who have > 2 acres of land, while the rest 80% are struggling to catch-up with the market demand, but unable to get good returns due to less landholding and social restriction in marketing their products.

Fig. 1 Variables Influencing Water Scarcity – Hamlet Rajana

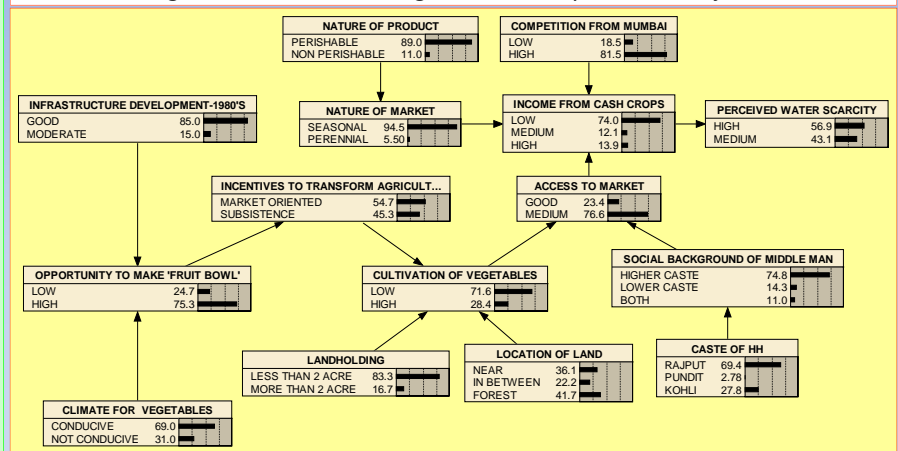
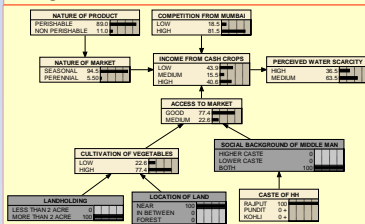


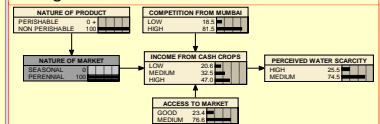
Fig. 2 POSSIBLE SOCIAL INTERVENTIONS



KEY FACTORS INFLUENCING WATER SCARCITY

1. **Socially embedded factors** – land holdings, location of land and background of the middlemen who facilitate access to market. These factors if intervened can reduce the perception of water scarcity in 'high' category to 40% (Fig. 2).
2. **Nature of market-** As the products marketed from the hamlet is highly seasonal, is likely to perish or lose its quality over a period. If these products are made perennial, through storage facility or processing industries, then the perceived water scarcity as 'high' will reduce to 25% (Fig.3).

Fig. 3 POSSIBLE MARKET INTERVENTION



IMPLICATION

1. Scarcity is created, not exclusively by state or market or community initiatives, rather by a combination of governance arrangements.
2. These institutional arrangements influence water scarcity incrementally and cumulatively over a period.
3. Application of multi-method and Bayesian network helped to understand the interactive nature of socio-economic, ecological and institutional factors.
4. All actors involved adopt 'fire-fighting' approach to address water scarcity by adopting various demand and supply-based water-centric options. Solution to the water scarcity in this hamlet requires interventions that modifies the socially-embedded and market factors.