

Ground water markets

- Ground water markets are very common in India
- Private
 - Water is sold on hourly basis
 - Water is sold on crop share basis
 - 1/3 for water, 1/3 for labour and 1/3 for the farmer



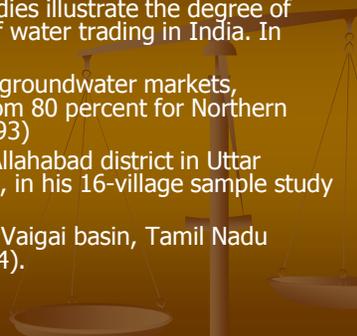
Informal water markets

Extent of water markets in India

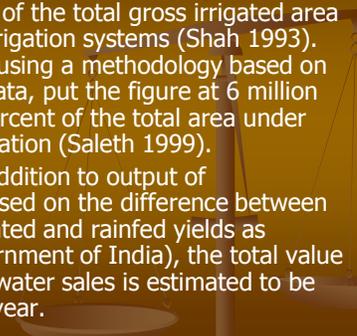
- Water markets that exist in India are informal and are generally limited to localised water trading between adjacent farmers, and the practice is quite common especially for groundwater.
- Although found in many parts of India, the occurrence of groundwater markets is not uniform. Water markets are widespread in Gujarat, Punjab, Uttar Pradesh, Tamil Nadu, Andhra Pradesh and West Bengal



- Several micro studies illustrate the degree of variation in use of water trading in India. In terms of area
- irrigated through groundwater markets, estimates vary from 80 percent for Northern Gujarat (Shah 1993)
- to 60 percent in Allahabad district in Uttar Pradesh (Shankar, in his 16-village sample study in 1992) to
- 30 percent in the Vaigai basin, Tamil Nadu (Janakarajan 1994).



- The area irrigated
- through water markets has been projected to be about 50 percent of the total gross irrigated area with private lift irrigation systems (Shah 1993). Other estimates, using a methodology based on pumpset rental data, put the figure at 6 million hectares or 15 percent of the total area under groundwater irrigation (Saleth 1999).
- Assuming a net addition to output of \$230/ha/year (based on the difference between the average irrigated and rainfed yields as reported by government of India), the total value of output due to water sales is estimated to be \$1.38 billion per year.



Nature and characteristics of informal water markets in India

- **Localised and fragmented.**
- **Mainly driven by surplus supply.**
- **Monopoly power.**
- **Influenced by social factors.**
- **Widely varying terms of payment.**
 - Cash payments are made on the basis of time, volume or area irrigated. Hourly price ranges between Rs 3 in West Godavari district of Andhra Pradesh to Rs 45 in Mehasana district of Gujarat (Shah 1993). Non-cash contracts, which typically take the form of sharecropping (i.e., seller collects a water rent in the form of a share of the buyer's output), are not uncommon¹⁰. They have been found to be incentive compatible (Aggarwal 1999).

Formal water markets in India

- The nature of informal markets is such that trading cannot be regulated. In contrast, since property rights are well defined in formal markets, trading can be regulated.
- Formal markets, based on an explicit water right system, can help potential investors and water companies gain secure long-term access to water, which is one of the important prerequisites to attract private investment into the water sector.

- legally well-defined and registered property rights reduce transaction costs involved in water trading. These costs include monitoring and enforcement costs, conveyance costs, and costs of designing contracts. Low transaction costs would encourage trade and thereby expand the scope of the market.
- in a formal water market regime small farmers and the poor will gain water rights, which would empower them, and can serve as additional collateral.
- Finally, informal markets generate neither any fiscal revenue for the government nor funds and incentives for investment in infrastructure.

Legal and institutional measures

- *Manage surface water on a river basin basis*
- *Clarify legal position on individual usufructuary rights for surface water*
- *Separate rights to groundwater from rights to land*
- *Establish limits for withdrawal of groundwater*
Broaden the market
- *Create conflict-resolving institutional arrangements*

Operational measures

- *Conduct an information campaign*
- *Initial allocation of rights*
- *Assignment of new rights*
- *Protecting rights of third party*
- *Protection against monopoly through taxes and regulations*
- *Protection against pollution and depletion*

Defining the Task

- Two key problems:
 - How to improve the service options available to consumers, including the poor?
 - How to empower the poor (in particular) to take advantage of these options?

There's no single "quick fix"

- Making progress requires attention to the full range of reform levers:
 - Market structure
 - Competition and free entry vs. exclusivity
 - Interconnection / bulk supply arrangements
 - Facilitating partnerships
 - Price regulation and price structure
 - Quality regulation
 - Subsidy arrangements

Market Structure

- Potential for competition and entry is constantly developing

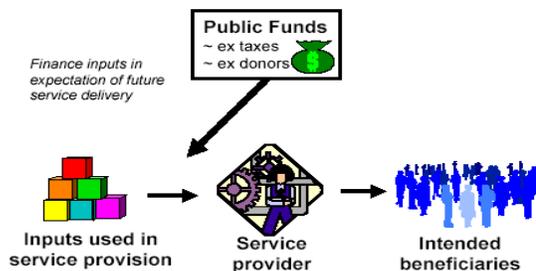
- business innovation, e.g.
 - Small-scale water and power providers

Price Regulation and Structure

- Price levels and price structure both matter for access:
 - Without long-term prospects for cost recovery, investment in system expansion is unlikely
 - Price structures are critical in determining who gets served

Fund flow- traditional

The Traditional approach



Problems with the Traditional Approach

- Poor targeting of development outcomes
- Poor accountability for results
- Public sector monopoly model provides weak incentives for efficiency
- Difficult to introduce competition
- Difficult to leverage private financing

An Alternative: Output-based subsidies

