

The Electricity-Groundwater Conundrum in India

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Outline

- I. Linkages between Groundwater and Electricity
- II. Second Look at the Conventional Wisdom: Four Propositions
- III. Possible Solutions
- IV. Way Forward

Electricity Groundwater Linkage

- Indian agriculture is groundwater dependent
 - 55-60% of agricultural land
 - 55-60% of population
 - 70-80% of production

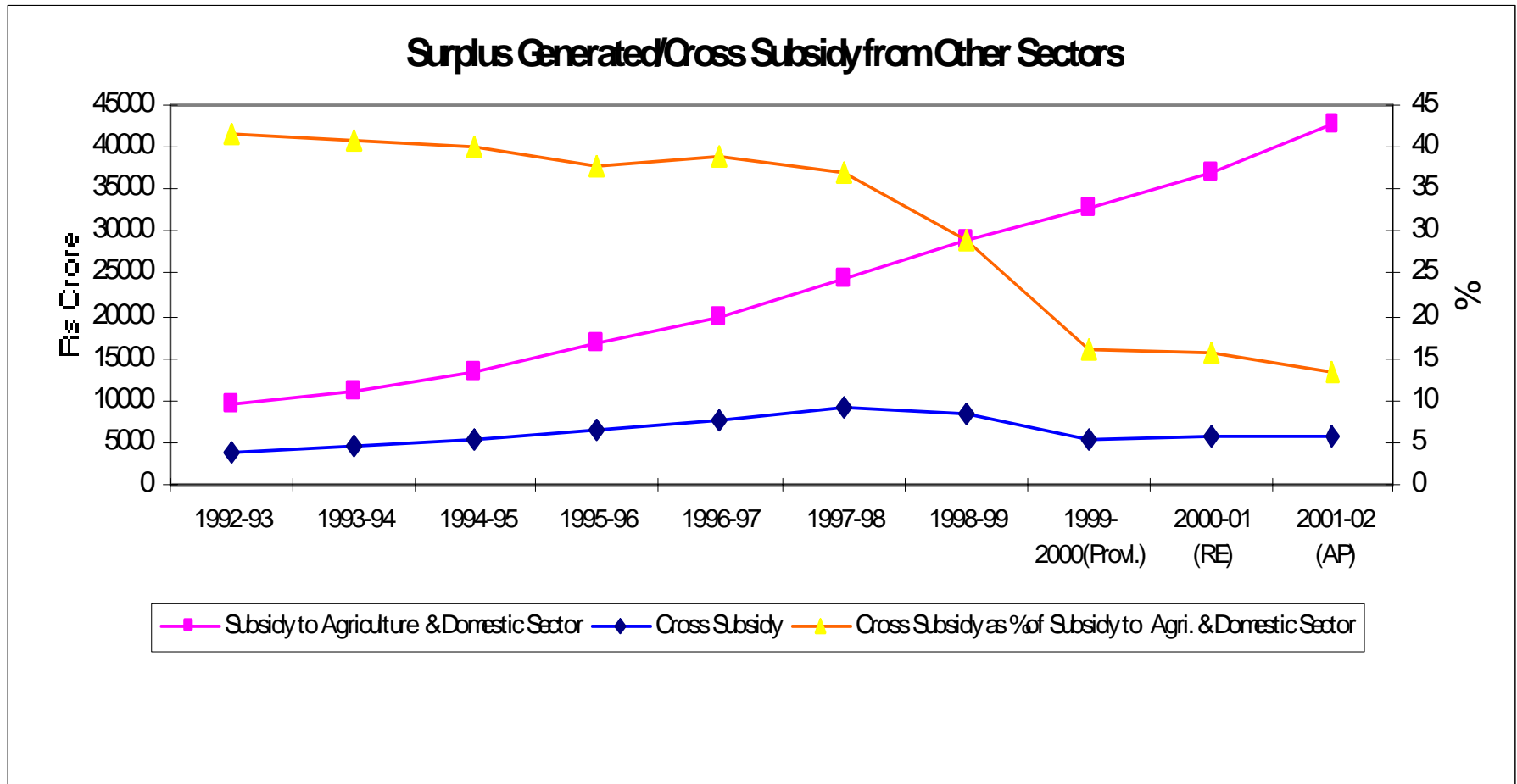
Electricity => Water Linkage

- Electricity has been essential for Green Revolution strategy of intensification
- Accelerating depletion: growing number of “dark” blocks
 - 5% increase annually in number of dark blocks mid 1980s to mid 1990s

Water => Electricity Linkage

- 25-33% of total electricity used for agriculture
- Agricultural populism has led to flat rate tariffs and free electricity
 - de-metering of the countryside
- De-metering has supported a culture of unaccountability
- Rising industrial cross subsidies to compensate for losses
- Diminishes enthusiasm for further rural electrification (70-80 mill households unelectrified)
- Farmer use is an obstacle to electricity reform

Industrial Cross Subsidies



Source: Annual Report on the Working of State Electricity Boards & Electricity Departments, Planning Commission (Power & Energy Division), Government of India, May 2002

Electricity-Groundwater Conundrum

- Free or cheap electricity leads to wasteful water use and groundwater depletion
- Dependence on electricity and track record of cheap electricity undermines health of the electricity sector
- Electricity-water nexus drains public budget
- Despite lose-lose-lose the situation persists

Conventional Wisdom

- Farmers are the root cause of electricity-related financial problems
- Farmers are misguided in demanding continuing subsidies
- Subsidies are unequally distributed so small farmers should oppose them
- Strong and principled politics are necessary to resist farmer pressure

Second Look at Farmers and Finances

- 24,000 cr subsidy in 2001-02 = 23% of states' gross fiscal deficit
- But lack of meters enables manipulation of consumption
- Surveys by electricity regulators show farmer consumption is grossly overestimated
 - Karnataka: ag. = 26% not 37%
 - Maharashtra: 23% overestimate of number of pumpsets
 - Haryana: 35% lower than estimates

Link between Farmers and Finances is Overstated

- More accurate loss (theft) estimates
 - Karnataka: From 19% to 32%
 - Maharashtra: 18% to 32%
 - AP: 19% to 35%
 - UP: 27% to 42%
- Circumstantial evidence: Growth in ag. consumption > growth in load while hours of supply have decreased
- Sum: Farmer contribution to problem of finances has been overstated. Theft by non-farmers is as big a problem

Misguided Farmers?

- Low level equilibrium: Low tariffs => electricity crisis => poor service and rationing => farmer refusal to pay
- But how to transition to a high level equilibrium of high tariff-high service?
- Farmers asked to accept higher tariffs now against a promise of better service later

Misguided Farmers?

The Economics

- Example from Haryana (World Bank)
 - Tariff = 8% of gross farm income
 - Add motor/pump maintenance = 15%
 - Add fixed cost = 25% (15%-38%)
- Example from AP (Dossani and Ranganathan)
 - Pump burn-out adds 78% to cost
 - Rostering leads to additional 15% use of power

Misguided Farmers or Realists?

- Real cost of poor electricity is far higher than the tariff alone
 - Cost is greater for small and marginal farmers = 64% of gross farm income in AP
 - Water share of 50-67% of crop is common
- Tariff increases without quality improvements will impose real costs on farmers
- Farmers are being hard-headed realists

Unfair Subsidies?

- Maharashtra (Sant and Dixit)
 - 79% farmers receive no subsidy
 - 2% landholding receive 19% of subsidy
- Karnataka (Howes and Murgai)
 - Medium/large farmers own 11% land but get 80% of subsidy
 - Large farmers get 10 times the equivalent of an equal distribution of the subsidy among the pop
- Flat rate reinforces problematic cropping patterns

Does Unfair = Unpopular?

- Absolute subsidy matters more than relative subsidy
 - AP: subsidy = 45-130% farmer income
- Spill-over benefits to labour through multi-cropping and use of marginal land (Shah)
- Subsidies passed through to water buyers in form of lower water price
- Solidarity of shared experience: Bharat vs. India

Strong Politics or Better Politics?

- Resisting electricity subsidies are equated with “political will”
- Populism or democracy at work?
- 2004 election cemented *perception* that politicians ignore electricity subsidies to farmers at their peril

Solution 1: Text-book Economics

- Reintroduce metering and hike tariff to cost of supply
 - Clear signal on scarcity value of water
 - High level equilibrium of high prices and better service
- Ignores political context
 - electricity as social policy, not commodity
 - Tool of political populism
 - Opportunity for rent-seeking and corruption
- No transition plan

Solution 2: Rational Flat Tariff

- Meters are costly and a source of harassment for farmers
- Flat tariff with intelligent supply management meets multiple objectives
 - Supply control limits overdraft
 - Rising flat tariffs address fiscal problems
 - Ensuring water at peak season limits political fallout

Flat Tariff: Band-aid at Best

- Metering has been successfully used in other similar contexts e.g. Bangladesh
- Strong economic case for each additional unit of water to be priced
- Administrative costs of “rational” flat tariff very high and scope for graft
- Administration particularly difficult in dynamic context of changing patterns

Solution 3: Contain Problem and Chip Away

- Accept but limit subsidy
 - Set aside low cost generation plants for farmers (Sankar)
 - Credible and no burden on SEB finances
 - Not open ended
- Focus on end use efficiency of pumps
- Creative micro experiments
 - Electricity feeder franchisee
 - Decentralized bill collection
 - Voluntary consumption restrictions for better quality

Way Forward I

Deepen Understanding of Farmers Views

- There may be a legitimate case for continued farmer subsidies
- Considerable theft occurs under the name of farmer subsidies
- Rural economy as a whole benefits, though rich farmers benefit more
- Low quality power is also cheaper power; subsidies are over-estimated
- Credible commitment to better service should precede increased prices

Way Forward II

A Grand Bargain with Farmers?

- Credible subsidy commitment based on understanding of farmers perspectives
- Re-introduction of metering, backed by credible subsidy to remove farmer fears of steep price increases
- Investment in efficiency of pumpsets and water distribution networks
 - Possible 35% efficiency improvements
 - Time and effort savings for farmers

Way Forward III

Forging a Political Consensus

- Any bargain has to be reached through a political process
 - Consultation and participation by farmers, not driven by policy elites and experts
- “Multi-stakeholder dialogue between farmers, consumers, industry, with utilities, regulators, and government
 - Build trust and understand different perspectives
 - Identify cost and benefits to different groups
- State-level to capture variation

Conclusion

- Electricity and groundwater reform are linked in a complex nexus
- Conventional wisdom about the need to simply ban farmer subsidies miss the point
- Farmers are being rational in demanding improved service before increased tariff
- Electricity subsidies for farmers are a political problem and require a political solution