Importance of rainwater harvesting to sustain rural drinking water supply: an overview

May 9-10, 2013
SIRDUP, Lucknow

Drinking water requirement

- Consumption in rural sectors is **2.6 BCM**
- The projected requirement is **4.6 BCM** rural population.
- **There is a huge dependance of drinking water on groundwater**

Groundwater development in Uttar Pradesh

- Total replenish able ground water resource of the state is **84 BCM**
- Out of the total replenishable resource, present total extraction is about **40.95 BCM**
- Stage of Ground Water Development: 70 %

Source: http://irrigation.up.nic.in/state_water_policy.htm

Dark and grey blocks

- Out of 819 blocks, there are 85 " Dark" block and 214 "Grey" blocks in the state
- 67 " Dark" & 86 " Grey" blocks are in western region
- **15 dark & 38 grey blocks in central region**

12 dark & 90 grey block in eastern region and

1 dark block in Bundelkhand region

Land cracks in many districts of CPZ (Allahabad, Etawah, Kanpur, Lucknow) alongwith in Bundelkhand region

According to GSI, exploitation of ground water was the main reason behind these cracks

Groundwater available for future

- Western: **14.8 BCM**
- Central: **8.5 BCM**
- Eastern: **16 BCM**
- Bundelkhand: **2.5 BCM**
- Foothills: **1.25 BCM**

Apparently shows that ample amount of ground water is yet to be exploited but uneven spacial distribution and the present state of exploitation has resulted in regional ground water imbalances

Future extraction of groundwater

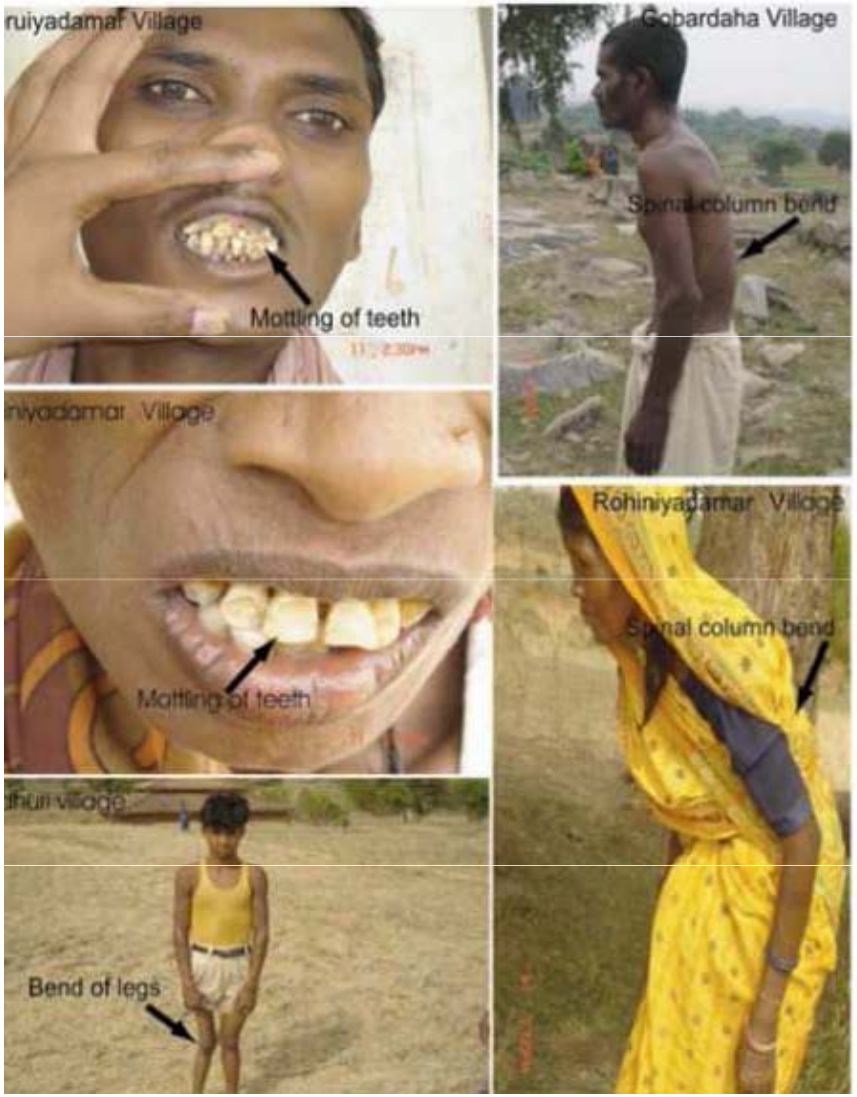
- It is estimated that for domestic, industrial and irrigation needs of growing population, the level of ground water exploitation will increase from **27 BCM to 64 BCM by 2025** (requirement of ground water will be more than double the present level)
- The number of over-exploited blocks may increase from **14 to 177 by the year 2025**. (These represent the blocks where the drawls are more than recharge).

Source: http://irrigation.up.nic.in/state_water_policy.htm

Groundwater quality

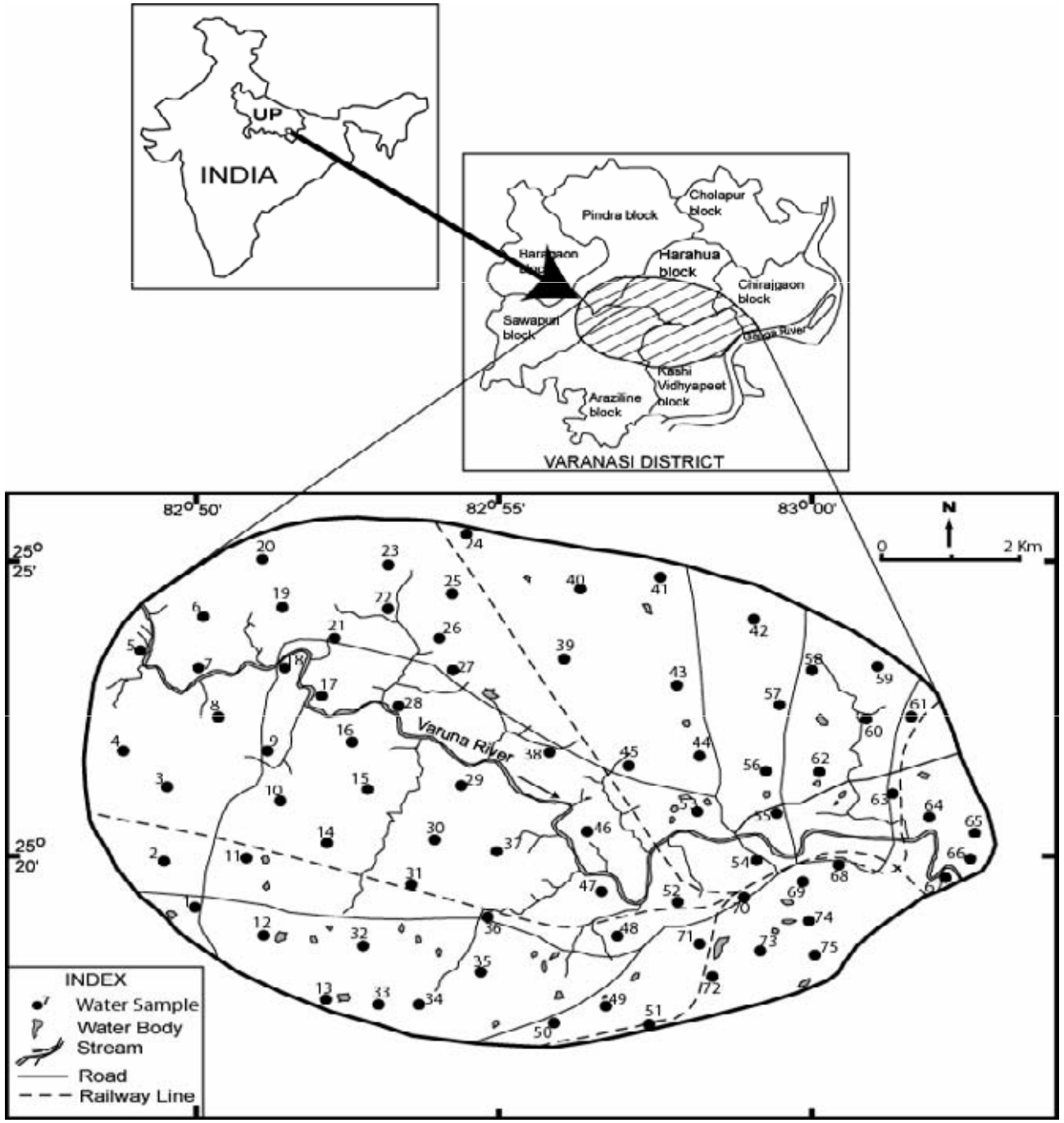
- Salinity - affected districts **3**
- Flouride - affected districts **10**
- Chloride - affected disticts **2**
- Iron - affected districts **15**
- Nitrate - affected districts **42**
- Arsenic - affected district **9**

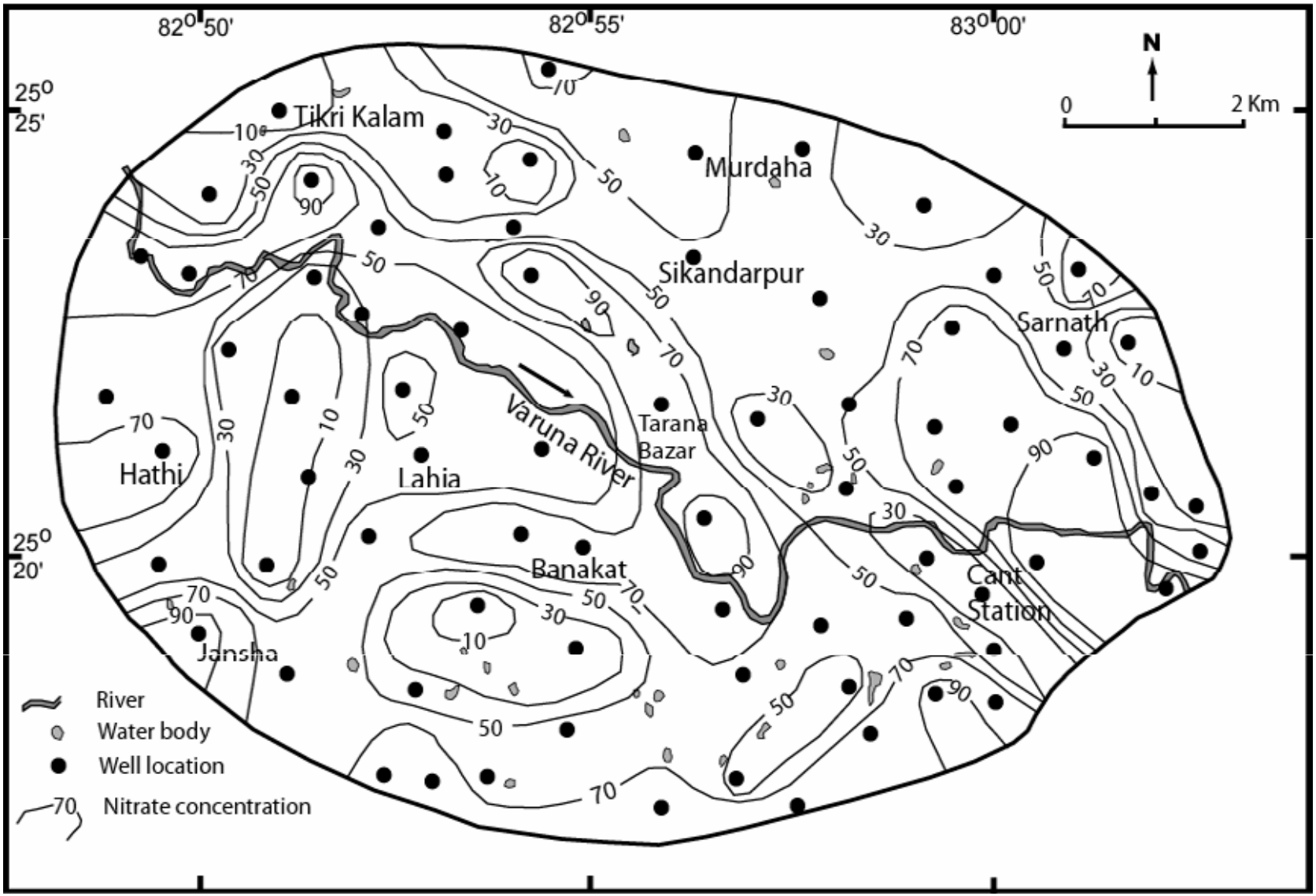
Source: Central Groundwater Board



Fluorosis-related health disorders of the habitants in Kachnarwa area, Sonbhadra District

Balia district:
310 villages in Ballia have Arsenic above that limit, with 94 having concentrations greater than 100ppm


UP
INDIA
Pindra block
Cholapur block
Harahua block
Chiraigaon block
Sawapuri block
Kashi Vidhyapeet block
Araziline block
VARANASI DISTRICT
82° 50'
82° 55'
83° 00'
25° 25'
25° 20'
N
0
2 Km
Varuna River
INDEX
Water Sample
Water Body
Stream
Road
Railway Line



Distribution of nitrate concentration in the lower Varuna River basin

What do we need to understand

- Change in the pattern of rainfall in the state
- Estimation in groundwater resources and development in the state
- Potential of groundwater recharge in the state
- Policy and technical issues in the implementation of artifical groundwater recharge and rainwater harvesting

Area identified for AR: **45180 sq km**

Quantity of Surface Water to be Recharged: **14022 MCM**

Feasible AR structures: **4410**

Source: Central Groundwater Board

Need to hold rainwater

How does nature do this?

Forests ensure water is captured and sent down to the aquifer. Available for the rest of the year.

But….

Deforestation, urbanisation mean less recharge.

Therefore, do rainwater harvesting or

Catch water where it falls

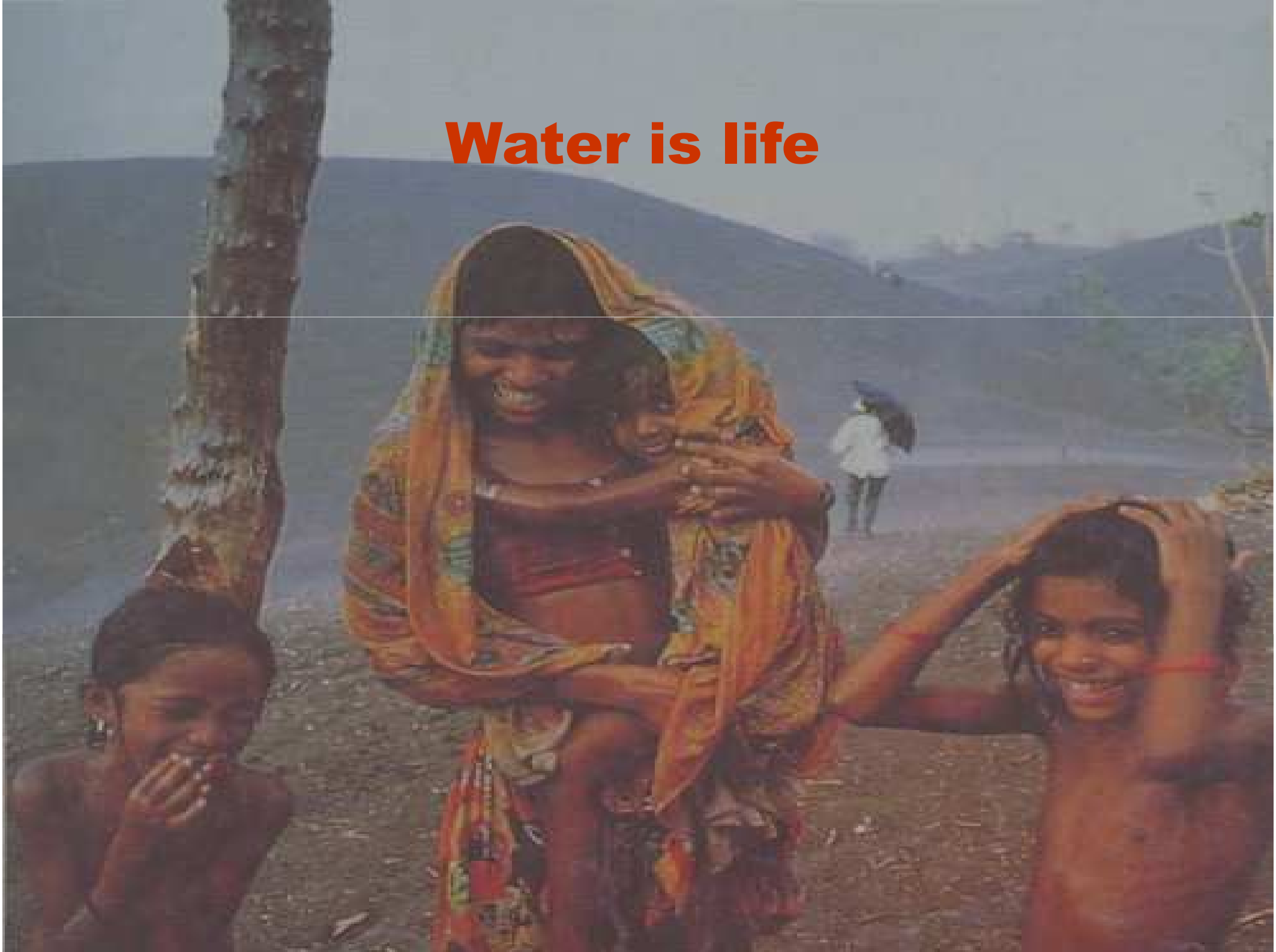
What is the solution?

Rainwater harvesting is a key.

Traditional rainwater harvesting systems can provide an important answer

Rain may soon be the only source of clean water

1 ha of land X 100 mm of rainfall = 1 million litres of water


Water is life

Thank you

Sushmita Sengupta
Deputy Programme Manager
Water Programme
Centre for Science and Environment
sushmita@cseindia.org