

Groundwater Governance and Sustainability in a Canal Irrigated Tract of Northwest India

Introduction

With over 5000 dams constructed in major rivers of the country, India is the third biggest dam-building nation in the world. However, the energy and enthusiasm shown in constructing structures are not visible to an equal measure in managing the command area of the dams. Lawless systems and faulty incentives have created several conflicts among head users and tailenders of the command area of canals, rendering unequal water distribution and unstable agriculture. A common response to the issues related to uneven availability of irrigation water and endemic conflicts is a shift in the mode of irrigation, from canal water to groundwater. This shift acts both as a conflict resolution mechanism and as a contributor to higher agricultural productivity by ensuring access to water on time for all users. Dispersed and personalised access to groundwater through borewells has stimulated the informal groundwater economy and induced rapid intensification of groundwater exploitation. No limits to groundwater extraction due to informal market poses externalities of economic uses.

Table 2 :Water rates from different sources

Canal Water Rate	Electricity Rate for pump owner	Electric Pump rental water rate	Diesel Rate	Diesel pump rental water rate
0 Rs per month	1500 Rs per month	60 Rs per hour	96.67 Rs per hour	100 Rs per hour

Methodology

We discuss an increasing reliance on groundwater despite farmers proximity to irrigation canals in the Ganga Canal command area of Western UP using a political economy framework. It highlights the impact of the emerging informal groundwater water market on the access of water by different types of users from different socio-economic, and political backgrounds based on field visits and surveys of a sample of farmers.



Table1:Groundwater Usage in Canal Command Area

Head Village		Tail Village	
38% (Diesel Pump)	8.3% (Electric Pump)	70% (Electric Pump)	2.3% (Diesel Pump)



Main Canal Branch



Excess Canal Water at Head Village



Tubewell usage at Tail Village

Conclusion

- Informal groundwater economy increased access to irrigation water for all farmers leading to food security.
- Exponential increase in groundwater extraction has led to falling groundwater levels and growing sustainability concerns.
- Informal groundwater economy based on the privately accessed common resource needs a strong governance framework.
- Need to re-imagine conjunctive use of surface and groundwater to satisfy social needs while respecting the ecosystem sustainability concerns.

Sharma, Laxmi. ⁽¹⁾, Vijayshankar, PS.⁽²⁾

(1). Shiv Nadar University, ls147@snu.edu.in

(2). Samaj Pragati Sahayog, p.vijayshankar@snu.edu.in