The zero-sum game: drinking water in India

Drinking water scenario in rural areas in the country

Presentation to the Standing Committee on Rural Development

February 16, 2007

Centre for Science and Environment, New Delhi

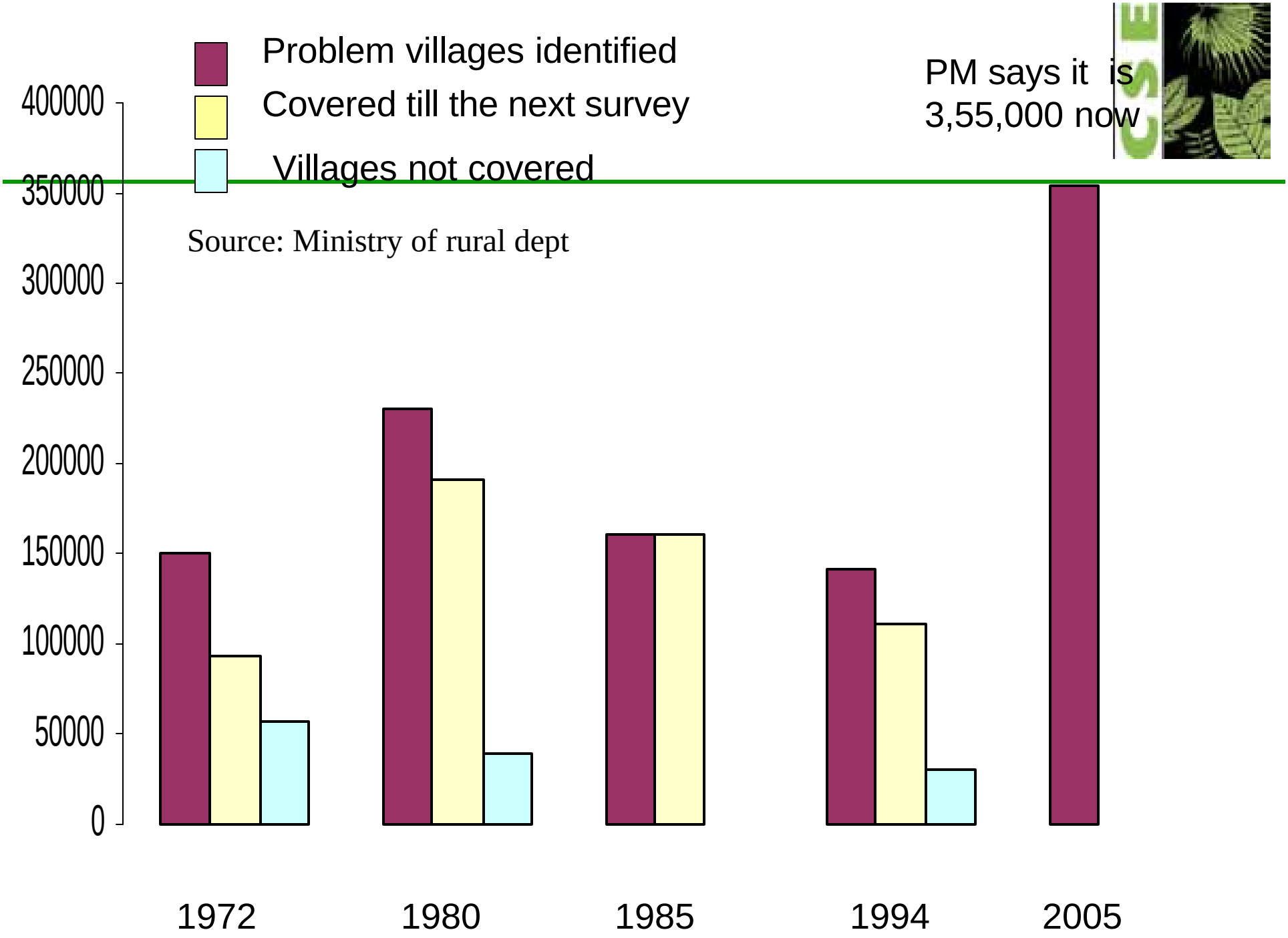
Q 1: Coverage

Government estimates 96% fully covered: This estimate is not worth the paper it is written on (**see mid-term appraisal of 10th Five Year Plan).**

Reason: **villages are covered but water is not available**.

By 2005: We have spent over Rs 45,000 crore in drinking water programmes.

But drinking water still not available. NSSO (54th round:1998): 23% access to drinking water.


Problem villages identified
Covered till the next survey
Villages not covered
PM says it is 3,55,000 now
Source: Ministry of rural dept
400000
350000
300000
250000
200000
150000
100000
50000
0
1972
1980
1985
1994
2005

Coverage

Villages slip from being fully covered to partially covered and from partially covered to not covered.

Water mathematics:

	100,000 ‘problem villages’ in 1970s
Minus	100,000 ‘problem villages’ in 2003
Equal to	100,000 ‘problem villages’

Q 2: Sustainability

Very serious. Increasingly **more** unsustainable.

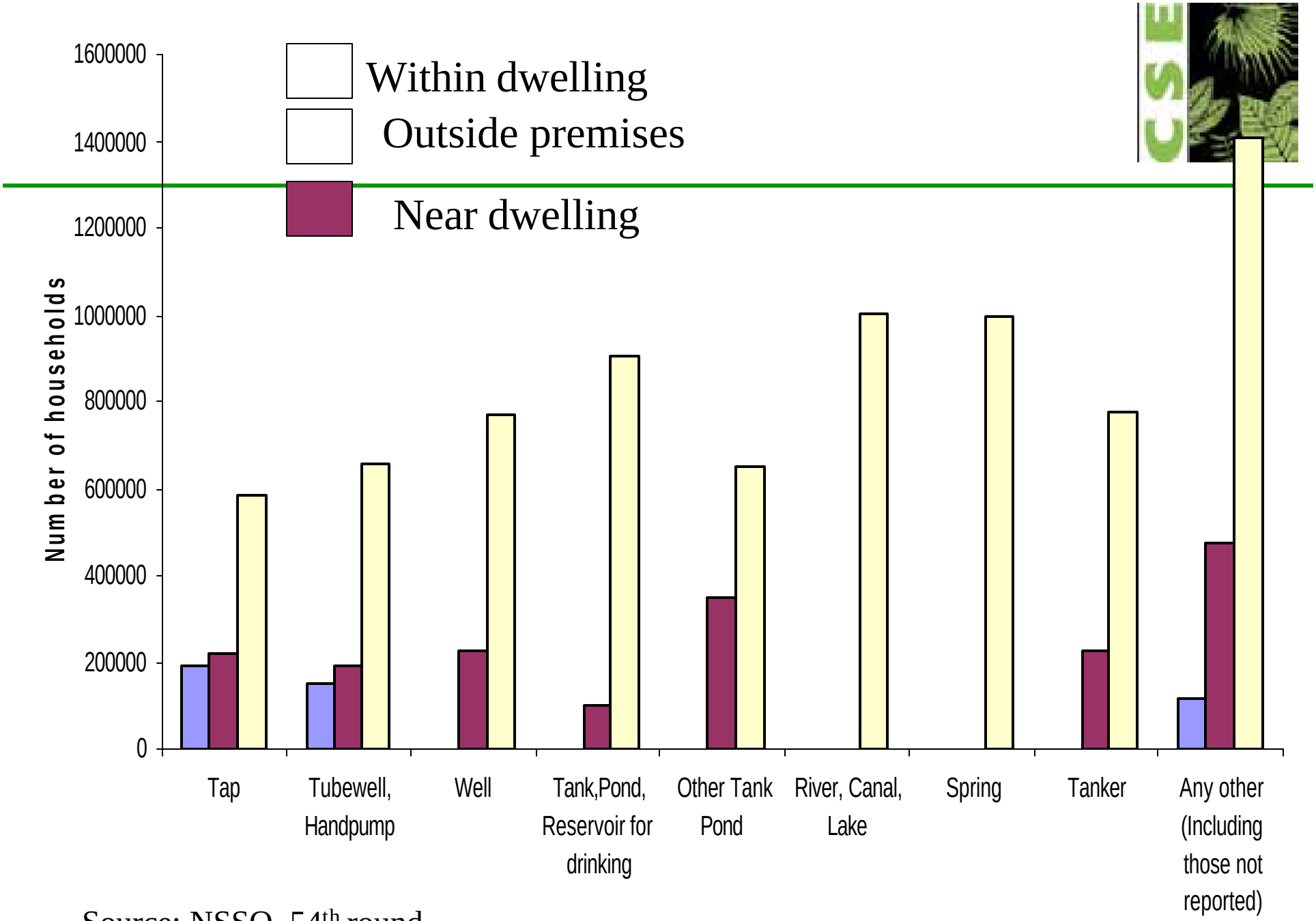
Why?

a. The **investment** is **not** sustainable: operation and maintenance cost high and difficult to recover. Pumps and pipes, hand-pumps and bores. The longer the distance, the higher the cost of delivery.
b. The **source** of water is **not** sustainable:
c. The **water** is increasingly **polluted** or contains **arsenic** or **fluoride** and not drinkable.

Q 3: Source sustainability

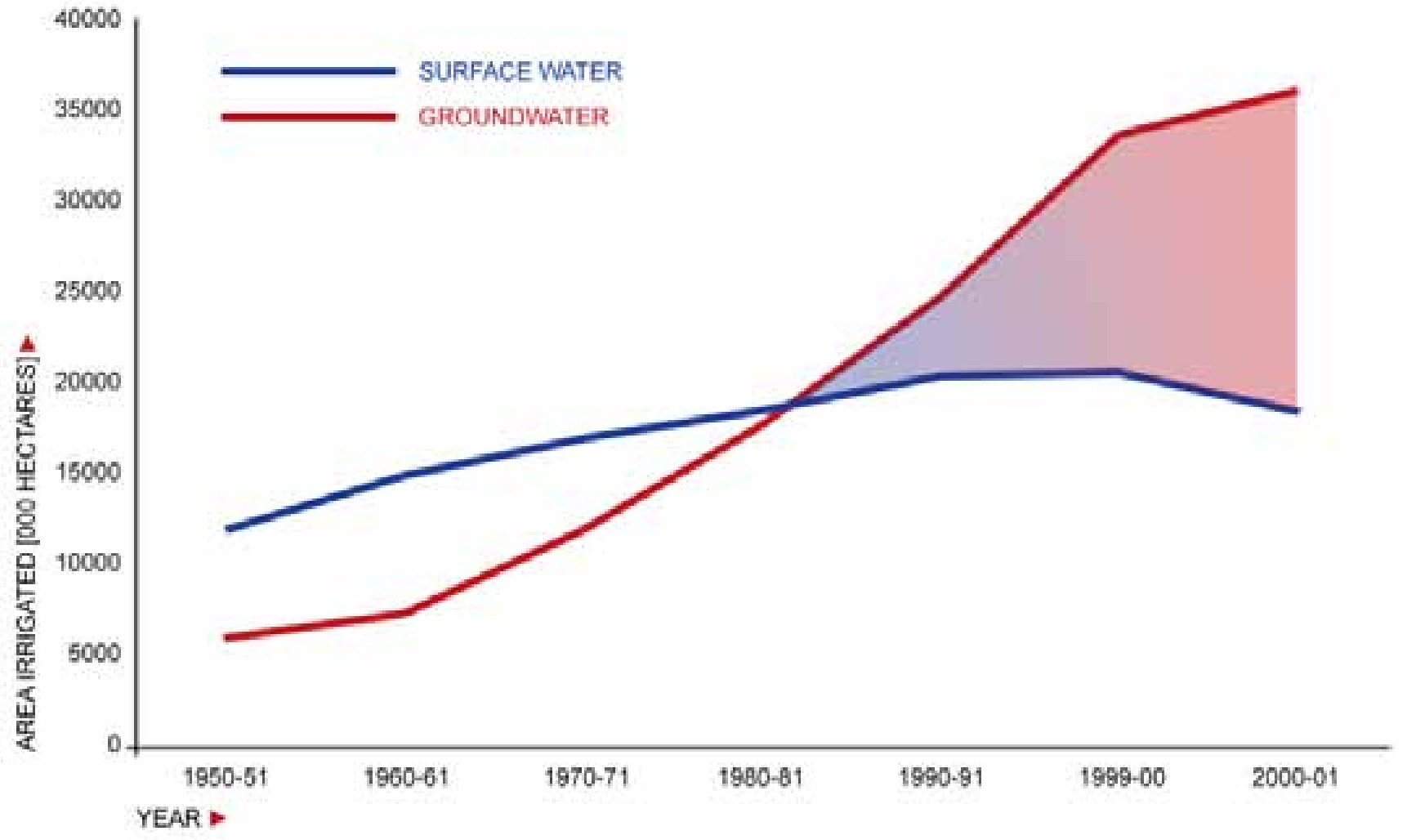
Over 90% of official drinking water is from groundwater. Tubewells or Bores connected to pipes or handpumps;

But many depend on ponds/tanks. Not accounted for in government records.

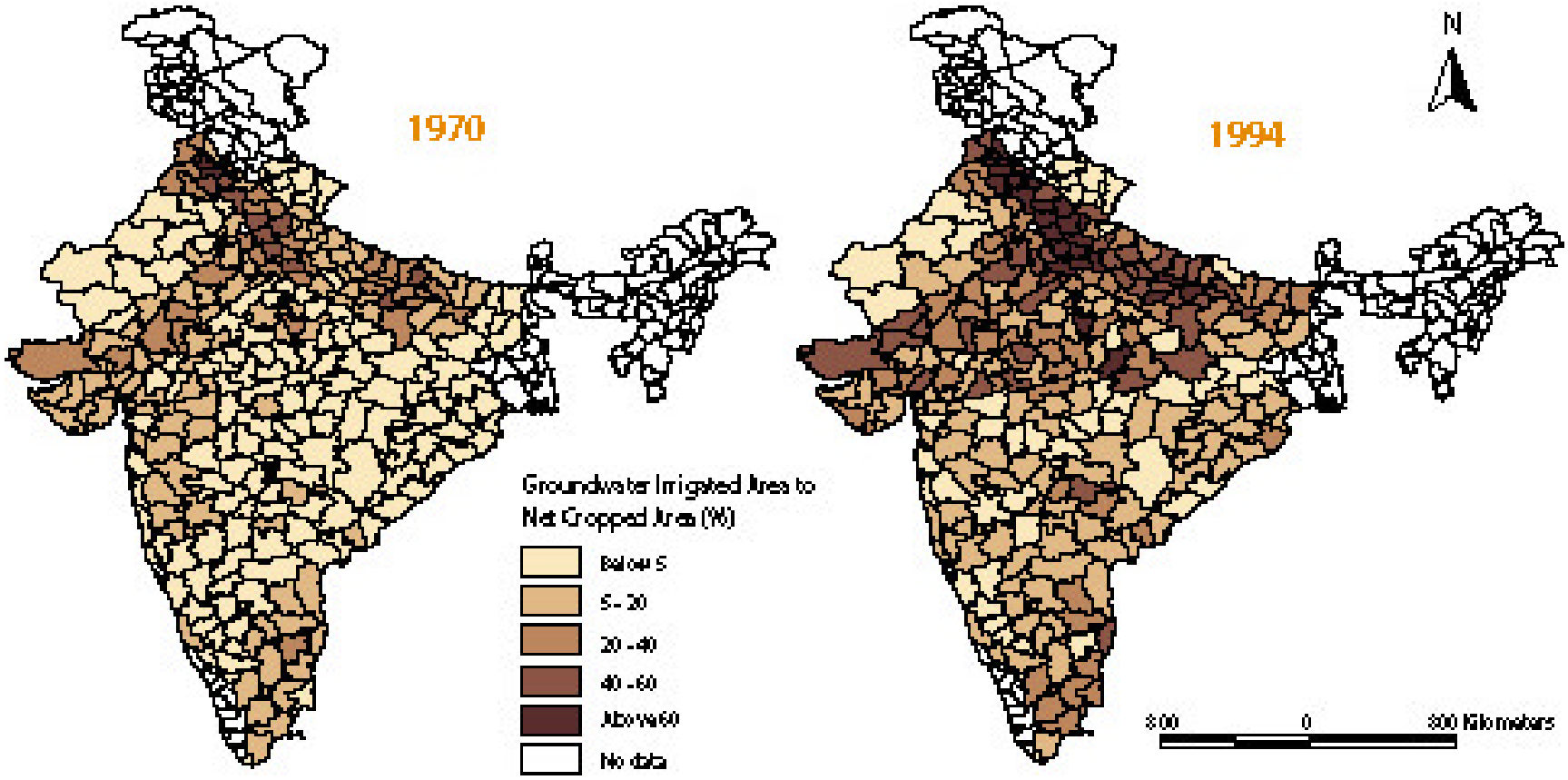


Source: NSSO, 54th round

Groundwater use has grown

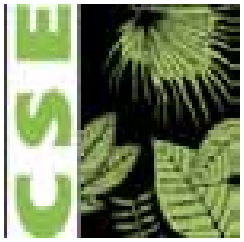


Groundwater levels declining..300 blocks more than 4 metres..



Source: IWMI, 2003

Q 7 and 8: Water norms: adequate or not



The problem not rural India. But problem is norms for urban India.

Cities are powerful. They get water from further and further away to meet their needs.

Cities are water-inequitous. The cost of treatment and delivery is high. State can provide to some and not all.

Cities are water-wasteful. The cost of efficiency cannot be paid in the current system. Use more-dispose more.

Need policy for urban drinking water. Reduce water and ask for recycling of sewage.

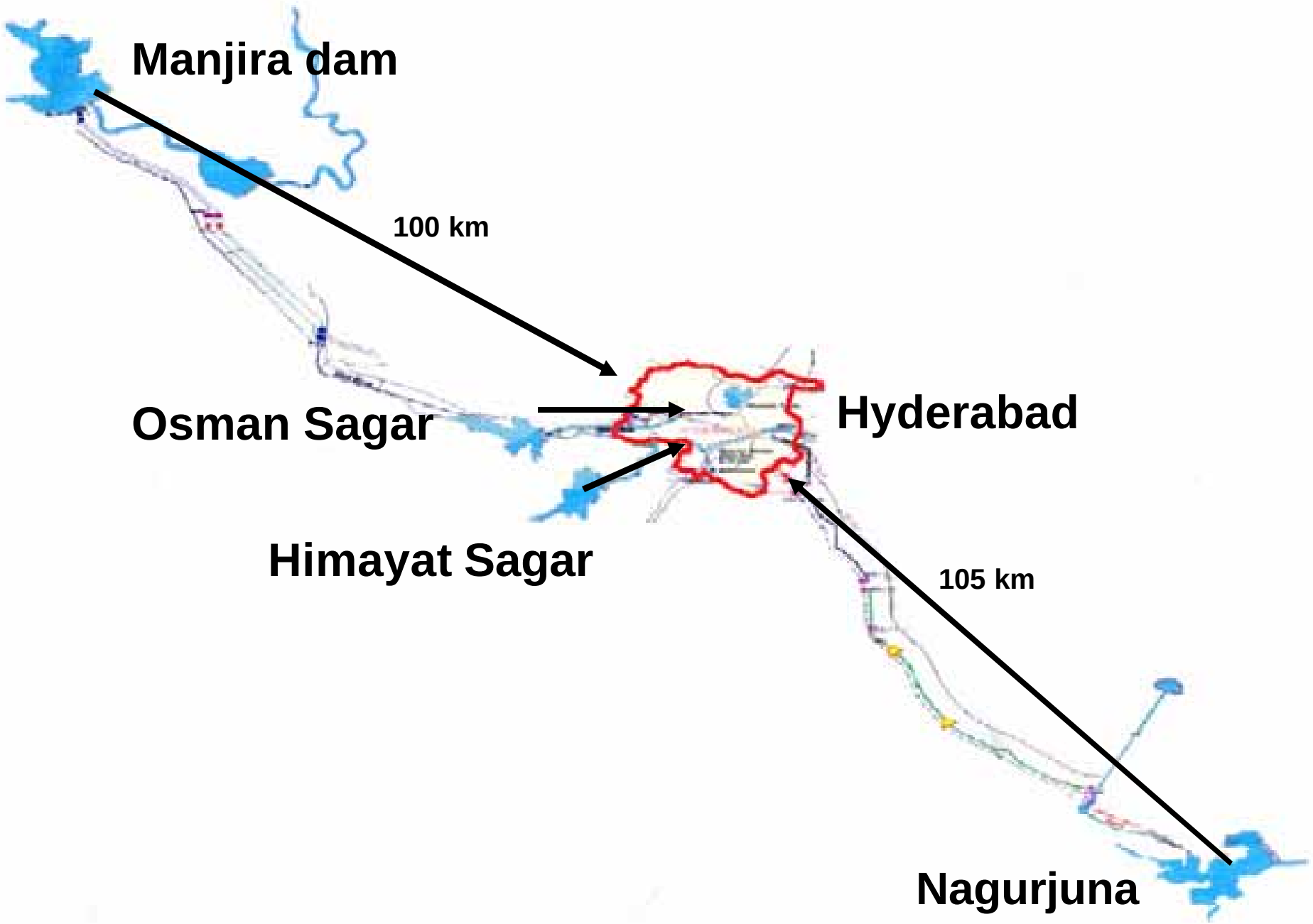
Cities search for water

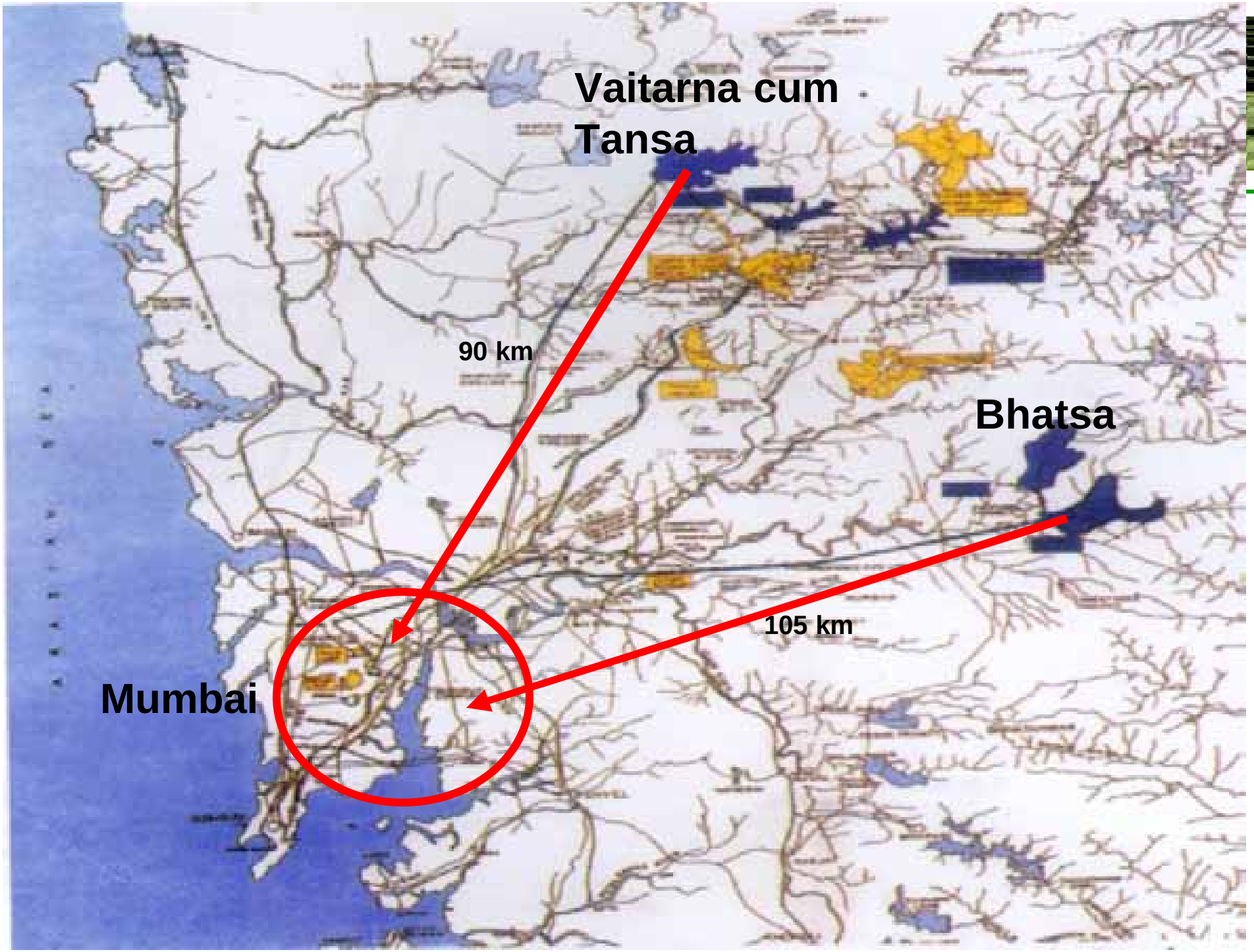
Chennai: 235 km (Veeranam lake) and now planning to go farther 300 Km (Veeranam extension project).

Bangalore: 95 km (Cauvery) pumping 1000 m elevation.

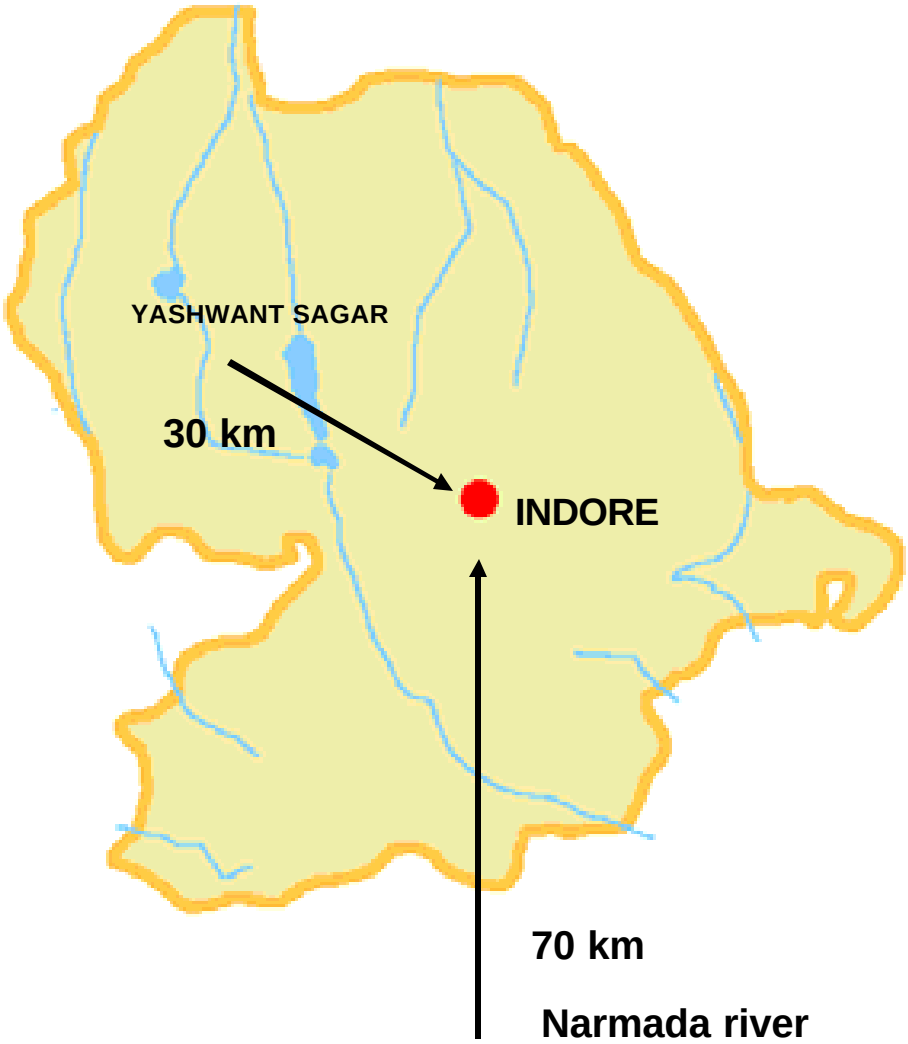
Delhi: from **Tehri dam (450 to 500 km)**.

Map of Tamil Nadu

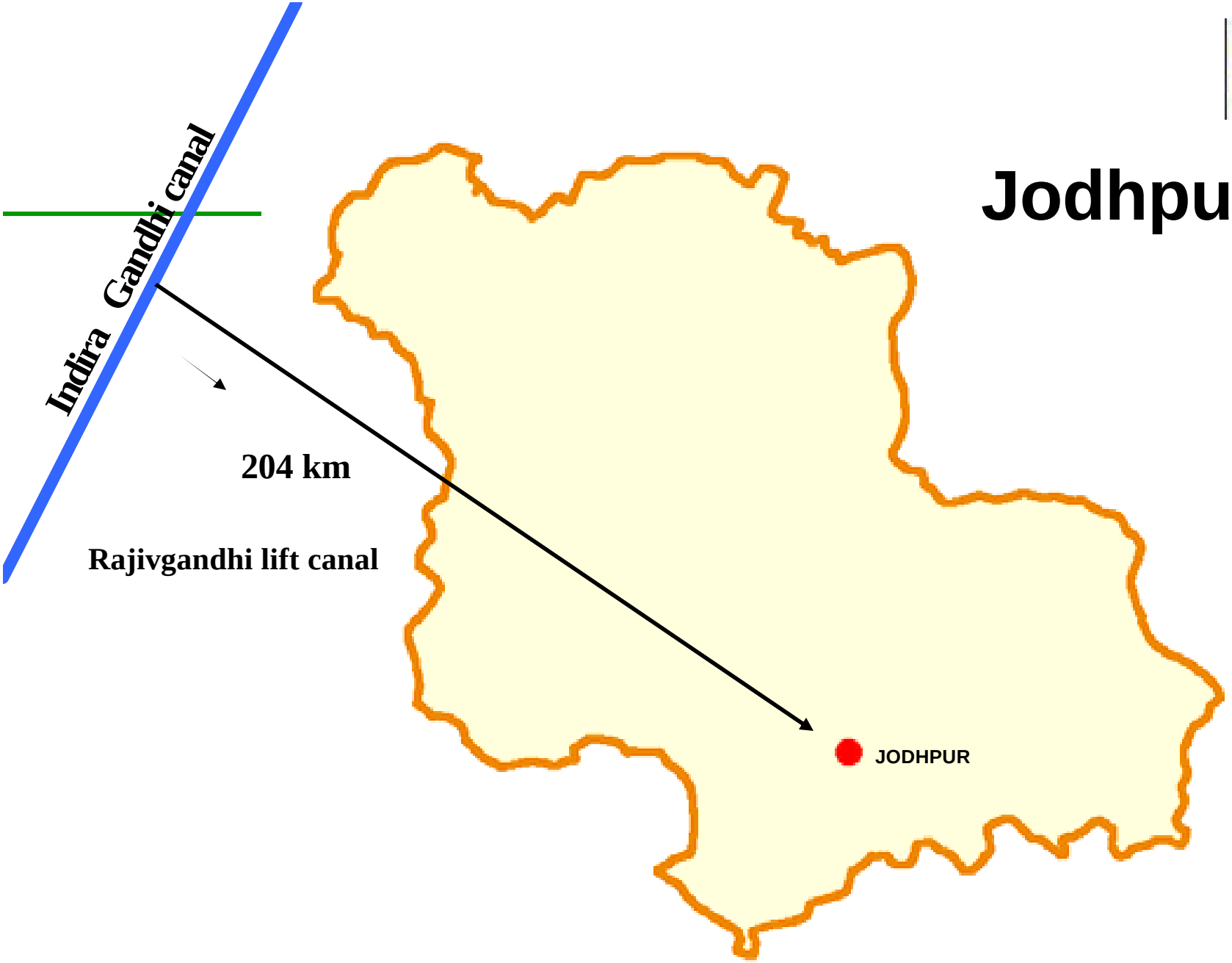

Manjira dam
100 km
Osman Sagar
Hyderabad
Himayat Sagar
105 km
Nagurjuna


Vaitarna cum
Tansa
90 km
Bhatsa
105 km
Mumbai

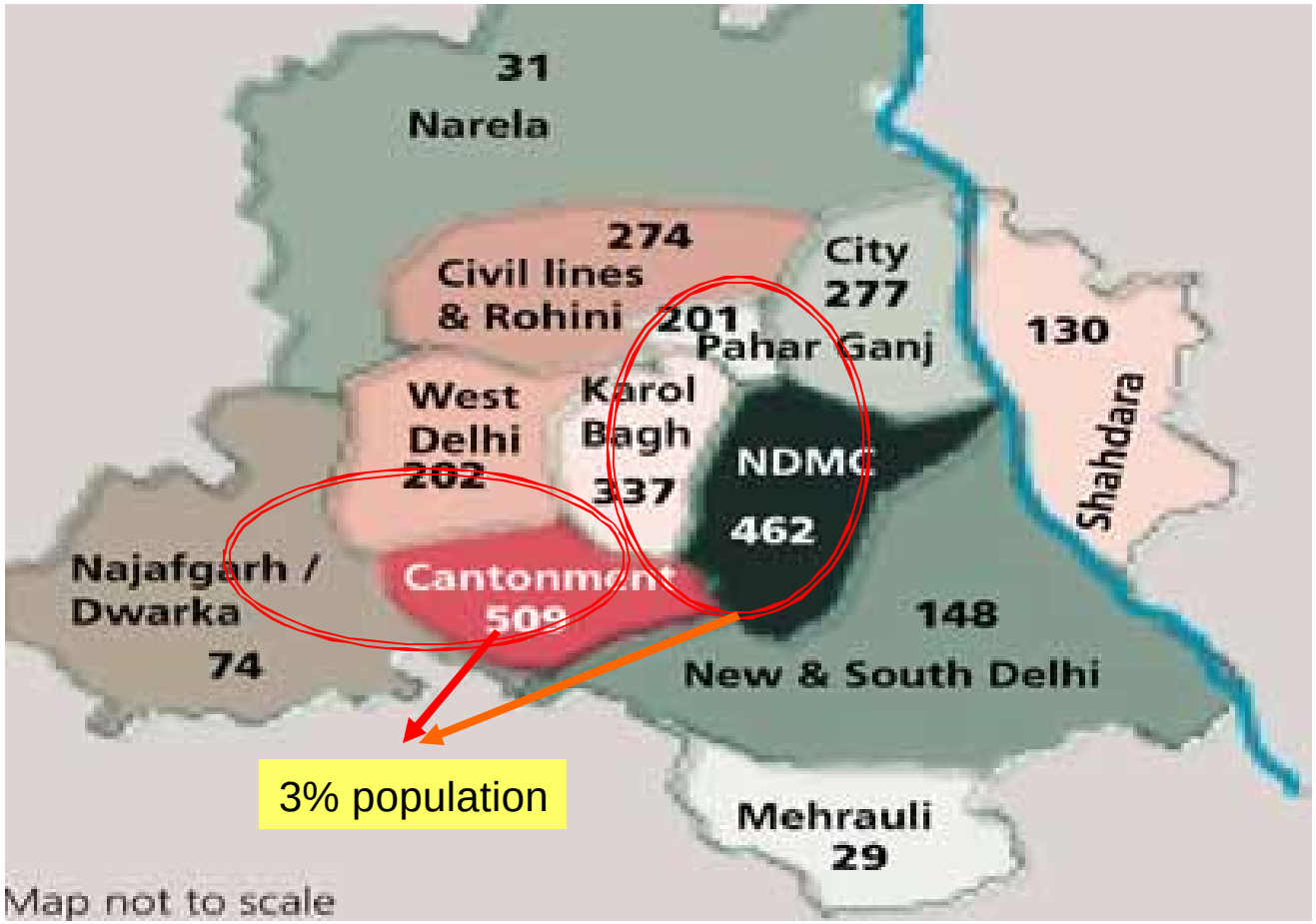
INDORE



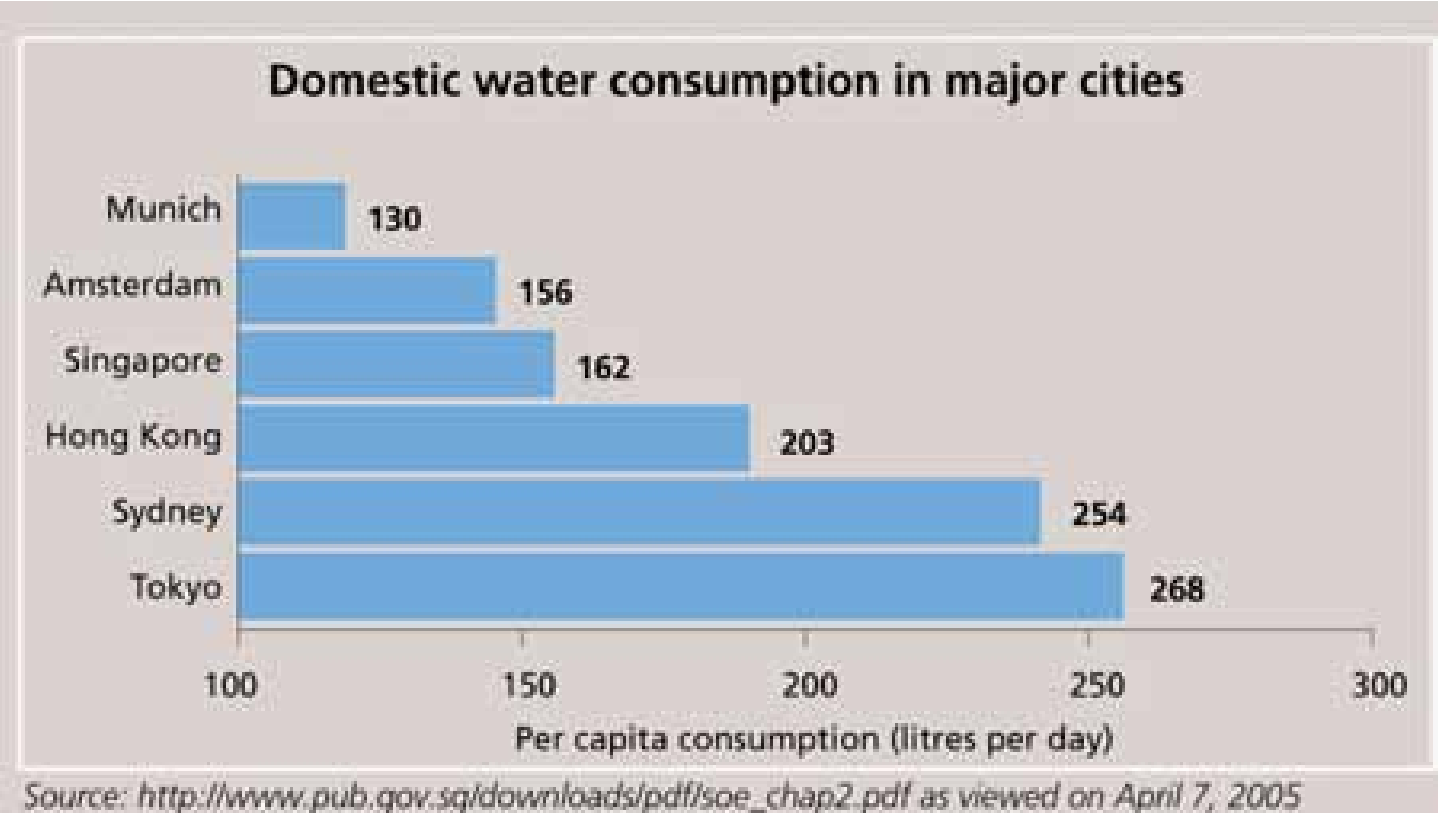
Jodhpur



Water costs are high. Distribution costs high. Cannot be recovered. Subsidy to some. Water inequity in Delhi.



Urban water norms need reform



DELHI

- Per capita **availability** 211 lpcd

- 2011 Master plan targets 363 lpcd

Need answers that are different. Less wasteful.

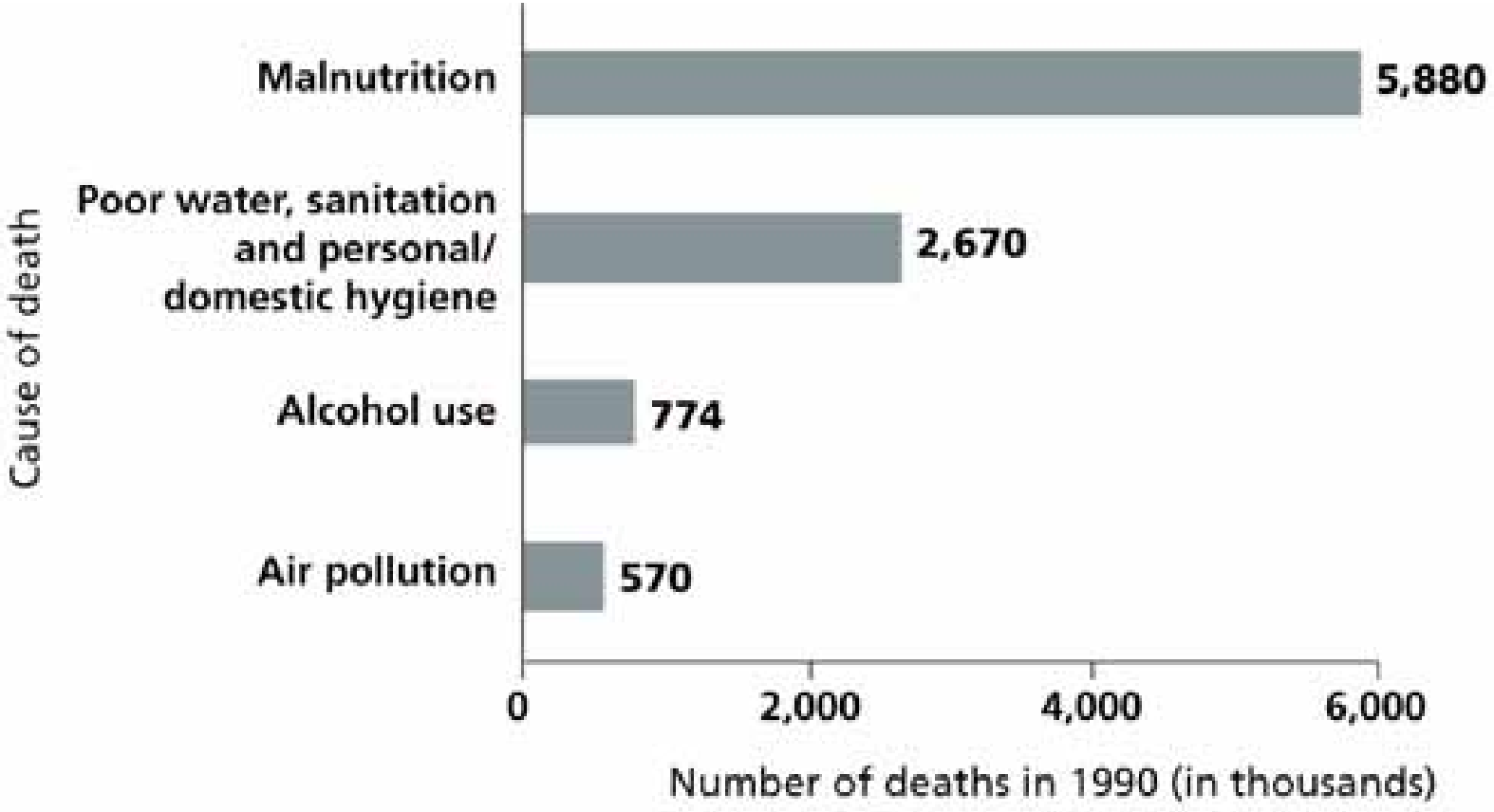
Q 13 and 14: water quality and contamination

Tremendous costs to health of poor.

Dirty water still the biggest killer in India.

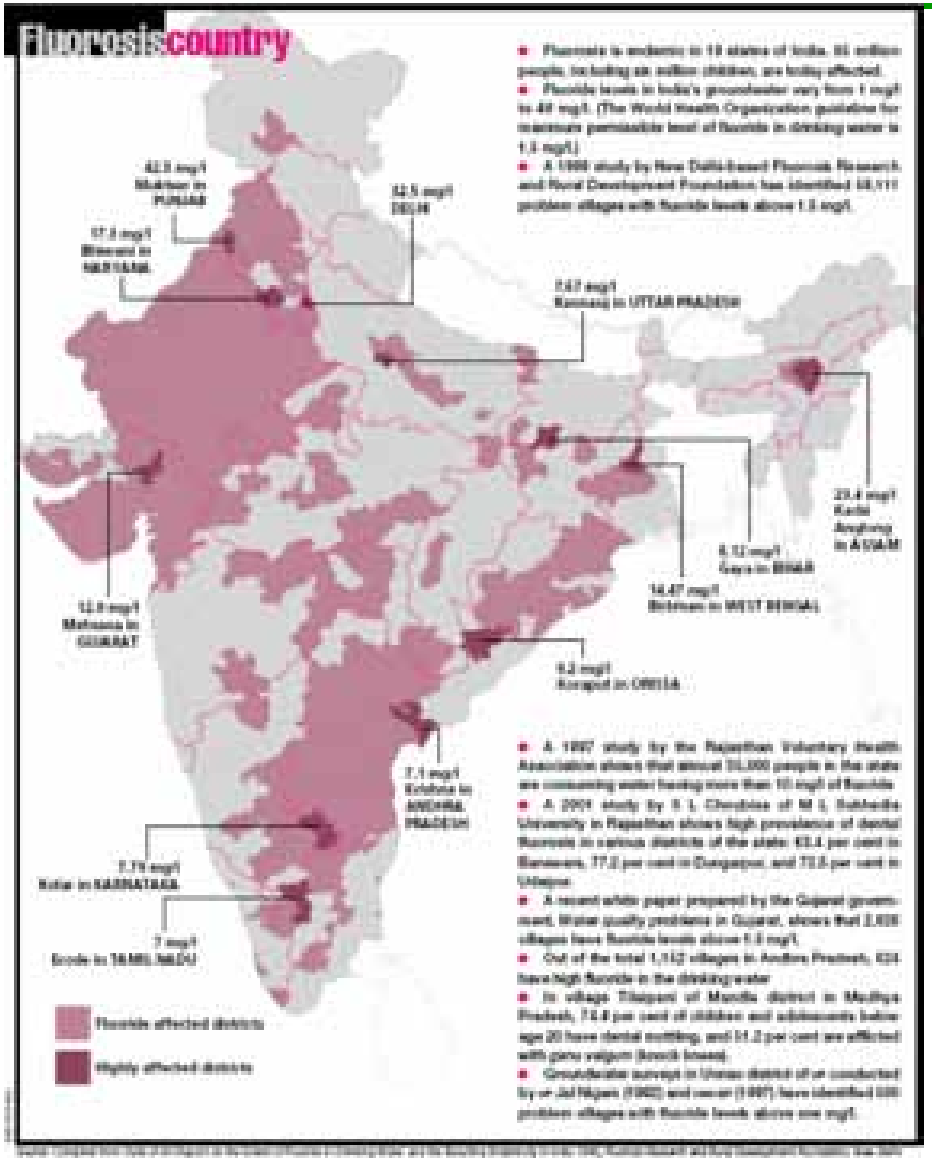
Study estimates 2.06 million deaths of children in 1999 in India. 90% in poor rural households. If all household had clean fuel, private (clean) water, private toilet would reduce infant child mortality by roughly 1 million (half the deaths). **Criminal. Shameful**.

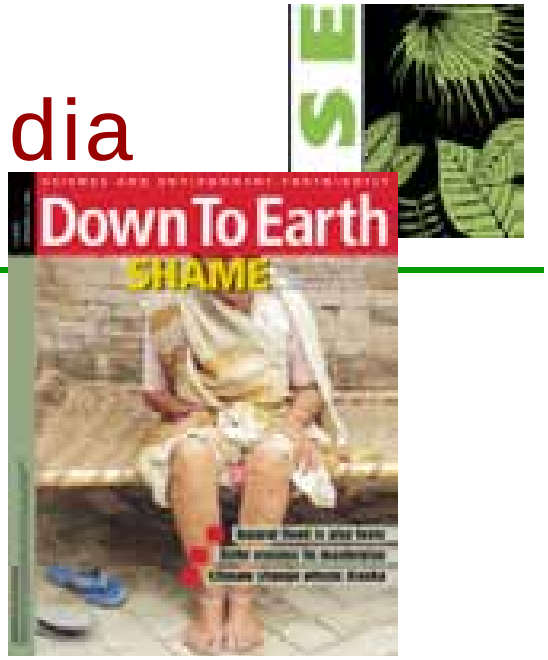
Dirty water second-largest killer of all Indians



Sources: Peter H Gleick, The World's Water, 2000-2001, p11; Abstract Volume, First International Conference on Ecological Sanitation, November 5-8, 2001, p7;`Status of water supply and waste water generation, collection, treatment and disposal in metrocities (1994-95), CPCB, August 1997, p32-33; Anon July 1999, Drinking water, sanitation and hygiene in India, NSSO, p40

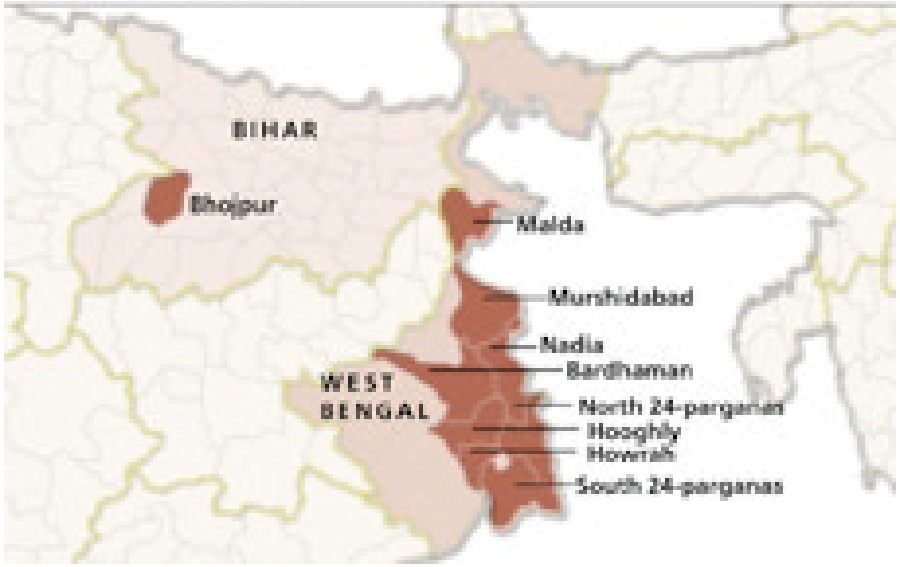
Fluoride-arsenic crippling of India





Unbelievable

Government believes only West Bengal and Bhojpur are contaminated



Answer: clean up surface water

Problem is that we have contaminated surface water with sewage. Leads to disease.

So we have increased dependence on groundwater. Going deeper and deeper. Finding arsenic-fluoride. Then we look for technologies to clean arsenic and fluoride.

Answers:

Clean up ponds, tanks. Put filters to clean microbial contamination.

Rainwater harvesting to recharge aquifers so that we do not dig so deep.

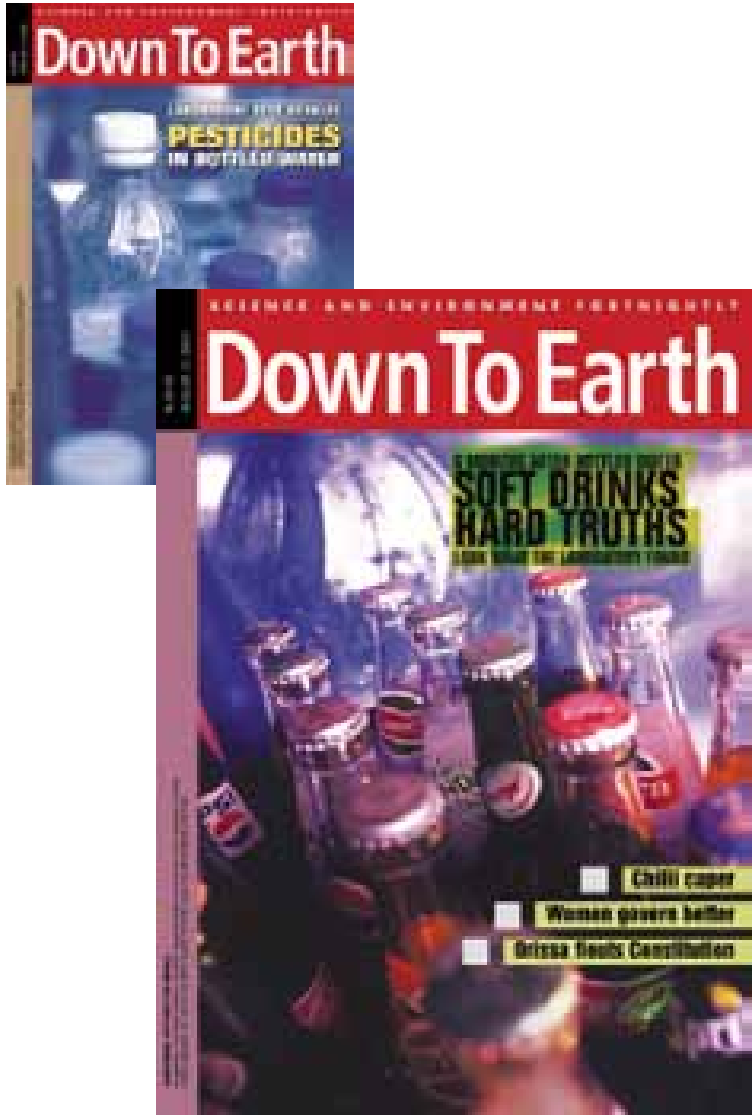
Challenge of new contaminants

Cannot deal with old problem: sewage.

Now new toxins – pesticides, heavy metals..

Toxic load in our bodies.

The problem is that we are rich enough to use; poor when it comes to clean up.



Q 5: how to do this? Do current programmes work

2000: Drinking water reforms. Swajaldhara introduced.

20% of funds:

- **Sustainability of source**
- **Quality of water**

15% of funds are allocated to:

- **O&M**

Communities “invest, own and operate systems’

They pay 10% costs. O&M under local bodies. Have to charge for water.

But partial reform. Effort to down-load (off-load) government functions to community. Not to plan for drinking water differently. Not to give community control over water sources (not just handpump).

Will not work.

Need structural reform in programme

- Drinking water programmes not connected to programmes of land-water management.
- Drinking water programmes not connected to issues of sustainability of resource.
- Drinking water programmes not about ownership of handpump or pipe. But about ownership of land-water surrounding village.

About decentralisation…

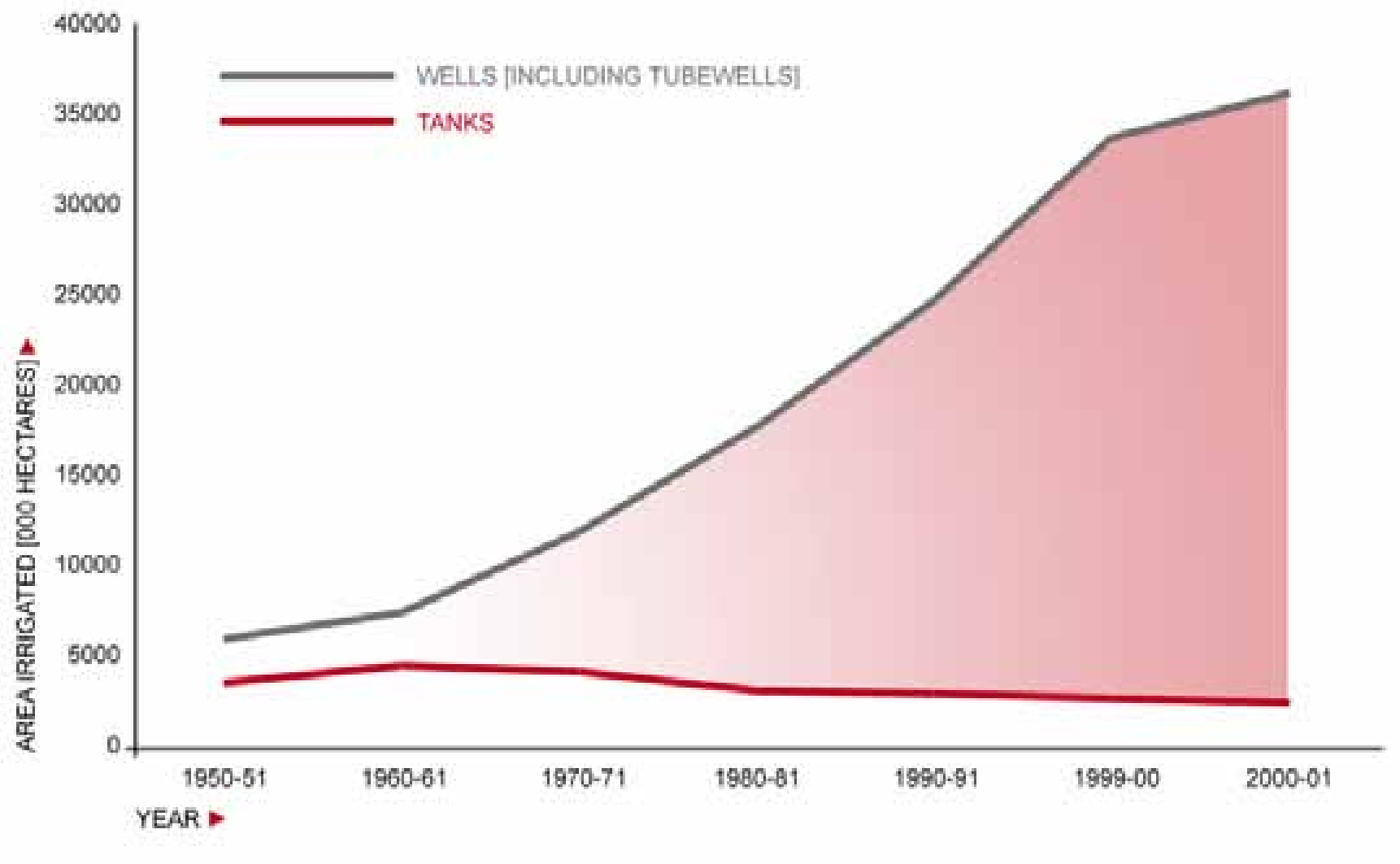
Q 4: Strategy: new approach needed

Has to learn from traditional technologies of water conservation;

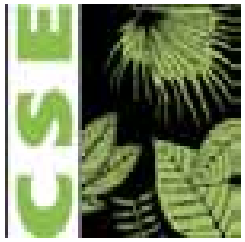
Has to depend on rainwater harvesting to recharge groundwater;

Has to make water each communities business;

Wells need sponges: groundwater use increasing but tanks have decreased.



Recognise: water most fluid substance on earth



Out of 8760 hours in a year, most of the rain in India falls in just 100 hours.

The solution is capturing, storing, recharging and then using the rainwater over the dry periods.

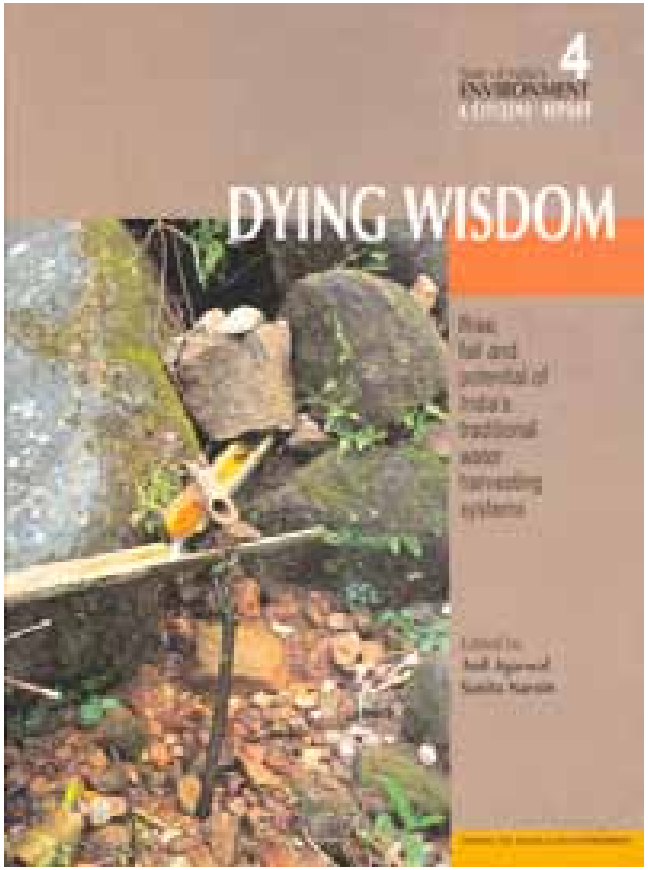
Our ancestors understood this.

Learning from traditions…

In 1997 we published Dying Wisdom:

Rich learning of our traditions.

Enormous diversity, technological sophistication. Each region had its own system to hold, capture rain. *Zings, ahars, johads, tankas, phad*…..



Traditional arithmetic

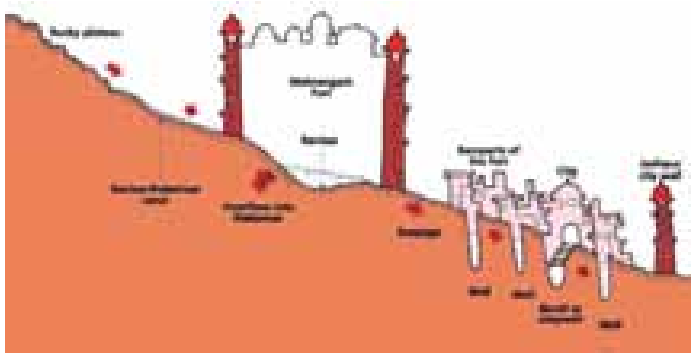
Indians learnt this water arithmetic as far back as 5,000 years. The city of Dholavira of the Indus Valley Civilisation was harvesting runoff in the dry Thar desert.

Catch water where it falls
A water harvesting structure

...tanks in hill forts in Rajasthan and cities like Jodhpur

…to integrated surface water and groundwater harvesting systems in cities…

(Jodhpur, Rajasthan)



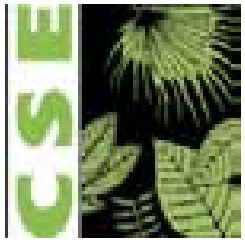
Cascade tanks in the district of Ramanathapuram in Tamil Nadu

Enormous potential

100 mm rain falling on 1 ha of land means 1 million litres of water.

There is no village in India which cannot meet its drinking water needs through its own rainwater endowment.

There is ever enough water



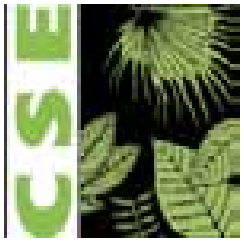
Cherrapunji in India gets 11,000-14,000 mm of rain. Water stressed. Dark zone.

Jaisalmer get 100 mm of rain. No recorded history of evacuation.

Drought not about scarcity of water. But about relationship of society with water.

Need culture of prudence and careful use.

Q 19 and 20
But water is not about water…..



….about decentralisation.

All watershed-pond-tank projects look at water. Not the land from where water will be harvested.

All watershed-pond-tank projects look at bureaucracies. Not the people who will manage

Need new approaches:

Involve panchayats in water management

Give rights over watershed to panchayats-gram sabha.

What we suggest:

1. **Make drinking water programmes part of all programmes on land-water by connecting the water source to its protection.**

- Employment Guarantee Act
- Tanks programme
- Watershed programme
- Soil conservation programme
- Afforestation programme

In all programmes, drinking water must be a component. All schemes must account for how many wells have been recharged and how many drinking water sources secured.

Integrate planning and funds

Integrate all programmes for water at settlement level.

The village and its land-water must be the unit for planning.

The panchayat/ **gram sabha** must be nodal unit for overseeing implementation.

All drinking water programmes must be integrated in village plans.

Integrate resources: land and water

Currently panchayats/gram sabhas do not have rights over their village commons – revenue or forest lands.

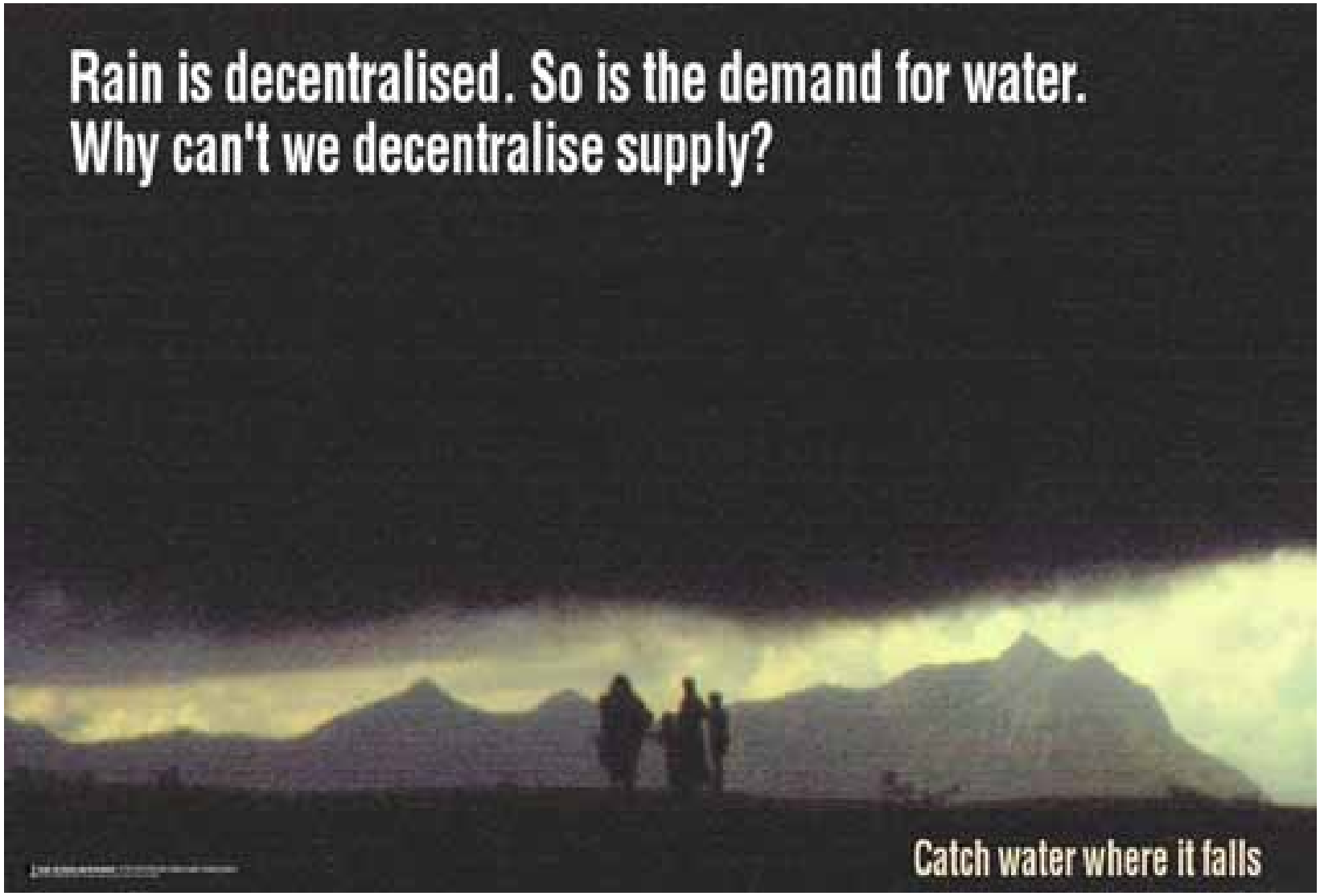
But without land there is no recharge.

Integrate at each settlement. Give rights to communities over water-land resources

Q 10 Policy: harvest and recharge should be mandatory

2. All drinking water programmes must include rainwater harvesting and recharge component. This must be mandatory.

3. Need a national 3 million well-recharge programme annually. Provide grant or rebate in interest for well recharge-farm pond programme.


Rain is decentralised. So is the demand for water.
Why can't we decentralise supply?
Catch water where it falls