

## Making the Horse Drink: Examining the Drivers of Large-scale Success of Community Groundwater Management in Andhra Pradesh

Sanjay Pahuja  
World Bank (South Asia Region)

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## Context: Particularities of GW use in India

- In volume and number of users, India is the largest gw user in the world
- 65% of irrigated area (85% of all area added since 1970) depends on groundwater
- 85% of rural and urban water supply schemes
- Environmental services: base-flows of rivers; wetlands, community water bodies

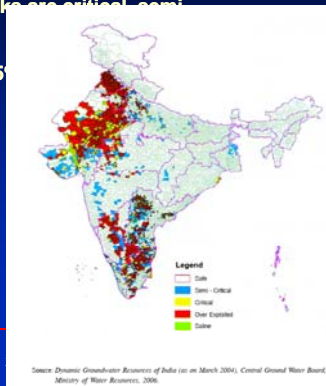
Intensive Use/Critical Dependence

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## Context: The “looming” crisis is now here

Nation-wide 28% of the blocks are critical, semi-critical or over-exploited

In some states as high as 75%



## Search for Pragmatic Solutions

### Regulation

- Large # of users (> 20 m wells)
- Weak enforcement / high transaction costs
- Indian and international experiences not v encouraging
- Appropriate if limited (e.g. overexploited urban blocks)

### Pricing/Tariffs and Tradable GW Property rights

- Transaction costs
- Indian settings v. different from where these have been successful

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## What can be done today?

Net value of outputs per acre (Rupees,  
current year prices)

| Hydrological unit/type of area       | Current year | Base Year | % change |
|--------------------------------------|--------------|-----------|----------|
| <b>Project areas: field crops</b>    |              |           |          |
| Chandrasagar                         | 16,838       | 8,987     | 87.35    |
| Mallapavagu                          | 9,884        | 5,835     | 69.39    |
| Nakillavagu                          | 13,339       | 6,301     | 111.72   |
| Narsireddypallyvagu                  | 11,208       | 8,378     | 33.78    |
| Erravagu                             | 7,042        | 5,317     | 32.43    |
| Peetheruvagu                         | 7,583        | 7,124     | 6.44     |
| Vajralavanka                         | 18,051       | 9,420     | 91.62    |
| <b>Nonproject areas: field crops</b> |              |           |          |
| Non-proj areas near Chandrasagar     | 4,348        | 6,415     | -32.22   |
| Non-proj areas near Mallapavagu      | 3,491        | 2,605     | 34.01    |
| Non-proj areas near Peetheruvagu     | 2,500        | 5,173     | -51.67   |

## The Puzzle from Mahboobnagar

Average annual rainfall ~400mm

No surface irrigation

Hard-rock aquifers with v. low water yields  
(1-3 lps or less)

Scale of agriculture unprecedented on  
such aquifers

Government programs provide 50% subsidy for  
drip and sprinkler irrigation systems

Average uptake ~ 30%

## CBGWWM – Experiences from project pilots

कर्म प्रेता येते वन पाणी कमी पडते तर ते कोठून घेऊन? त्यासाठी या पर्यटनमानाची सुसंगत पीक रचना निवाड्याची लागण. हे पाणी केवळ टॅन्कांच्या केवळच नव्हे तर नेहमी अजून वापरचे लागते. त्यासाठी शिबक आणि चुपार पद्धतीला प्राधान्य देणे आवश्यक आहे.

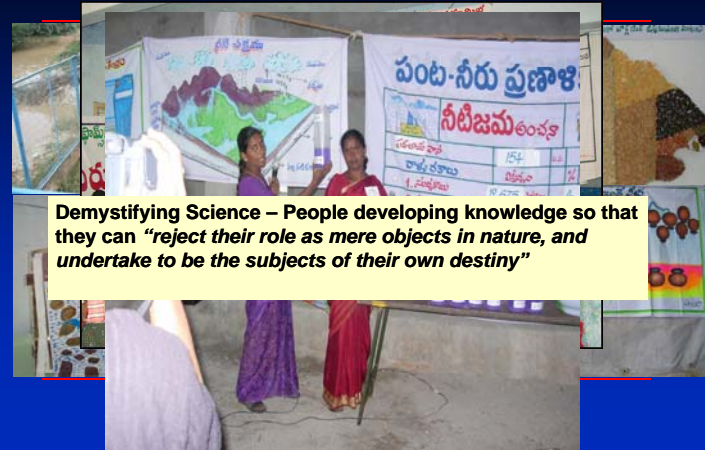
या अभ्यासात गांधार्या दक्षिण-पश्चिम विरोधात एका पाहून कलावाची विचारच करण्यात आलेली आहे.



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## Participatory Education – Non-formal Approach for Barely Literate Farmers



Demystifying Science – People developing knowledge so that they can “reject their role as mere objects in nature, and undertake to be the subjects of their own destiny”

## “Why would the farmers participate?”



## Crop planning based on water balance

| Survey No | Farmer Name    | Wheat | Maize | Soybean | Groundnut | Watermelon | Other |
|-----------|----------------|-------|-------|---------|-----------|------------|-------|
| 125/A     | [Farmer Photo] | 2     | 1     | 0       | 2         | 2          | 2     |
| 582/R     | [Farmer Photo] | 3     | 0     | 3       | 0         | 3          | 3     |
| 126/D     | [Farmer Photo] | 0.5   | 0     | 0.5     | 5         | 0.5        | 0     |
| 128/1E    | [Farmer Photo] | 1     | 1     | 1       | 1         | 1          | 1     |
| 126/8/E   | [Farmer Photo] | 3     | 1     | 0       | 3         | 1          | 3     |
| 126/E     | [Farmer Photo] | 0.5   | 0.5   | 0       | 0.5       | 0          | 0     |
| 129/P     | [Farmer Photo] | 2     | 2     | 2       | 2         | 2          | 2     |
| 126/Q     | [Farmer Photo] | 3     | 3     | 3       | 0         | 3          | 3     |
| 128/E     | [Farmer Photo] | 5     | 1.5   | 1.5     | 1.5       | 0          | 1.5   |
| 185/N     | [Farmer Photo] | 5     | 0     | 7       | 5         | 0          | 5     |
| 586       | [Farmer Photo] | 1     | 0     | 1       | 2         | 1          | 2     |

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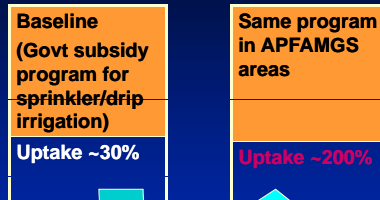
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## The Puzzle from Mahboobnagar (Uptake of subsidy program)



## CBGWM: Collective Action on Common Property Resources (CPR)

### Crucial Resource Characteristics:

- ◆ Feasible Improvement
- ◆ Indicators
- ◆ Predictability
- ◆ Spatial Extent

### Crucial User Characteristics:

- ◆ Salience
- ◆ Common Understanding
- ◆ Trust and Reciprocity
- ◆ Autonomy
- ◆ Prior experience and leadership

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## Questions:

### What is the primary need?

A “Pull Factor” at the grass-roots

Software (pedagogy and participatory outreach) is more important than subsidies or structures

### Are we prepared to do this, even partially?

Our budgets betray the answer (“No”, at this moment)

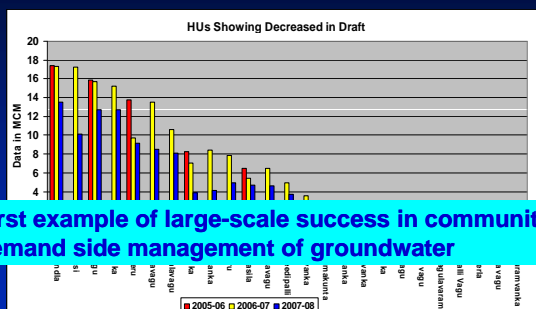
**Total Sanitation Campaign - example**

Thank you!

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## Achievements – Reducing Groundwater Draft



First example of large-scale success in community-led demand side management of groundwater

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