

Key Questions
The Resource Perspective
1.1 Resource Inventory: Understanding and documenting nature and characteristics of the aquifer, rainfall, rates of recharge; analyzing the behavior of the aquifer, and of linkages between surface and groundwater flows; analysis of sustainability of groundwater use and impacts on groundwater quality
1.2 Agriculture: History and current state of agriculture; cropping patterns, agricultural technology, and status of surface and groundwater irrigation. Analyze how pattern of agricultural evolution explains the current state of groundwater use in agriculture.
1.3 Groundwater Extraction: estimate number and types of groundwater structures; rate of increase; energy efficiency; discharge rates; water distribution methods and technologies in use;
1.4 Options for Demand Management and Supply Augmentation: what are the technical options for increasing usable groundwater supplies and their economics? What are the options for reducing groundwater demand—by crop change, micro-irrigation, agronomic practices, and other?
Groundwater Socio-ecology
2.1 Economics of Groundwater Use: what are the economics of groundwater irrigation? Estimation of productivity and economic impacts of groundwater irrigation. Estimating price elasticity of irrigation demand in various agro-economic conditions; Understanding how change in cropping pattern and input-output price ratio affect groundwater use; Who benefits from groundwater irrigation; how can groundwater be made more accessible to landless, tenants and women
2.2 Groundwater Irrigation, gender and livelihood: understanding how groundwater irrigation affects livelihoods and farm incomes. Who has access to groundwater and at what costs? Impact of social structure on access to irrigation; How does groundwater help ensure household food and nutritional security? What are the gender roles and responsibilities on groundwater irrigation? Impact of groundwater irrigation on farm employment, out migration and power relation amongst different social groups.
2.3 Externalities of Groundwater Use: Estimation of positive and negative externalities of groundwater irrigation; social costs of groundwater depletion and quality deterioration and its differential impact on men and women of different age-groups, income classes and social groups..
2.4 Economics of Sustainability: Economic impacts of demand management; local and sub-basin level economics of augmenting groundwater supply; economics of conjunctive use.
Policy-Institutional Perspective
3.1 Hydro-institutional mapping: What are the various types of formal and informal groundwater institutions in different resource conditions? What are the effects of institutional arrangements on appropriation and use of groundwater? Analyses of 'missing institutions'. The native notion of groundwater ownership and use rights
3.2 Regulatory and Promotional Policies: what government policies and programs affect the groundwater economy of the region? What are the key formal institutions engaged in business of groundwater management, regulation and monitoring? What are their vision, mission and strategies? What is their outreach and effectiveness?
3.3 Indirect Stake-holders: which other organizations, have a stake in this economy? How does their working affect this economy, and its subsequent socio-ecological impacts? How can these participate in improved governance of the groundwater economy?
3.4 Lessons from Elsewhere: apply to your site the lessons from global case studies. What might work here and what might not? Why?