



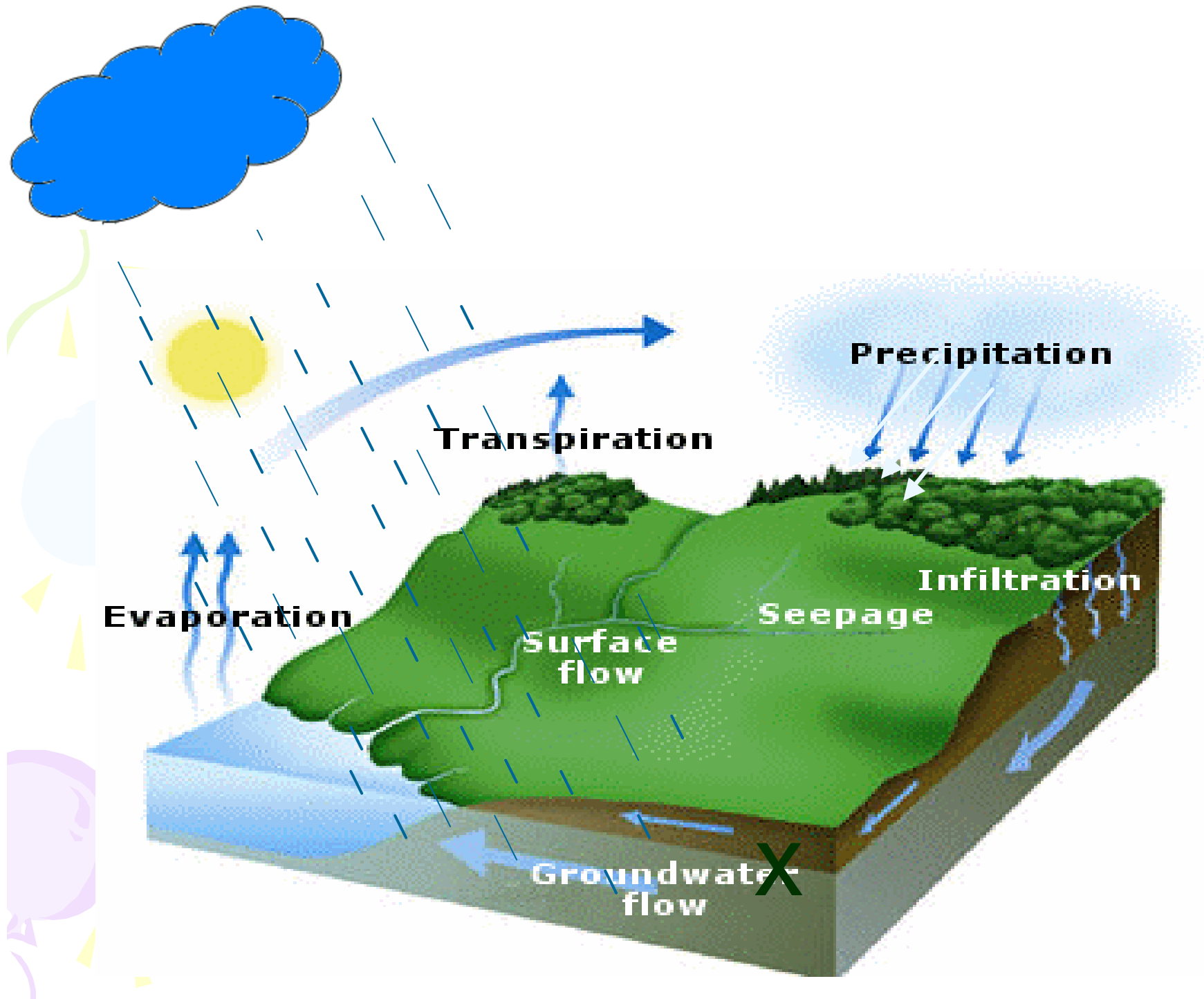
# Ground Water Management- some leads

Presented By:

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Centre for World Solidarity

**CE-WLP Member,**  
Focus area 1: Rules, regulations and systems for improved water resource management






# How we manage water?????

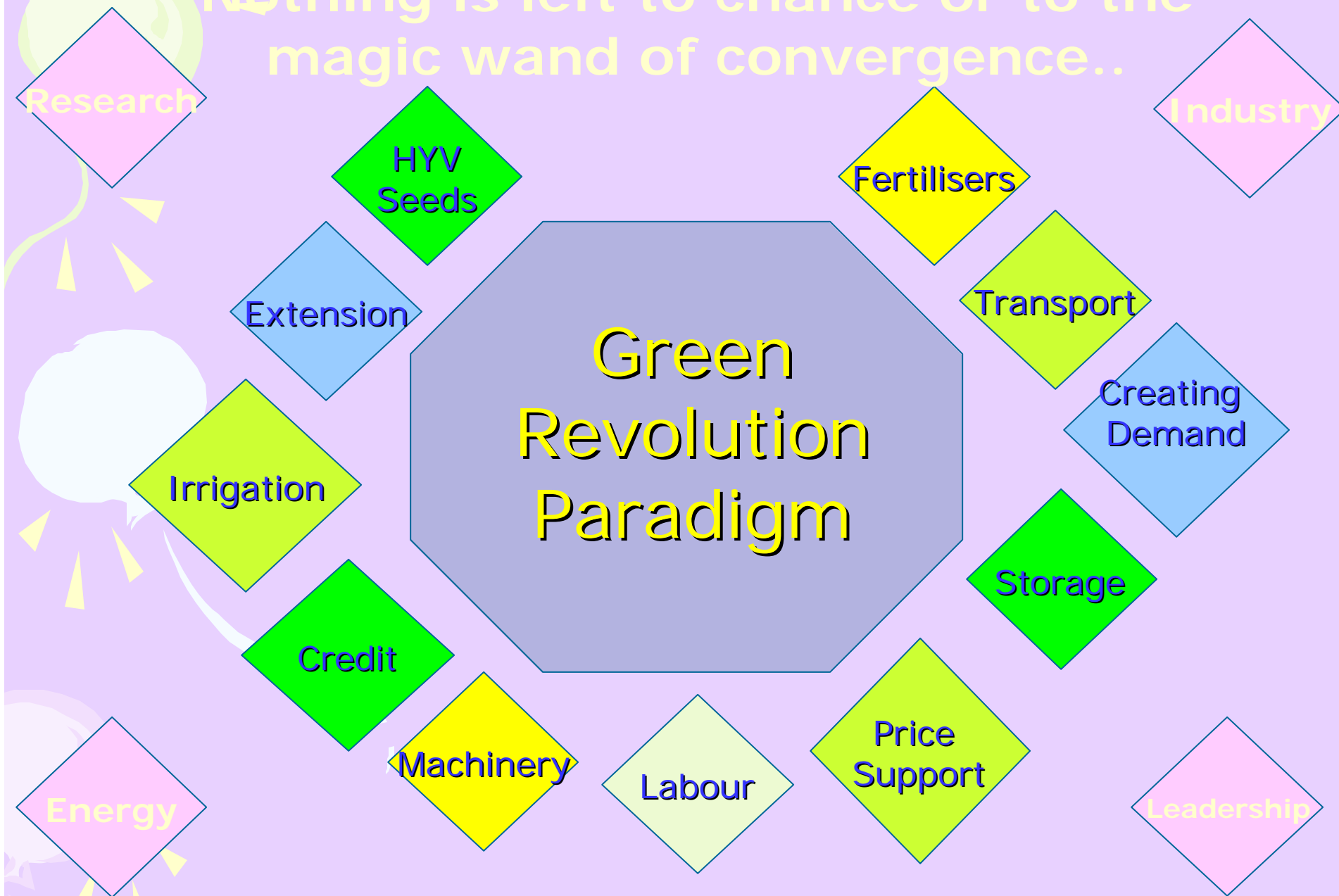
## Water for food

- 70-90% - the percentage of the developed freshwater supplies, the developing countries withdraw to – grow food
- 500 to 2000 lts – the amount of water required for a kilogram of grain;
- 10,000 litres – the amount of water required for one Kg of fed beef

## Water for livelihood

- 450 million – the number of people facing water shortages today
  - 1 in 3 – the predicted portion of the world's people whose livelihoods will be affected by water scarcity in 2025, if present trends continue
  - 75% - the portion of the 1.2 billion poor people in the world today who are dependant on agriculture as their primary source of income
- 

Nothing is left to chance or to the magic wand of convergence..



**Public support  
is only  
for those having  
Water!!**

Research

Seeds

Fertilisers

Industry

Extension

Transport

Creating  
Demand

Irrigation

Storage

Credit

Price  
Support

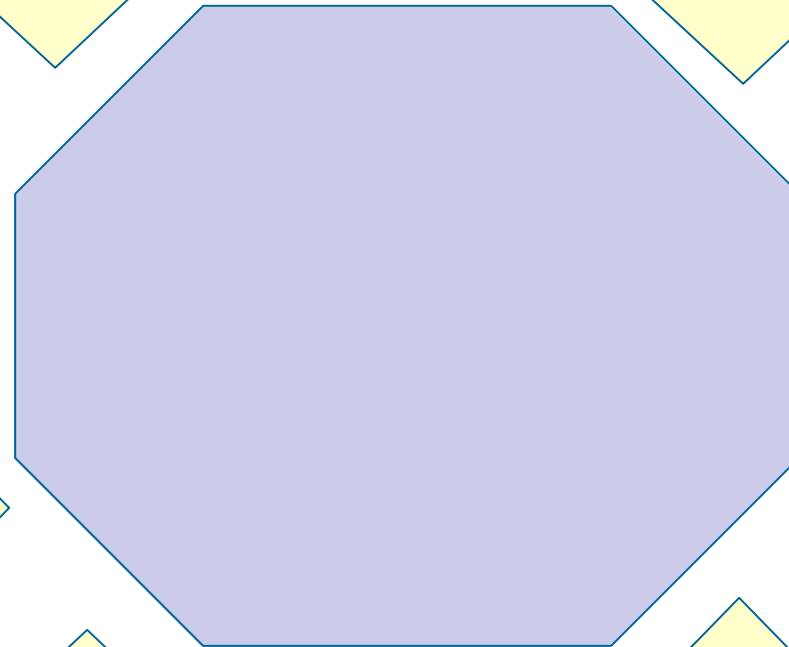
Machinery

Labour

Energy

Energy

# For A Rainfed Farmer?



Research

Seeds

Fertilisers

Industry

Extension

Transport

Creating Demand

Irrigation

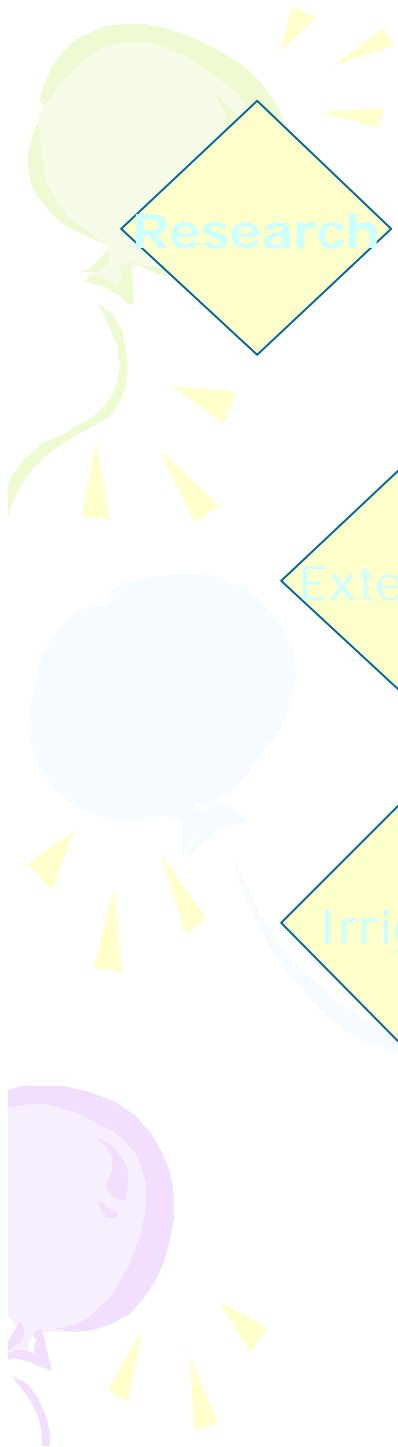
Storage

Machinery

Labour

Price Support

**What Public Policy Support is Available?**



# For A Rainfed Farmer?

If irrigation is available...  
policies/ public support  
comes to life!

Research

Seeds

Fertilisers

Industry

Extension

Transport

Creating  
Demand

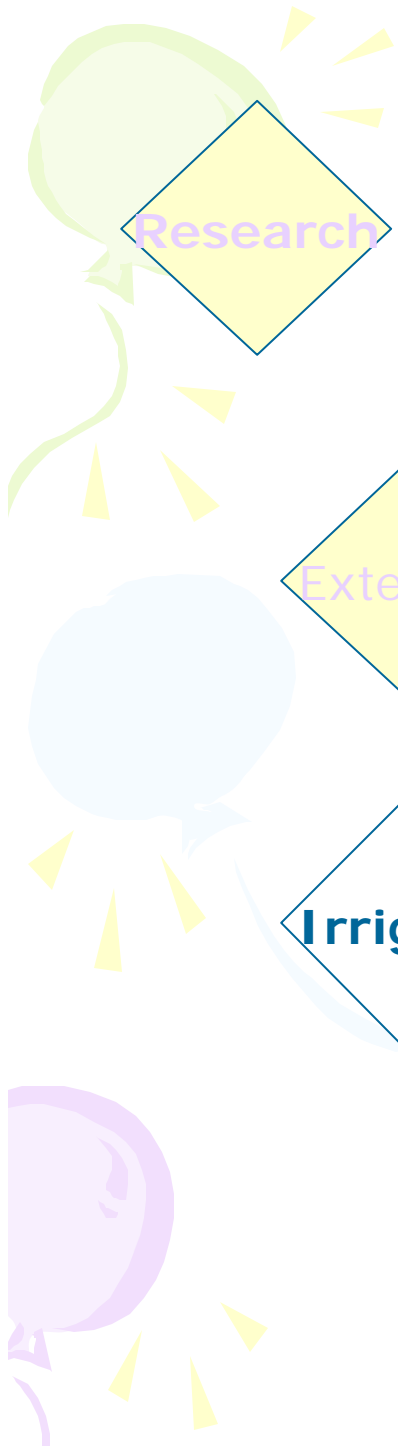
**Irrigation**


Storage

Machinery

Labour

Price Support



- 
- Studies indicate that access to irrigation is central to the impact of watershed interventions. (Kerret al., 1998 ; IIED .....)
  - Private investments in deep bore-wells matching the order of project investments on land treatment are commonly observed in watershed program (wassan)
  - Cultivation of water intensive crops like paddy and sugarcane in the dry lands with irrigation results in high levels of inefficiency in water use
  - Water budgeting with equity consideration is a crucial missing element in watershed planning (Tushar shah)



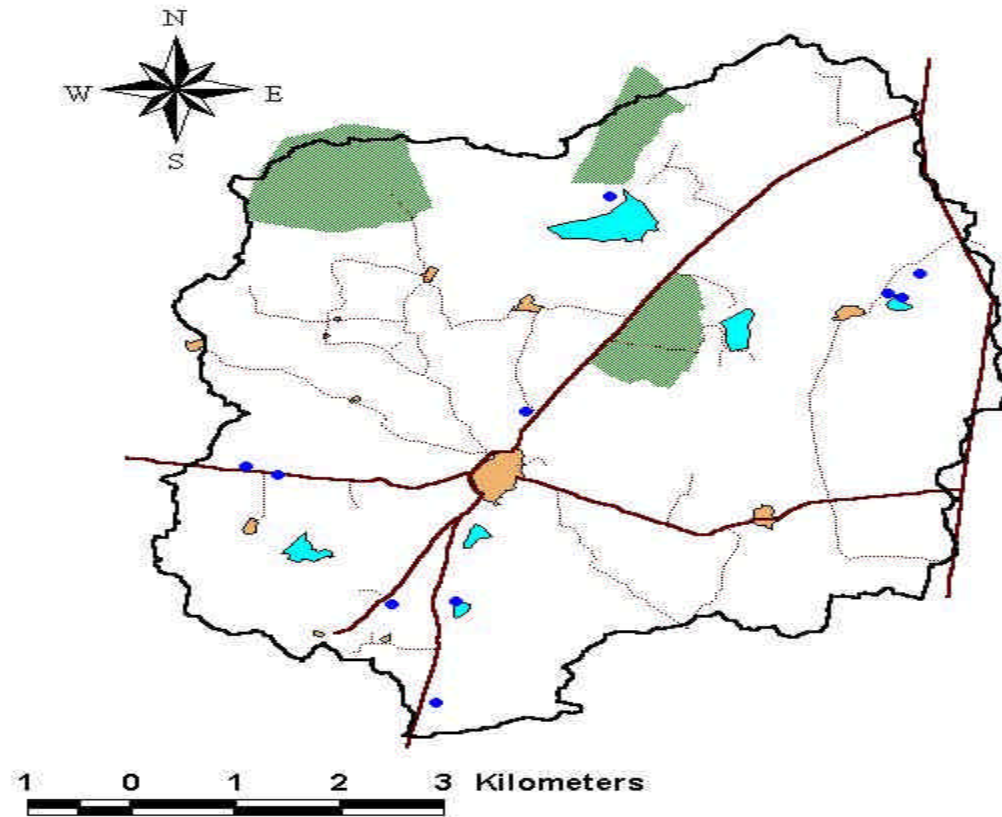
Rights on regenerated water –  
the equity perspectives

**We lost all open wells – even after the investments in watersheds**



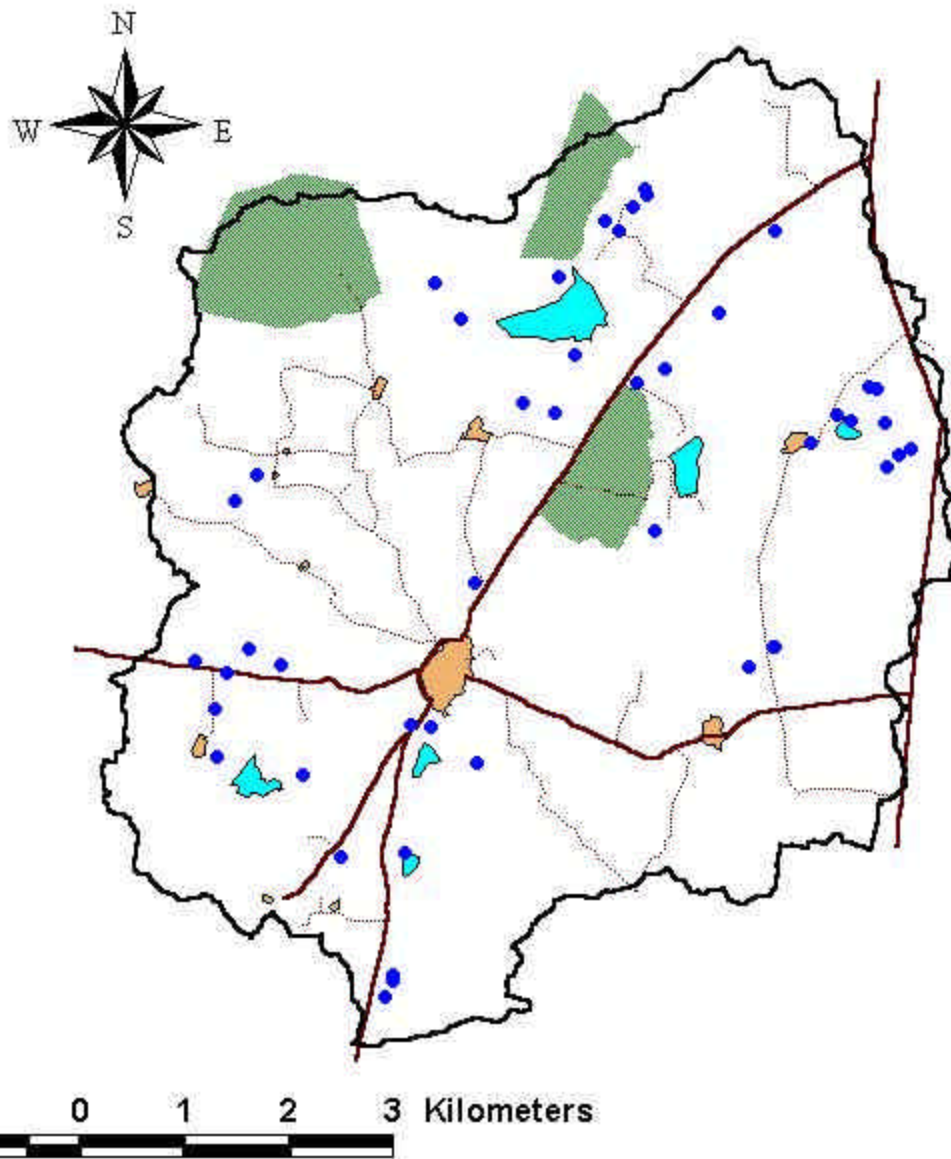
1985

Maheshwaram watershed – study  
organised by NGRI

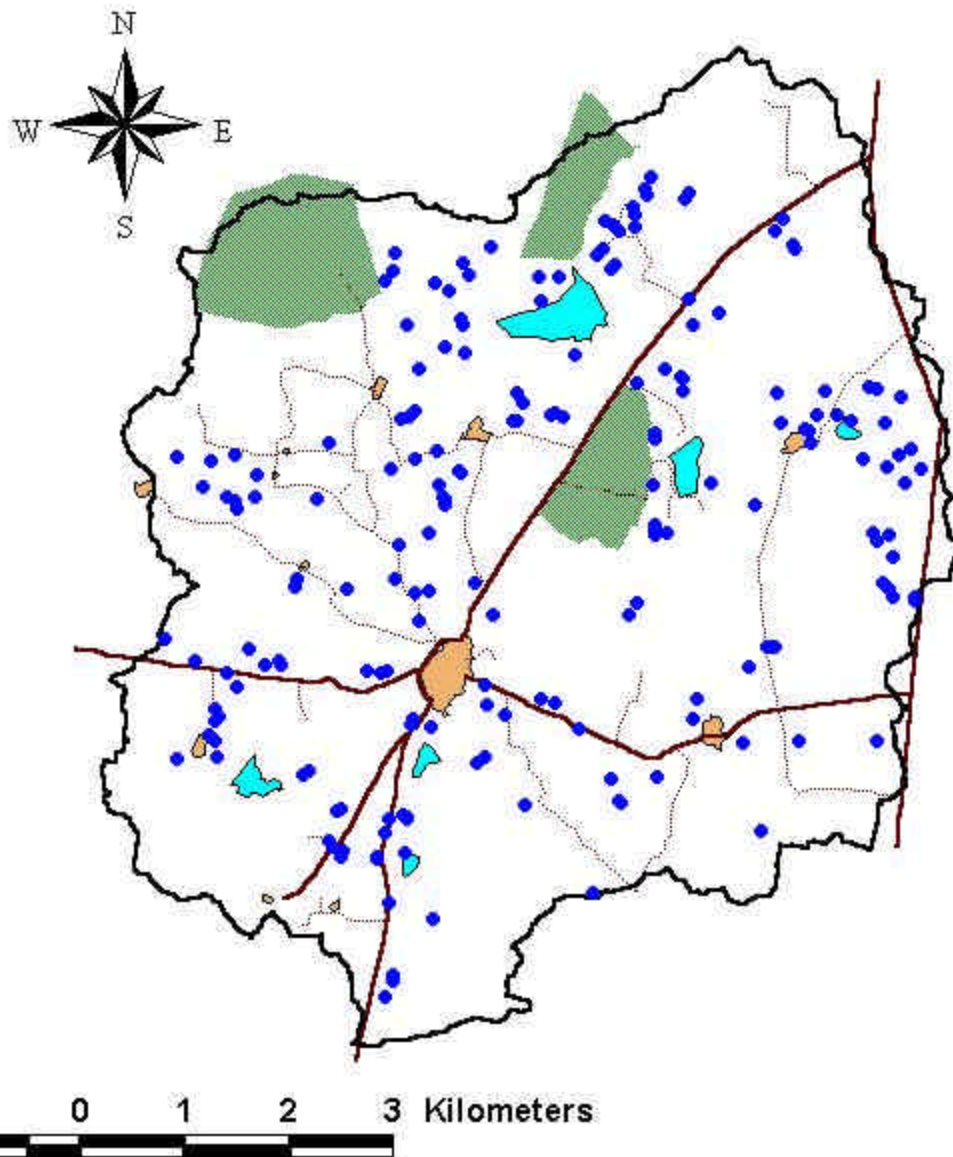


Courtesy : Dr. Shakeel Ahmed, NGRI

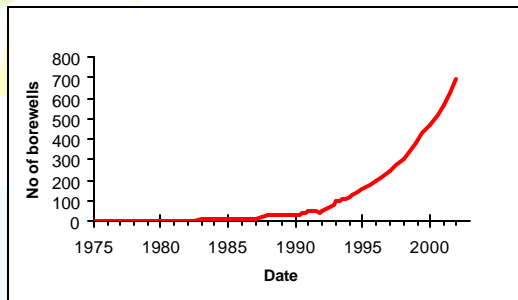
1990



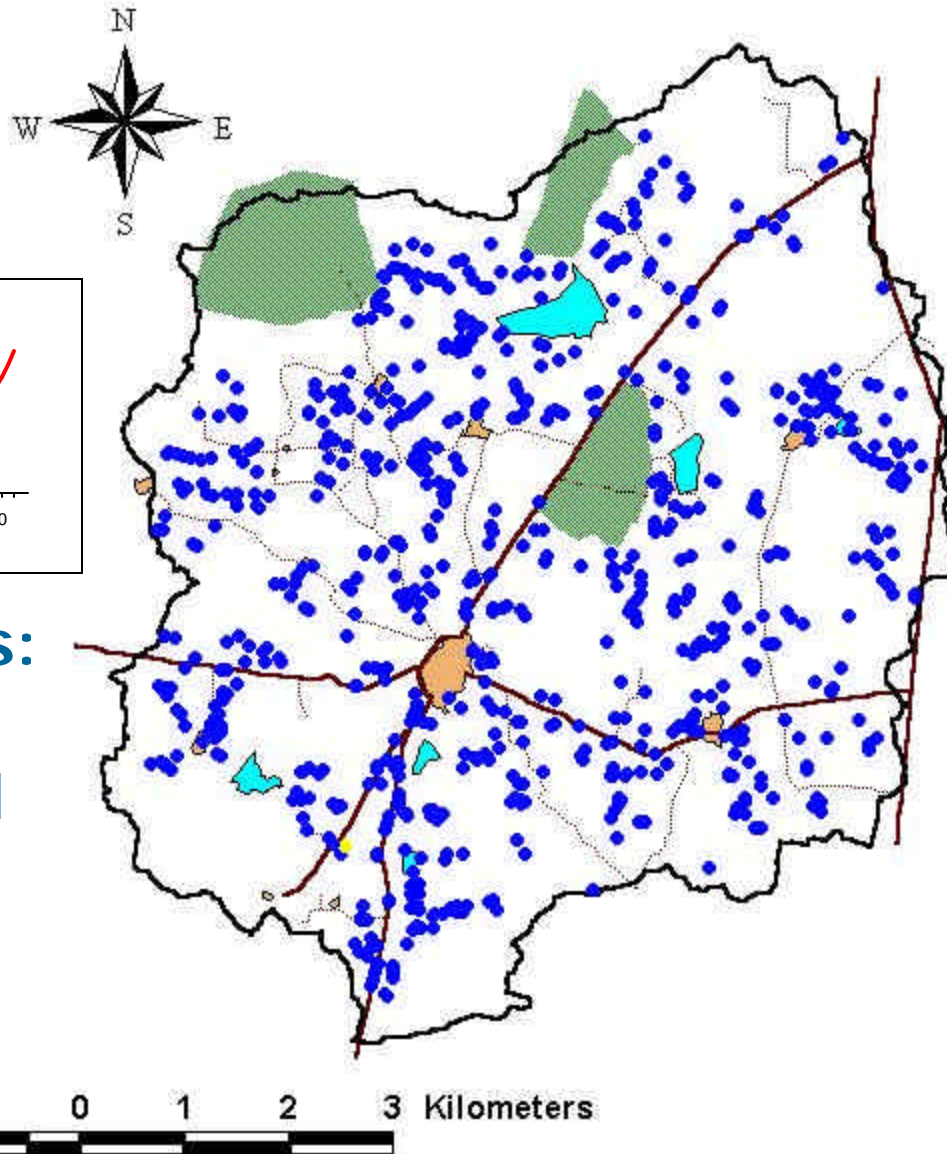
1995



2002



**929 borewells:**  
-707 in use  
-228 not used





**Drinking water**









The background features abstract, colorful swirls in shades of purple, green, and blue, interspersed with small yellow triangles. The text is centered on the page.

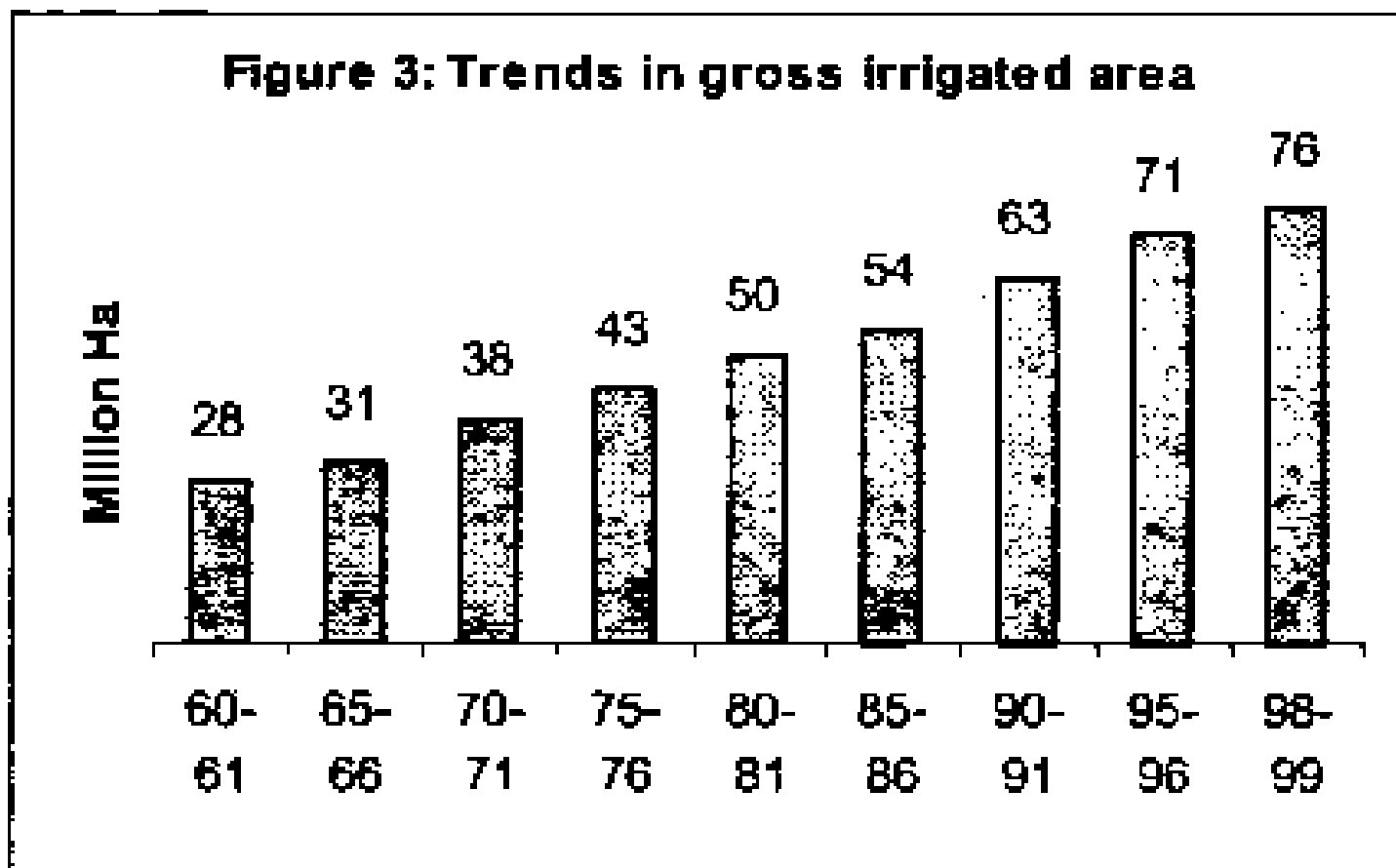
•85% of household needs in rural India are met from Groundwater

•**Could we assure basic minimum safe drinking water – irrespective of the droughts?**

# Irrigation



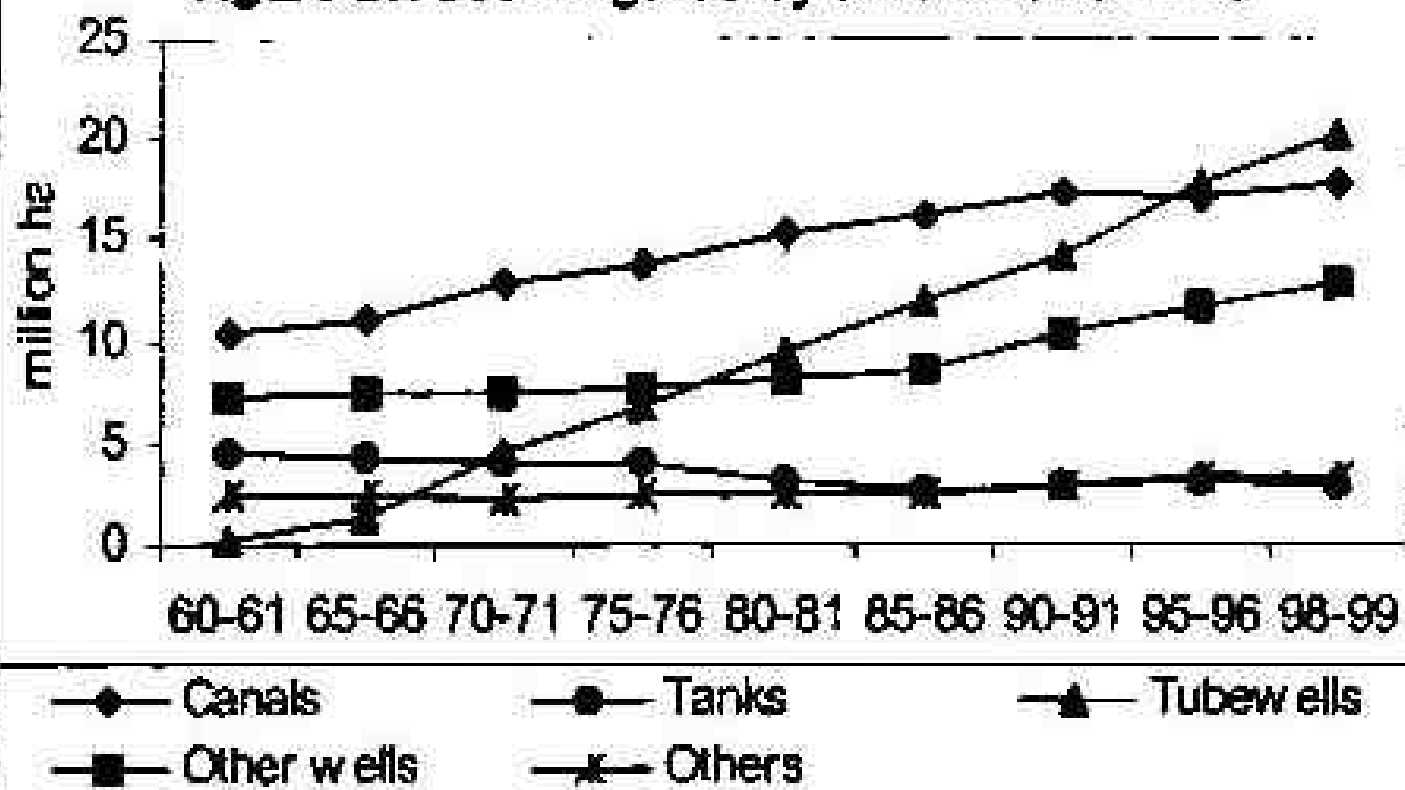
## Let us look at All India trends



Source: [www.agricoop.nic.in/statistics/sump2.htm](http://www.agricoop.nic.in/statistics/sump2.htm)

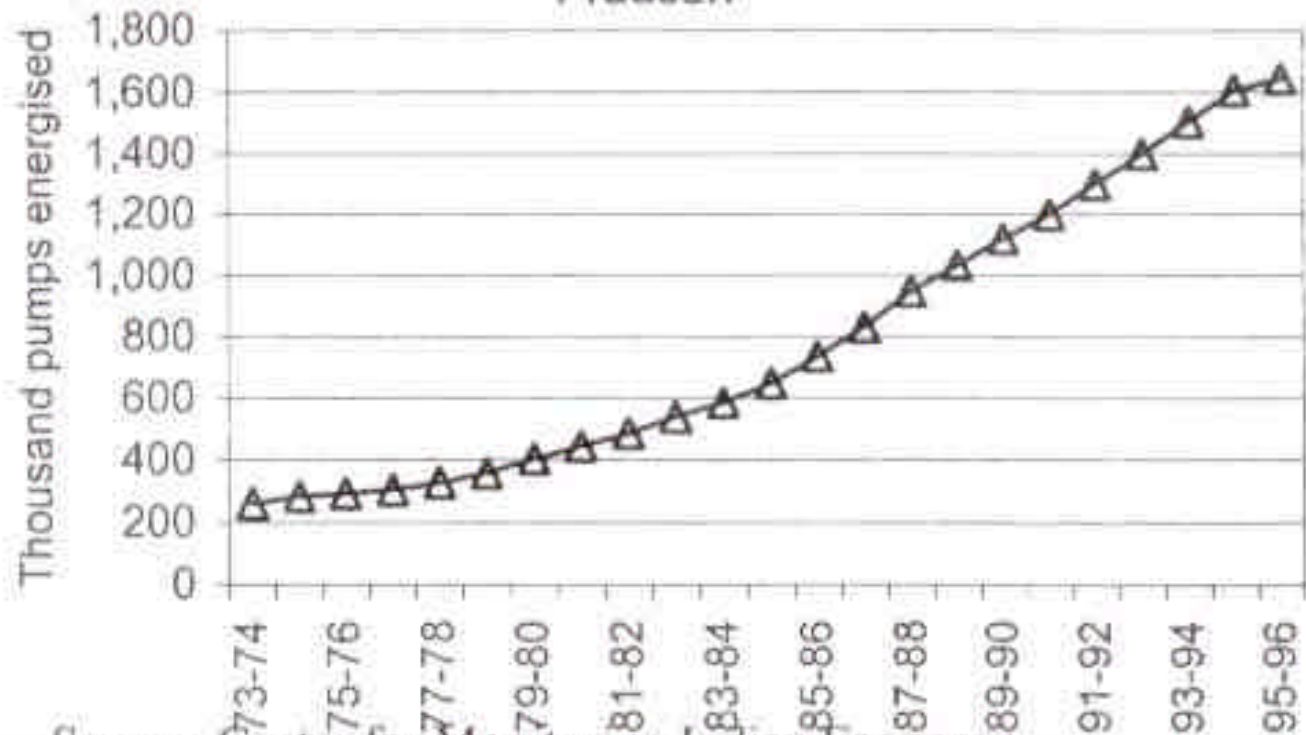
Compounded Annual growth Rate of irrigated area 2.2%

**Figure 2: Area Irrigated by different sources**



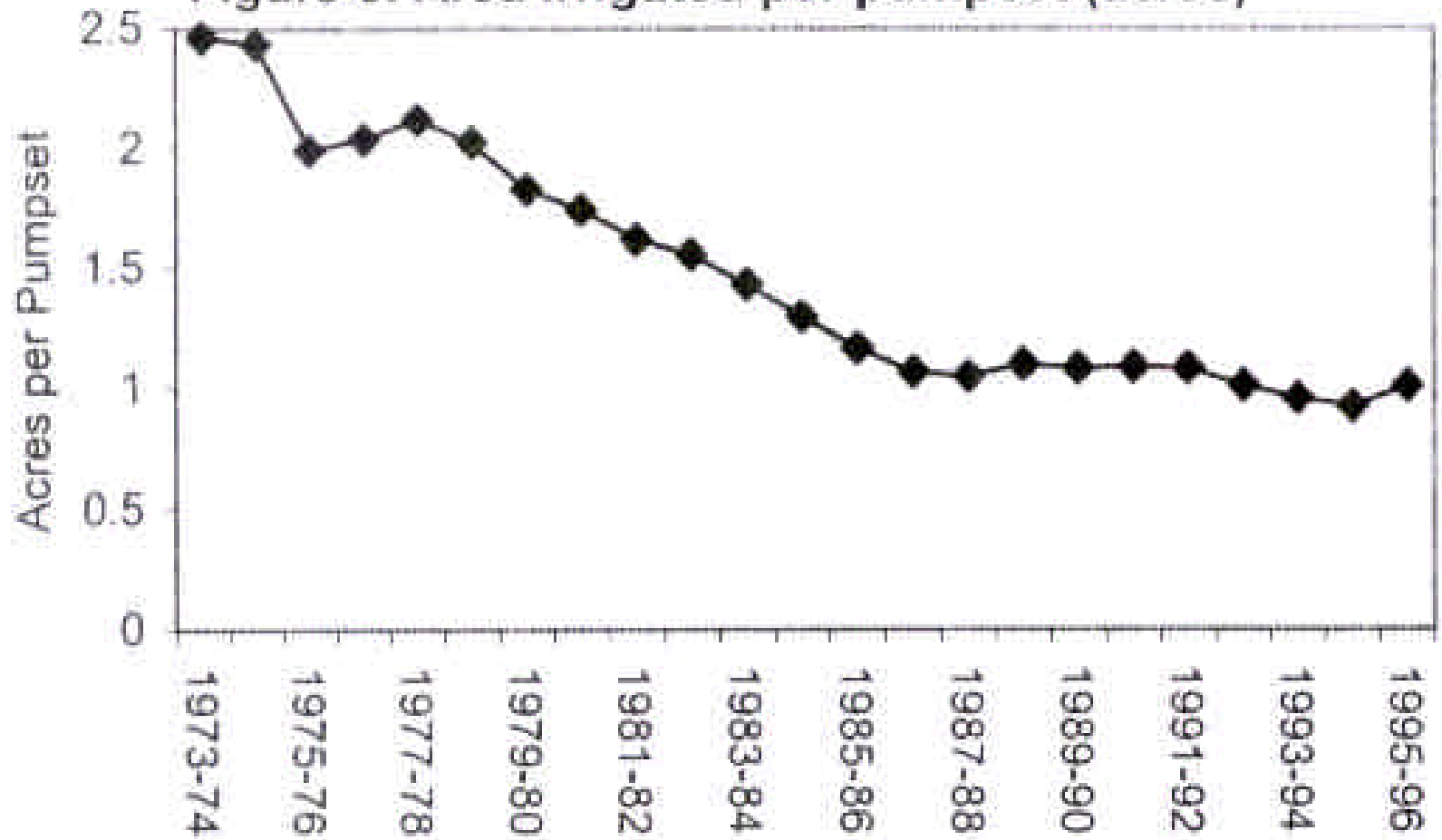
Source:  [www.agricood.nic.in/statistics/sumd2.htm](http://www.agricood.nic.in/statistics/sumd2.htm)

Figure 7: Growth of Electric Pumps in Andhra Pradesh



Source: Center for Monitoring Indian Economy (CMIE), Energy, 2000

Figure 8: Area irrigated per pumpset (acres)



## PLANWISE FINANCIAL EXPENDITURE (STATE + CENTRAL) ON IRRIGATION IN INDIA

(Rs. in crore)



Sl. No	Period	Major & Medium	Minor	Flood Control	Command Area Development	TOTAL	Pvt /Instt. Funding for MI
1	I Plan(1951-56)	376.24	65.62	13.21	-	455.07	-
2	II Plan(1956-61)	380.00	142.23	48.06	-	570.29	19.35
3	III Plan(1961-66)	576.00	327.73	82.09	-	985.82	115.37
4	Annual Plans (1966-69)	429.81	326.19	41.96	-	797.96	234.74
5	IV Plan(1969-74)	1242.30	512.28	162.04	-	1916.62	661.06
6	V Plan(1974-78)	2516.18	630.83	298.60	-	3445.61	778.75
7	Annual Plans (1978-80)	2078.58	501.50	329.96	362.96	3273.00	480.40
8	VI Plan(1980-85)	7368.83	1979.26	786.85	777.65	10912.59	1437.56
9	VII Plan(1985-90)	11107.29	3118.35	941.58	1427.63	16594.85	3060.95
10	Total up to VII Plan	26075.23	7603.99	2704.35	2568.24	38951.81	6788.18
11	Annual Plans 1990-92	5459.15	1680.48	460.64	615.06	8215.33	1349.59
12	Total upto1991-92	31534.38	9284.47	3164.99	3183.30	47167.14	8137.77
13	VIII Plan(1992-97) @	21669.15	6282.34	1859.47	2183.79	31994.75	4241.69
<b>14</b>	<b>Total up to VIII Plan</b>	<b>53203.53</b>	<b>15566.81</b>	<b>5024.46</b>	<b>5367.09</b>	<b>79161.89</b>	<b>12379.46</b>
15	IX Plan #	42968.99	9369.84	2938.49	2887.29	58164.11	
16	Annual Plan 1997-98 (outlay)	7565.83	1498.15	419.26	432.74	9915.98	488.66
17	Annual Plan 1998-99 (Provisional)	9322.23	1795.10	647.70	478.52	12243.55	
18	Annual Plan 1999-2000 (Out lay)	12280.15	2176.46	735.94	492.49	15685.04	

- 
- Groundwater sustains 60% of the country's irrigated agriculture and contributes more to rural wealth creation than any other irrigation source
  - No Public investments on Ground water Management



# Legal framework



- 
- 
- To assist states a **DRAFT Model bill** was circulated in 1996/(later on finalised in Jan2005)
  - It recommends the establishment of Ground water Authorities (GWA) at the state level
  - Constitute members of authority
  - GWA to advise the state Government to declare any area to be notified area for the purpose of GW control and regulation
  - Authorised to regulate GW through a system of permits, registration and licences



- Empowered to inspect wells, install water measuring devices, seize equipment



- Impose penalties etc
- Various states have initiated legislative measures to enable them to regulate GW



- Karnataka Ground water Bill (draft), Tamil Nadu, Maharashtra, Gujarat

# Andhra pradesh

- **APWALTA** :Andhra Pradesh water, land, trees act (2002) was enforced with an aim to promote water conservation, tree cover and regulate the groundwater.
- All wells need to be registered.
- Minimum Spacing (250 mts) is determined between the wells, but no conditions on depth
- Authority at district level is constituted
- The authority is empowered to make decision in critical conditions

## Amended in 2004

The preconditions are;

Hydrological surveys

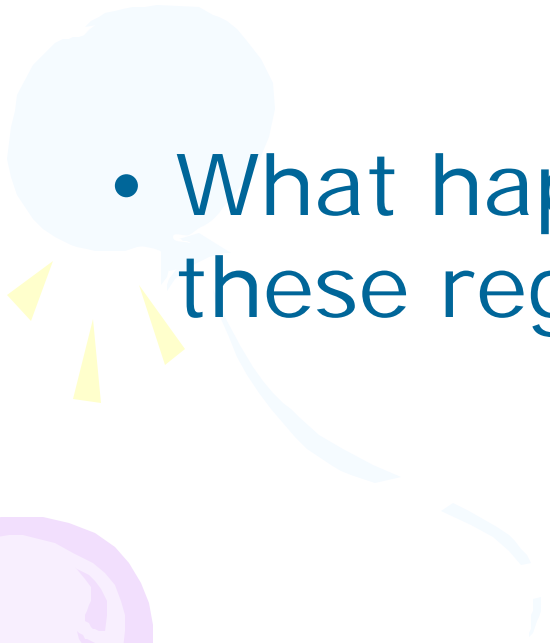
Insurance

Permission from APTRANCO

**Not by community but by rig owners**



- Can we practically implement such regulations.....



- What happens if Govt. enforces these regulations...





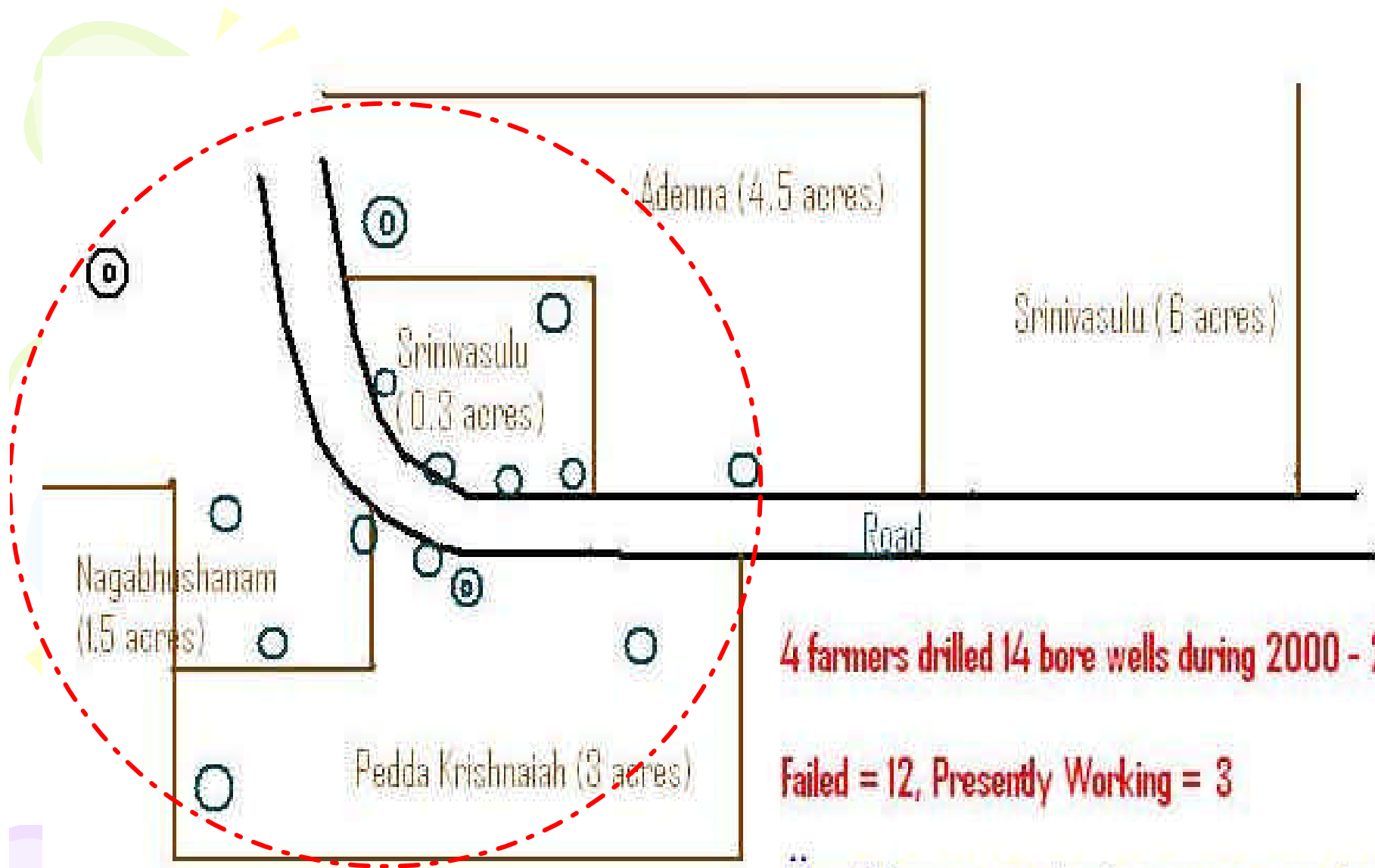
Could we try Social regulations as an approach to Ground water management.....

# We know the actual situation



Ankapur – ICAR best village





4 farmers drilled 14 bore wells during 2000 - 2004

Failed = 12, Presently Working = 3

.. Now, 3 farmers are sharing water to more than 10 neighbouring farmers from 3 working bore wells

# Regulations at different levels.. A case from Janajagruti, MC thanda village

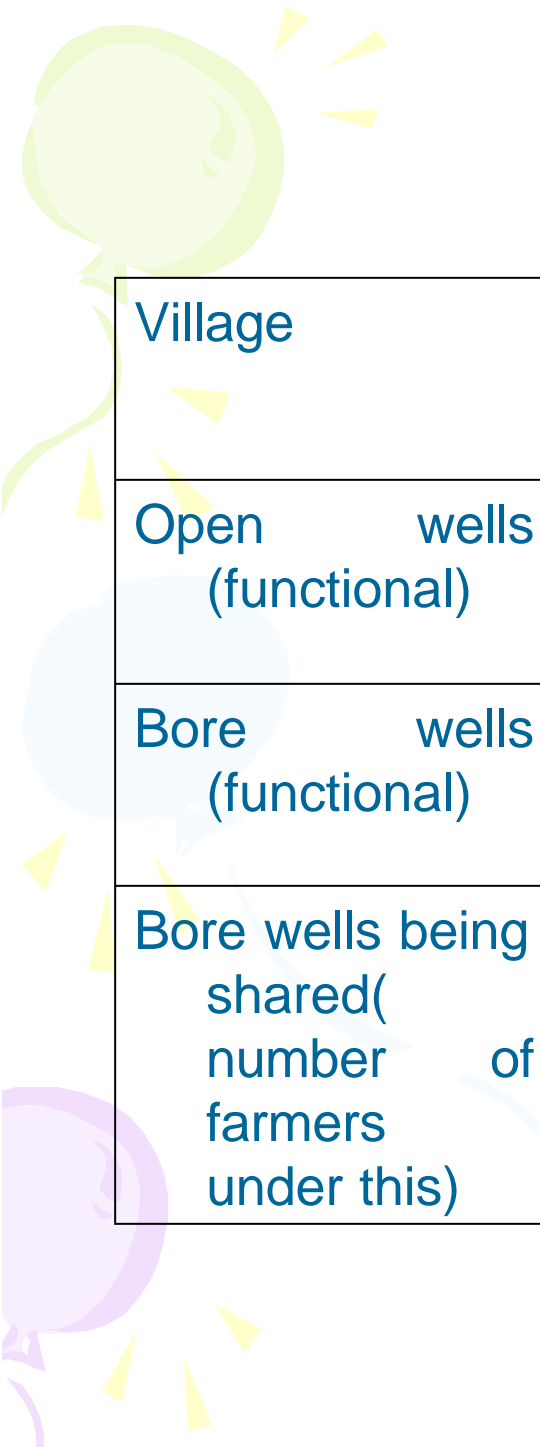
## Regulations on accessed water:

- No individual bore wells but Group bore wells: 6 to 7 farmers together drilled a bore well that irrigate around 10 acres under each bore
- No new borewells to be dug, without the acceptance of the committee
- Maintenance is a collective responsibility of the group. Agreement on stamp paper; A lawyer has explained the details of the agreement
- Members can't sell their lands without the permission of others in the group
- Water has to be shared equally among the members of the group

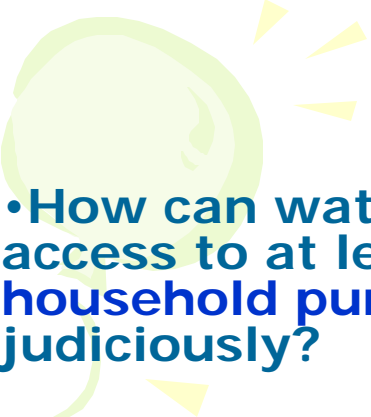
- Rice and Sugarcane should not be grown
- Only half the acreage of kharif is permitted to be irrigated in the Rabi season for growing food crops.
- Borewell Committee enforcing regulation of 200 mts distance between borewells

Participatory hydrological  
Monitoring  
Institutional regulations

There are limitations



Village	Madirepally	Mylaram	CR Pally
Open wells (functional)	57 (0)	135 (0)	60 (06)
Bore wells (functional)	136 (60)	115 (60)	60 (24)
Bore wells being shared( number of farmers under this)	33 of the 60 functional wells	16	17



•How can water demand be regulated to ensure that everyone has access to at least the **basic minimum of water for drinking and household purposes**, and that the available water resources are used judiciously?

•What **type of information** about water availability and water use would organisations or bodies at community level and at higher level (e.g. Mandal, district, state) require that enable them to manage water resources equitably and sustainably?

•What **types of social institutions, regulations, rules and norms** does it need to do this? How can such institutions be formalised in community-based organisations that have the authority to enforce the rules? What should be the "boundary" or "scale" of such organisations (tributary level / watershed level, village level, panchayat level etc.)



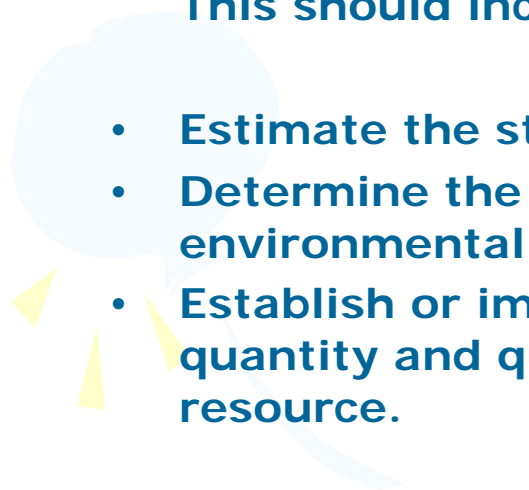

•How could such regulatory mechanisms relate to / fit with existing organisational structures, such as **panchayats, water user associations, watershed committees, etc.**

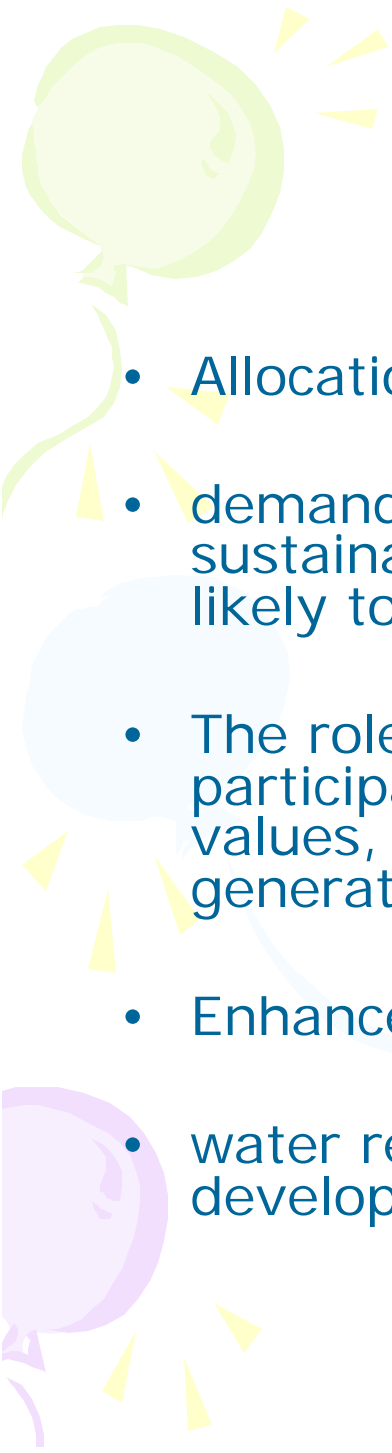


# Critical elements

## *Moving from development to management of water resources*

Such approaches need to be based on a strong knowledge base. This should include a better understanding of how to:

- Estimate the status, trends, options at community level
  - Determine the value of water uses – economic, social, environmental, political.
  - Establish or improve water management mechanisms to address quantity and quality issues associated with competition for a finite resource.
- 
- 

- 
- Allocation, entitlements and access issues be to addressed
  - demand management be employed to improve the sustainability of WSS systems. Savings in irrigation water likely to benefit WSS and under water circumstances
  - The role of information flows, communication, and participation of stakeholders, in determining resource values, understanding scarcity, and how one assesses e.g. generates knowledge.
  - Enhance the role of PRIs and federate
  - water resources based catchments planning, and with other development plans



- Business as usual is not option;  
If we want to ensure water for food, health, livelihood, the environment and for future generations –
- Lets change the things and water is everybody's business.



# Thank you



Social Regulations in Water Management, NRM Desk

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