

Comparative Analysis of Groundwater Regulation Acts in Selected States in India

Learning and Insights

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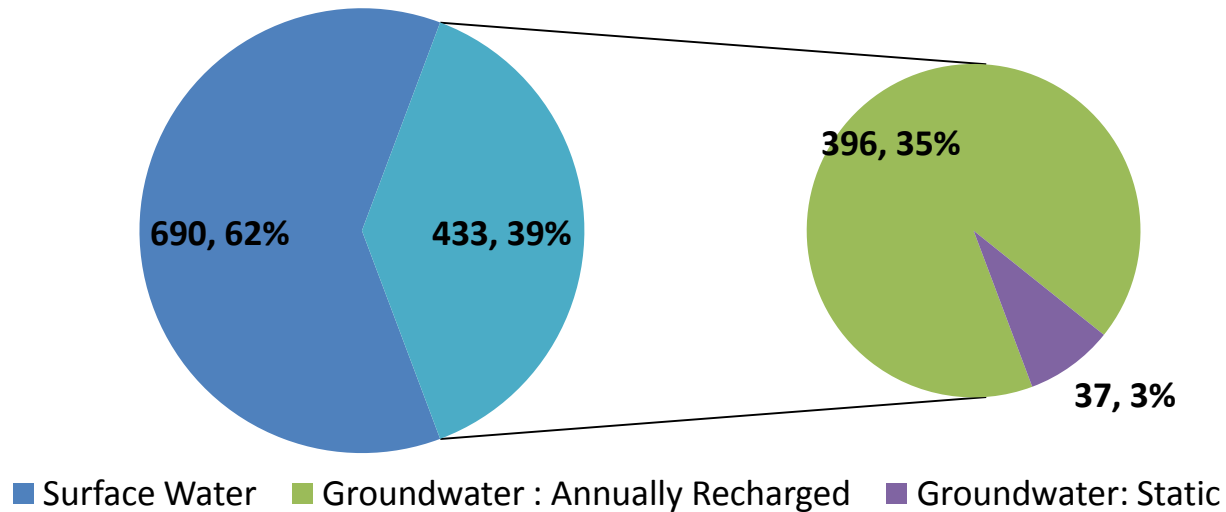
Objectives

The objectives of the study were

- To understand the ground water scenario and major groundwater issue at national as well state levels (for selected states)
- To Study the groundwater regulation Act for selected states from governance perspective.
- To compare and analyze the ground water regulations with the help of AHP

Groundwater as a Resource

Bifurcation of Available Utilizable Water Resources (BCM, %ge)



- Total Annual Precipitation(BCM) : 4000
- Annual Utilizable Surface Water : 690
- Annual Utilizable Groundwater : 433
 - Annually Recharged groundwater : 396
 - Estimated Use of groundwater: 230 (20% of total Utilizable Water)

Groundwater as a Resource

- **Vital Resource**

- Drinking needs of Rural as well as Urban population (80%)
- Livelihoods needs of large sections of population (60% or irrigated agriculture)
- Not easily renewable, Diversity in availability across India
- More Reliable than surface water

- **Why Critical**

- India is largest country in the groundwater use and its socio-economic conditions are different from other countries
- 85% demand of water is for irrigation, failure in surface flow irrigation
- Over use -> Over exploitation with vigorous increase in number of tube wells
- And no control over Over-exploitation

State of Groundwater Regulation

- Groundwater as state's subject – actual prescription for adoption of Model bill has been left to state governments
- So far, 11 states have enacted the Model bill while 18 other states are in process
- Interestingly states which are,
 - Major users of GW (Stage of GW development > 50%) – 6 states are not enacting bill
 - Moderately exploited (25-50%) states are enacting bill (8states out of 14)
 - Less exploited (<25%) have rejected to enact to the groundwater legislation on the basis of very low groundwater development

State of Groundwater Regulation

- Regulations are mainly about registration of users, restricting use, penalties and incentive etc – Demand side measures.
- Top down approach... Government enforces the regulations
- How to do it? What should be the alternate approach? To what extend villagers should own the GW resources? Who owns the GW?

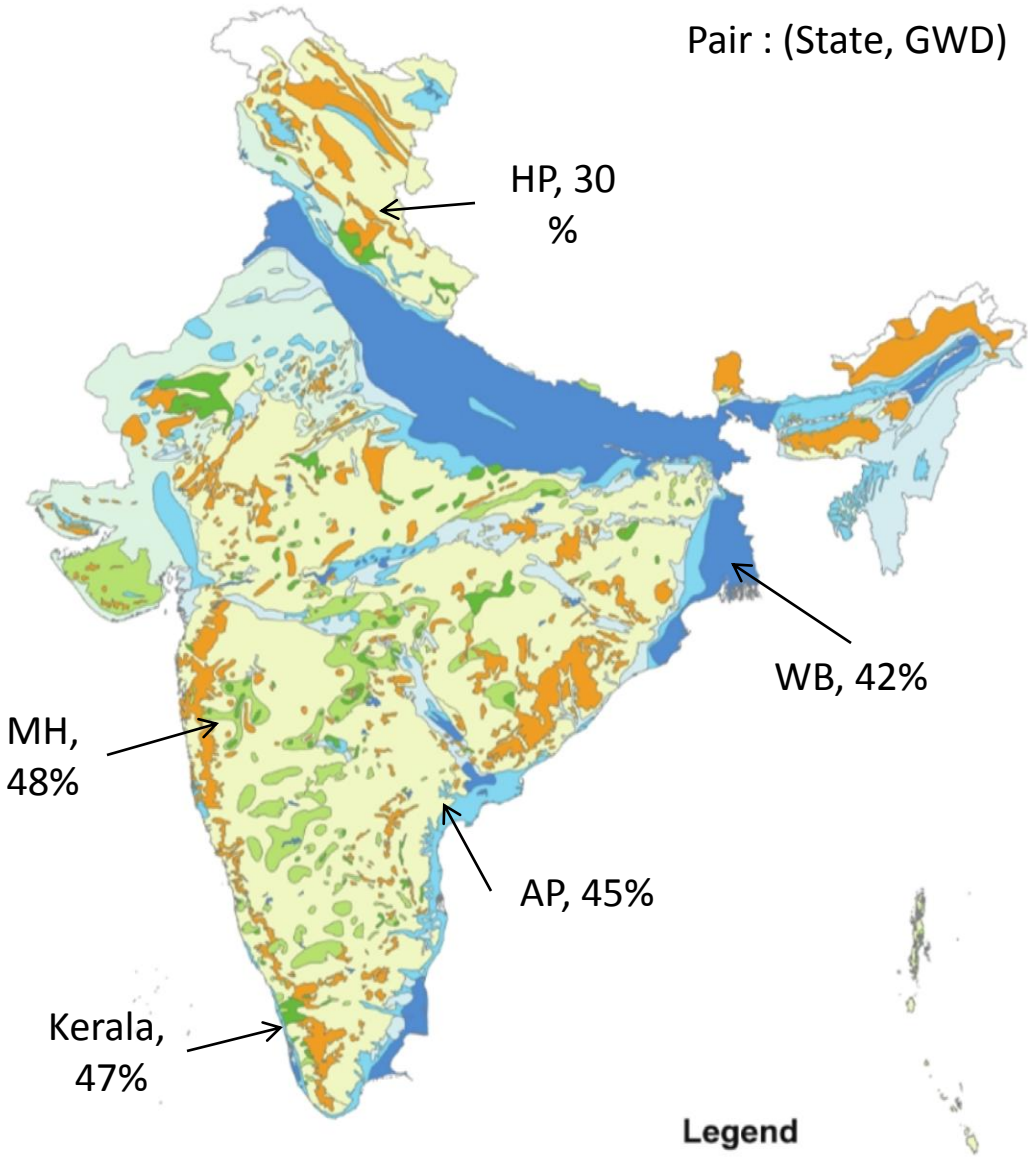
No Answers!
- No focus on capacity building of villagers

Groundwater Regulation

Broader Issues

- Unit Groundwater Management
- Land ownership – Groundwater Ownership
- Groundwater as a commodity
 - Drinking water as a right
 - For Other Uses – GW as a commodity
- Context Specificity
 - Natural environment
 - Human Induced Environment (Socio-economies)
- Demand Side and Supply side measures
- Paradigm shift in groundwater governance

Pair : (State, GWD)



Legend

Ground Water Potential (Yield Litres/sec)			
>40	25-40	10-25	<10

Unconsolidated Formations

Consolidated /Semi-Consolidated Formations

Hilly Areas

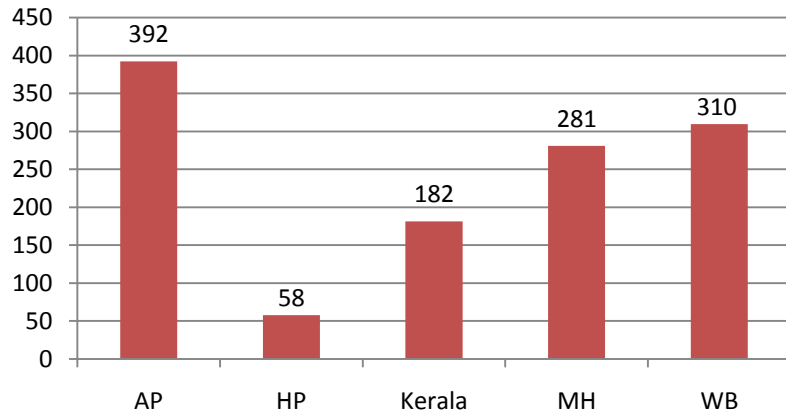
Hydro-geological map of India (Source: CGWB)

Groundwater Profile of Selected States

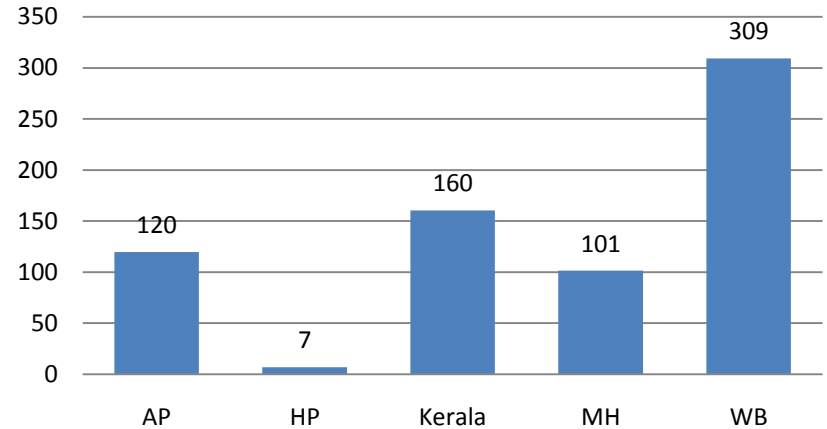
	Andhra Pradesh	Himachal Pradesh	Kerala	Maharashtra	West Bengal
Hydro-geological Formation	85% Consolidate formation of Basalt	Mainly Hilly terrain, with small portions in valley are alluvium	Major part is Crystalline formation, Alluvium Plains, Coastal area	85% Consolidated formation of Basalt	2/3 part is covered by unconsolidated formation and western part is by consolidate
GWD (%)	45	30	47	48	42
Major Issue	<ul style="list-style-type: none"> •Irrigation •Industries •Diversity in GW availability 	<ul style="list-style-type: none"> • Increasing Industrialization • supply side 	<ul style="list-style-type: none"> • Deteriorating environmental systems • Water quality 	<ul style="list-style-type: none"> • Irrigation • Industries • Low recharge rate 	<ul style="list-style-type: none"> • Water quality

Groundwater Profile of States

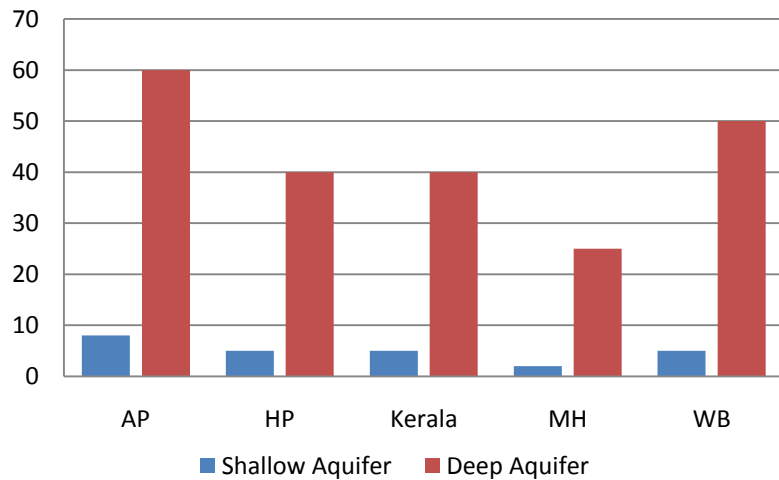
1 . Per Capita Net Groundwater Availability (thousand CM)



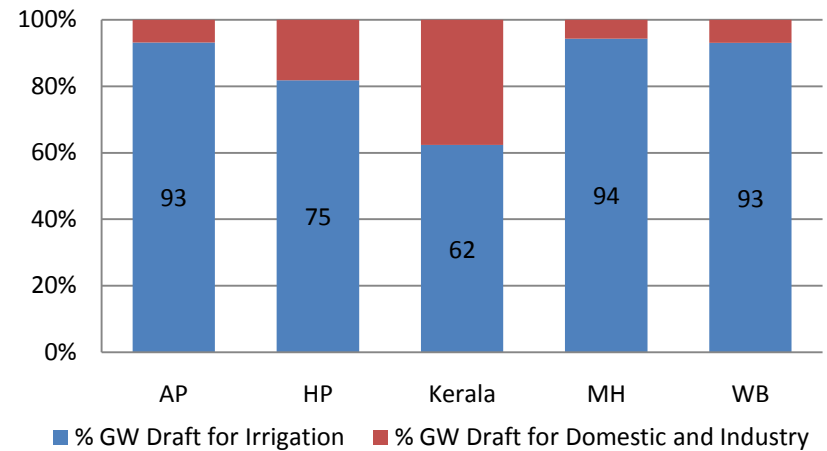
2. Net groundwater availability per Sq km area of state (thousand CM per sq.km)



3. Average Groundwater Yield (Ips)



4. Bifurcation of Use of Groundwater draft



Perspective

- A study which could lead to generate set of alternatives or choosing best policy alternatives for groundwater governance.
- Democratic governance
 - Participatory approach
 - Scope (Implementation, Planning, Decision making , Monitoring, Accountability)
 - Level of participation (Informing, Placation, Consultation, Delegation, Control)
 - Comprehensiveness of Apex authority over groundwater resources
- Context Sensitivity

List of Attributes

1 Clarity of Objectives

2 Clarity and Priority of Water Use

3 Coverage of Act

4 Comprehensive demand side measures

5 Appropriate Supply side measures

M2: Comprehensive Formation of Apex body

10 Level of Autonomy

11 Authorities to Apex Body

12 Mandatory function

13 Wide Range of Organization involved

14 Expertise from different organization

15 Democratic Formulation

16 Selection procedure of members

17 Achievable Transparency

M1: Context Sensitivity

6 Addressing the Major issue

7 Context Sensitivity of Priorities

8 Context Sensitivity of Supply side Measures

9 Context Sensitivity of Demand Side Measures

M3: Participatory Approach in governance

18 Level of participation of stakeholders in Institutional arrangement

19 Level of participation of stakeholders in supply side measures

20 Level of participation of stakeholders in demand side measures

21 Clarity in division of responsibilities and powers

22 Organizing local participation

23 Capacity Building of Stakeholders

Attributes - Priorities

A1 - Clarity of objective

A2 – Clarity and Priority of water uses

A3 – Coverage of Act

A8 – Comprehensive Demand Side

Measures

A7 – Appropriate Supply Side

Measures

M1 – Addressing Context Sensitivity in

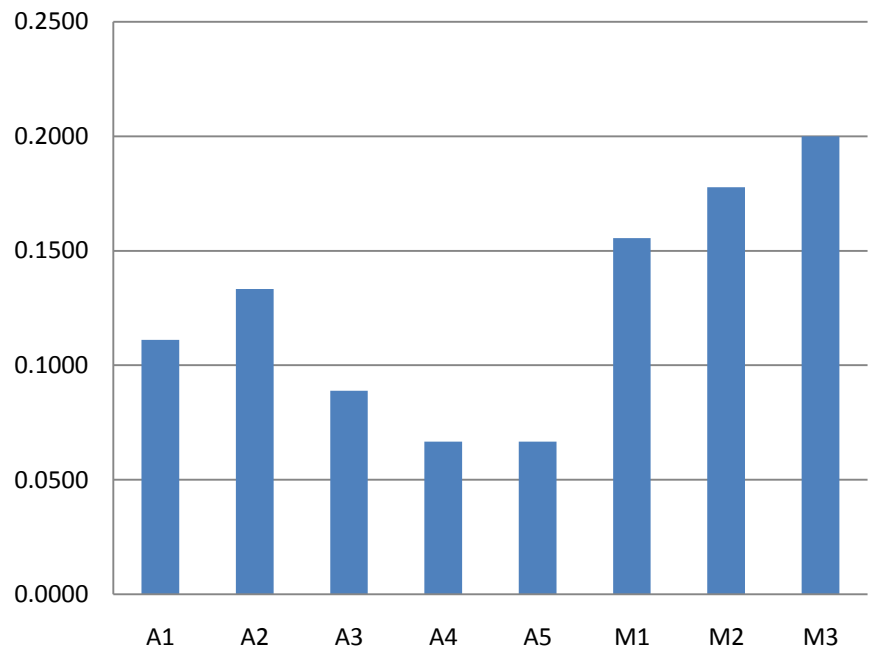
Act

M2 – Comprehensive formation of

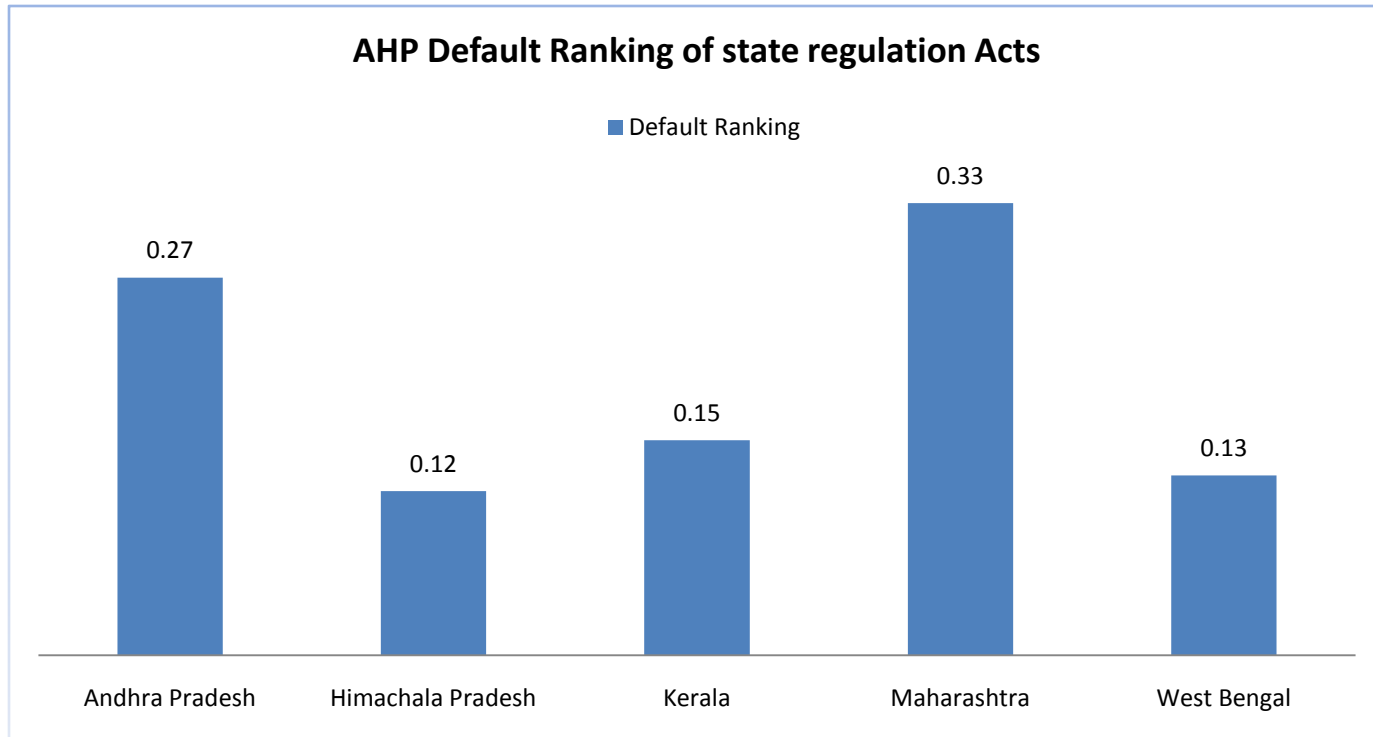
Apex Body

M3 – Participatory Approach

Normalized Priority Weights of Level-1 Attributes



AHP Results



Key Findings of Analysis

- Maharashtra state has adopted to current paradigm, participation of stakeholders with delegated powers at different level and integrated approach to address groundwater situation. MH groundwater bill 2009 is more comprehensive in following regards
 - Demand side as well as supply side measures
 - More community driven
 - Technological decisions are well thought. (e.g unit of management, technologies for supply side measures)
 - Capacity building
- Andhra Pradesh is also adopting to current paradigm shift of governance but still has not realized the need to address in current context. The main focus of AP is irrigation.
- Other states : They are still based on old framework or just a copy of Model Bill

2005

Conclusions

- Diversity: No single strategy is applicable across India
- Institutional arrangement to govern groundwater seems fragmented.
- Groundwater governance
 - State intervention was inevitable
 - Need for new intermediate approach
 - Decentralizing and Recognizing rights of PRI
 - Stakeholder participation at different level participation
- **How other technical Institutes are going to help to build capacity of communities?**

Conclusions

- Three shortcomings are
 - Still failure in implementation level in sphere of Political economy
 - Falsifying level of participation as it remains at micro-level unit only
 - Capacity building to empower to make decision and to overcome decision of state
- The ultimate democratic governance can be achieved if all the stakeholders are given representation in the different levels of groundwater authority, authority to take decisions can be delegated to local institutions and regardless of their representation in state or local level authority, they are empowered to overcome the state decision.
- Land-groundwater link continues to remain
- Water right, equity and citizens control over resources are not yet addressed.

Limitation and Future work

- **Limitation**
 - Governance aspect only in the interest of time
 - Legal interpretation of words
 - AHP is subjective
- **Future work**
 - Technical and economical aspects
 - Field level experience
 - Implementation feasibility
 - To give prescription for the suggestion for governance alternatives

Thank You...