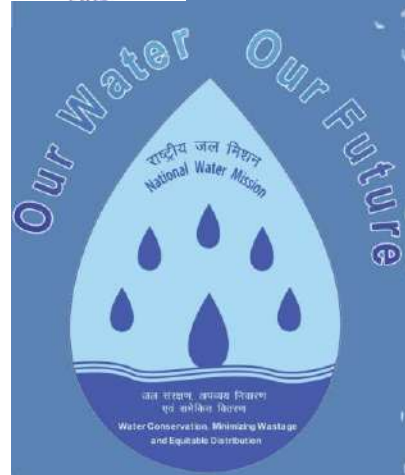


Water Conservation and Rainwater Harvesting

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Catch the Rain

Where it falls, When it falls

NATIONAL WATER MISSION

Jal Shakti Abhiyan



Water conservation and rainwater harvesting



Renovation of traditional and other water bodies/tanks



Reuse water and recharge structures



Watershed development

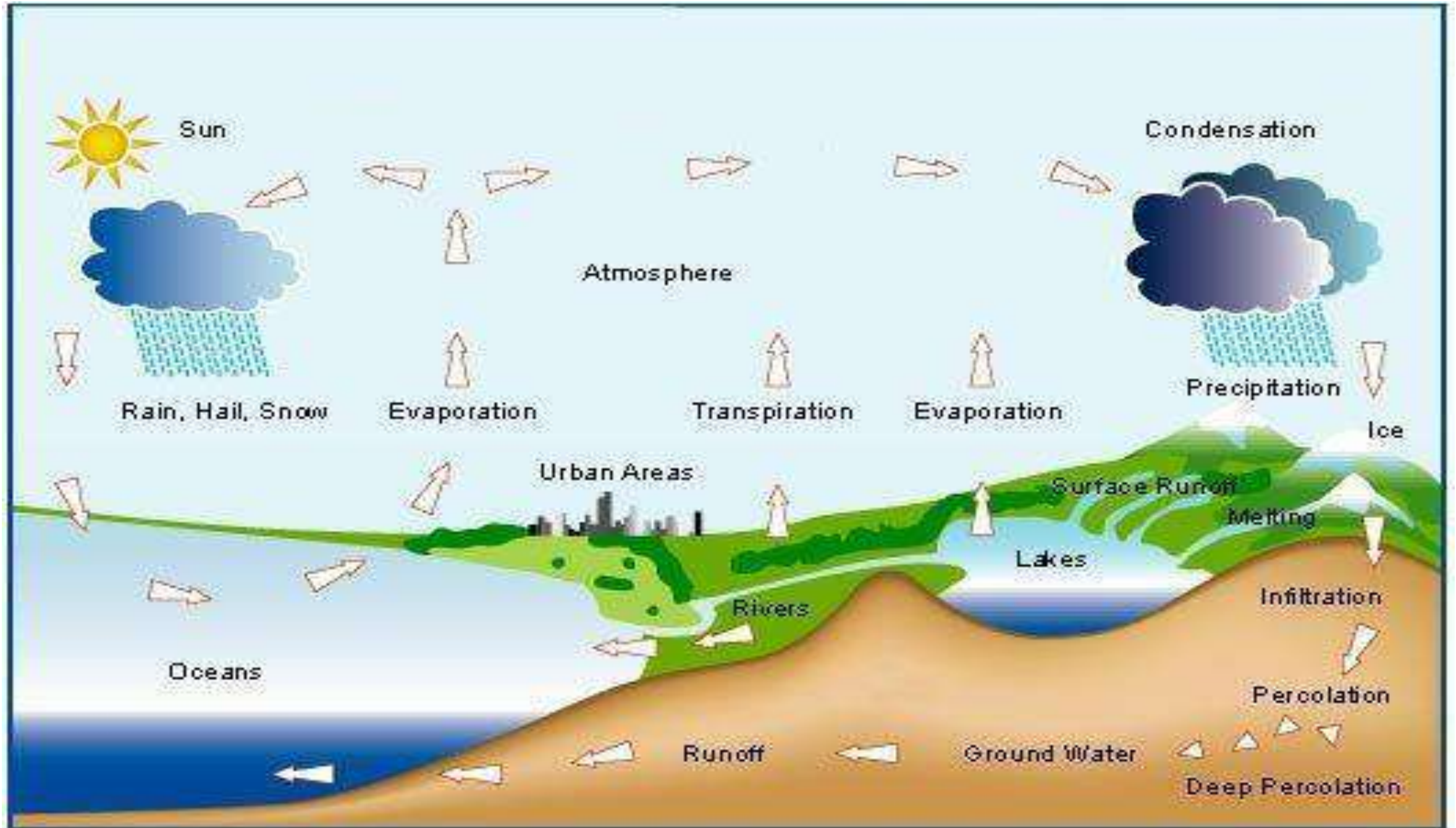


Intensive afforestation

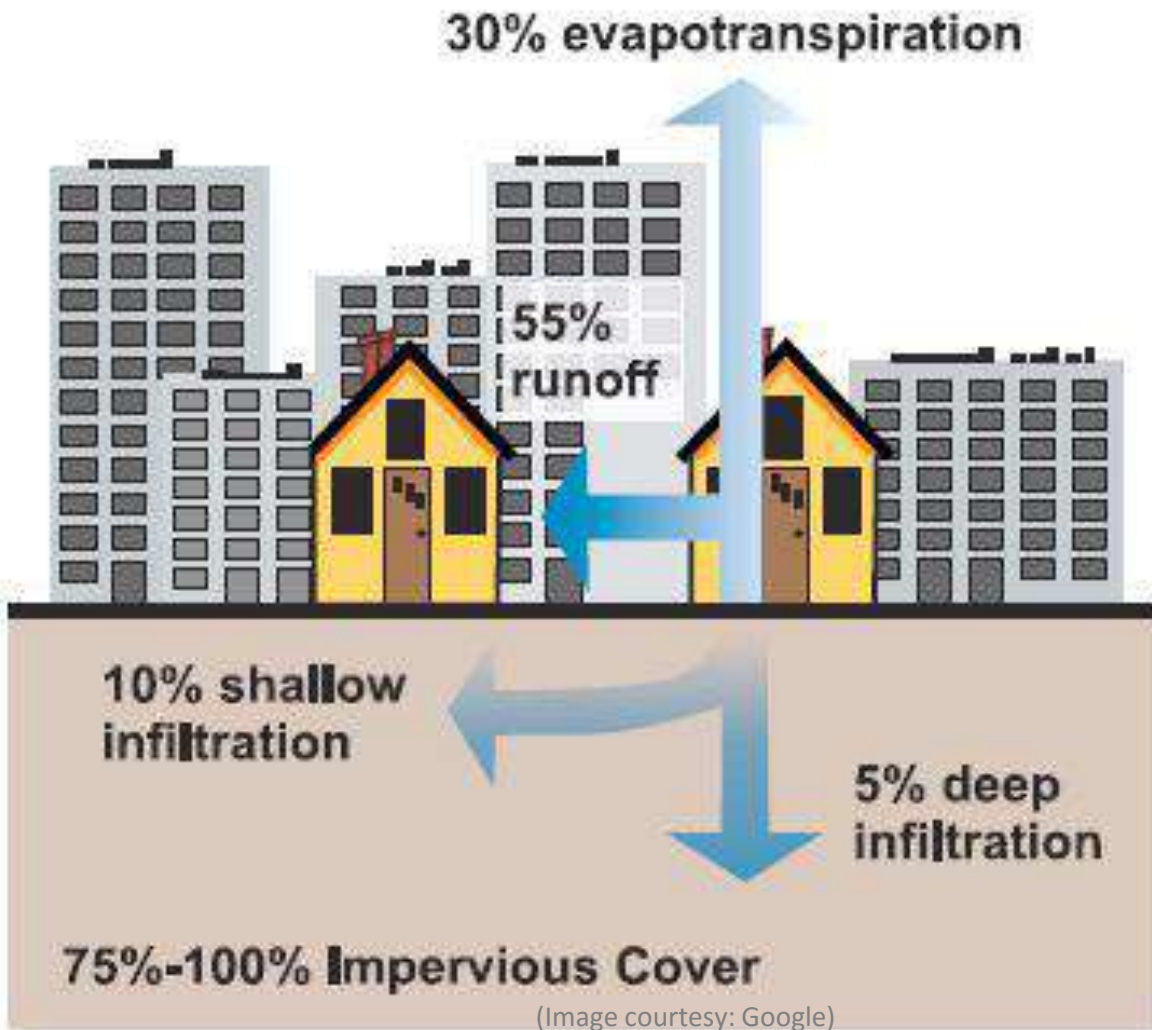
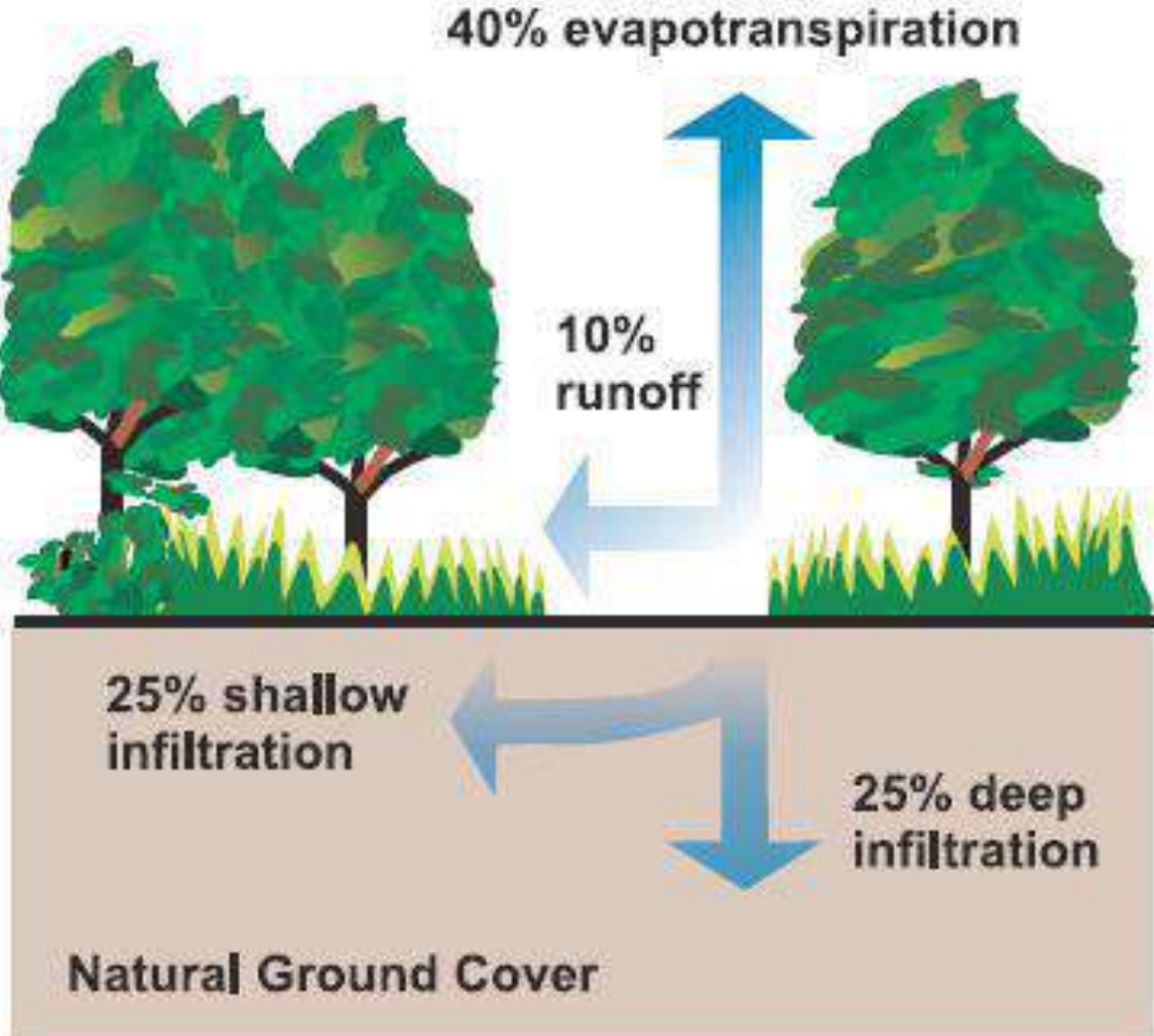
Focused on integrated demand and supply-side management of water at the local level, including creation of local infrastructure for source sustainability

Catch the rain, where it falls, when it falls

The Water (Hydrologic) Cycle



Green and Blue Spaces (Recreate/Rejuvenate)





The Problem:
Why water
conservation?

Table - 1 Per capita water availability in India

| Year | Population (Million) | Per capita water availability (m ³ /year) | Remarks |
|------|----------------------|------------------------------------------------------|-----------------|
| 1951 | 361 | 5178 | |
| 1955 | 395 | 4732 | |
| 1991 | 846 | 2210 | |
| 2001 | 1027 | 1820 | |
| 2011 | 1211 | 1651 | water stressed# |
| 2015 | 1326* | 1508 ^s | water stressed# |
| 2021 | 1345 ^a | 1486 ^s | water stressed# |
| 2031 | 1463 ^a | 1367 ^s | water stressed# |
| 2041 | 1560 ^a | 1282 ^s | water stressed# |
| 2051 | 1628 ^a | 1228 ^s | water stressed# |

Source: Government of India, 2009 (NCIWRD Report, 1999), *projected from 2011 census

Population Vs Water Needs



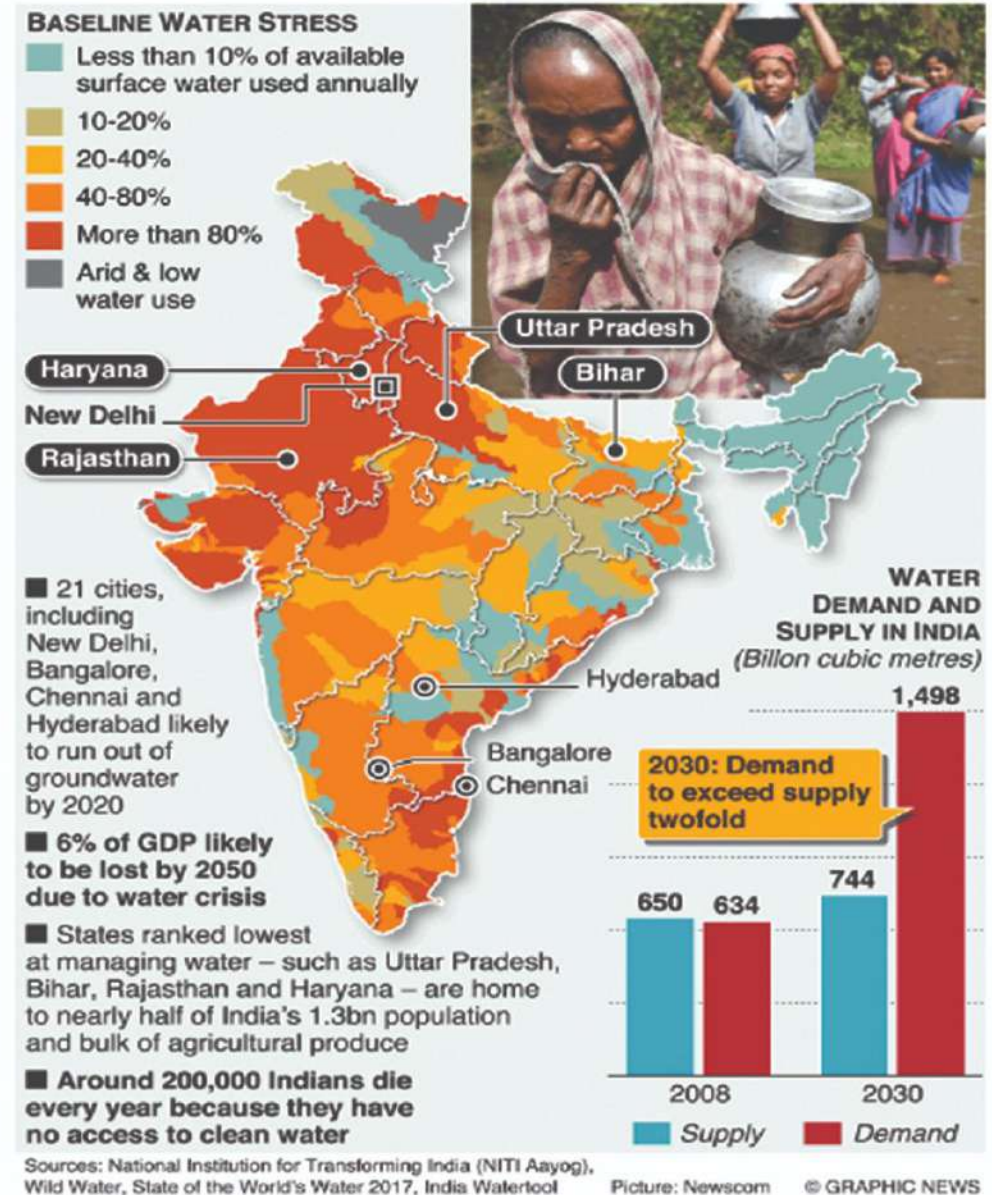
Water Stress

| | |
|------------------------------------------------------|----------------------------------|
| Area of the country as % of world area | 2.4% |
| Population as % of world population (Census, 2011) | 17.1% |
| Water as % of world water | 4% |
| Average annual rainfall (India Meteorological Dept.) | 1160 mm (world average 1110 mm) |
| Range of distribution | 150-11690 mm |
| Range Rainy days | 5-150 days |

Source: Water Resources Information System of India

India on brink of worst-ever water crisis

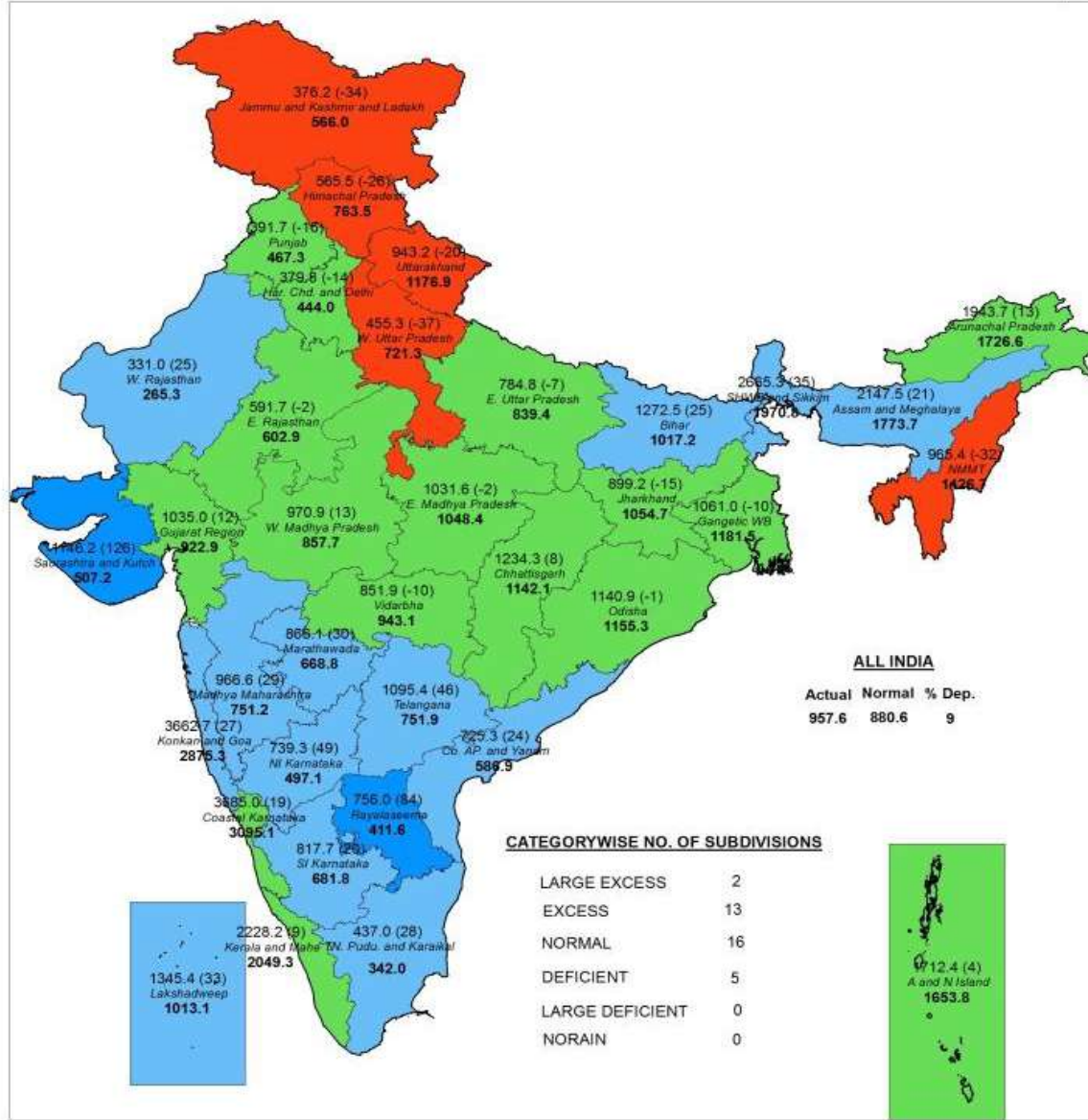
India is suffering from the worst water crisis in its history with some 600 million people facing acute water shortage. The crisis will worsen as demand is projected to be twice the available supply by 2030





SUBDIVISION RAINFALL MAP

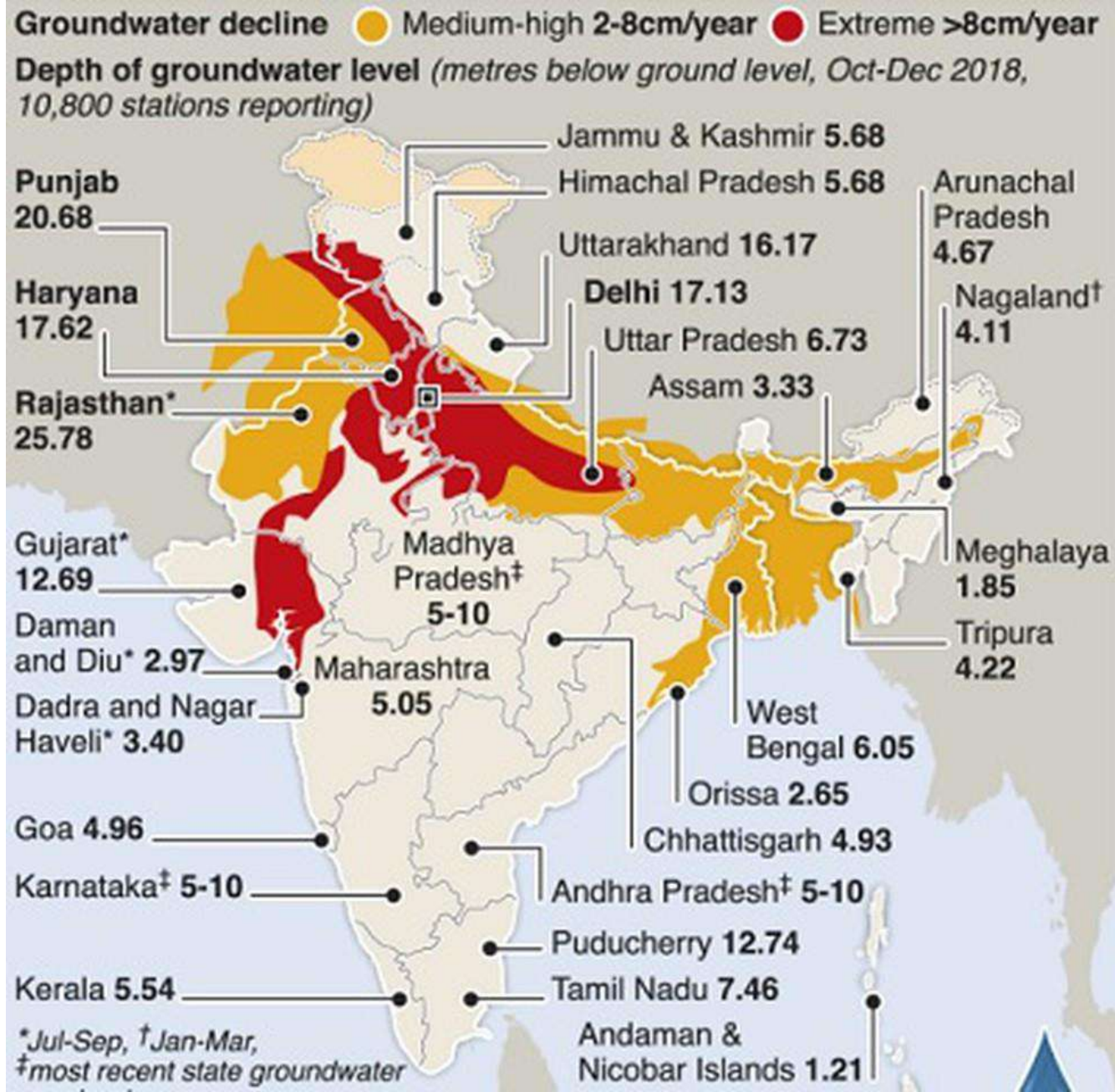
Period : 01-06-2020 To 30-09-2020



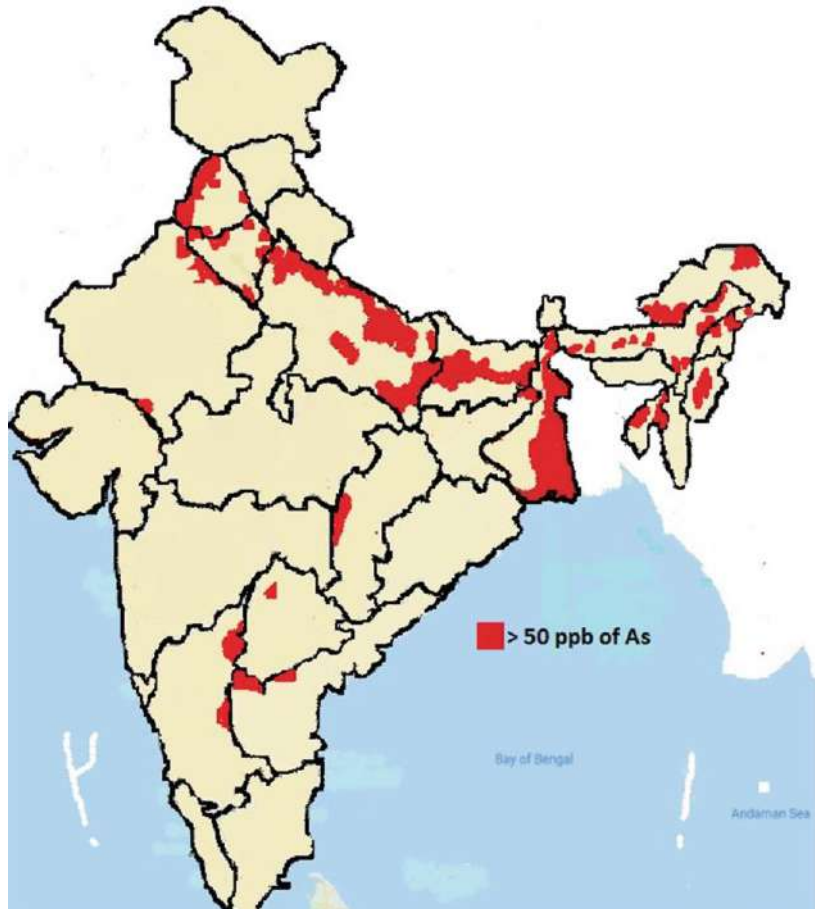
Legend

Large Excess [60% or more] Excess [20% to 59%] Normal [-19% to 19%] Deficient [-59% to -20%] Large Deficient [-99% to -60%] No Rain [-100%] No Data

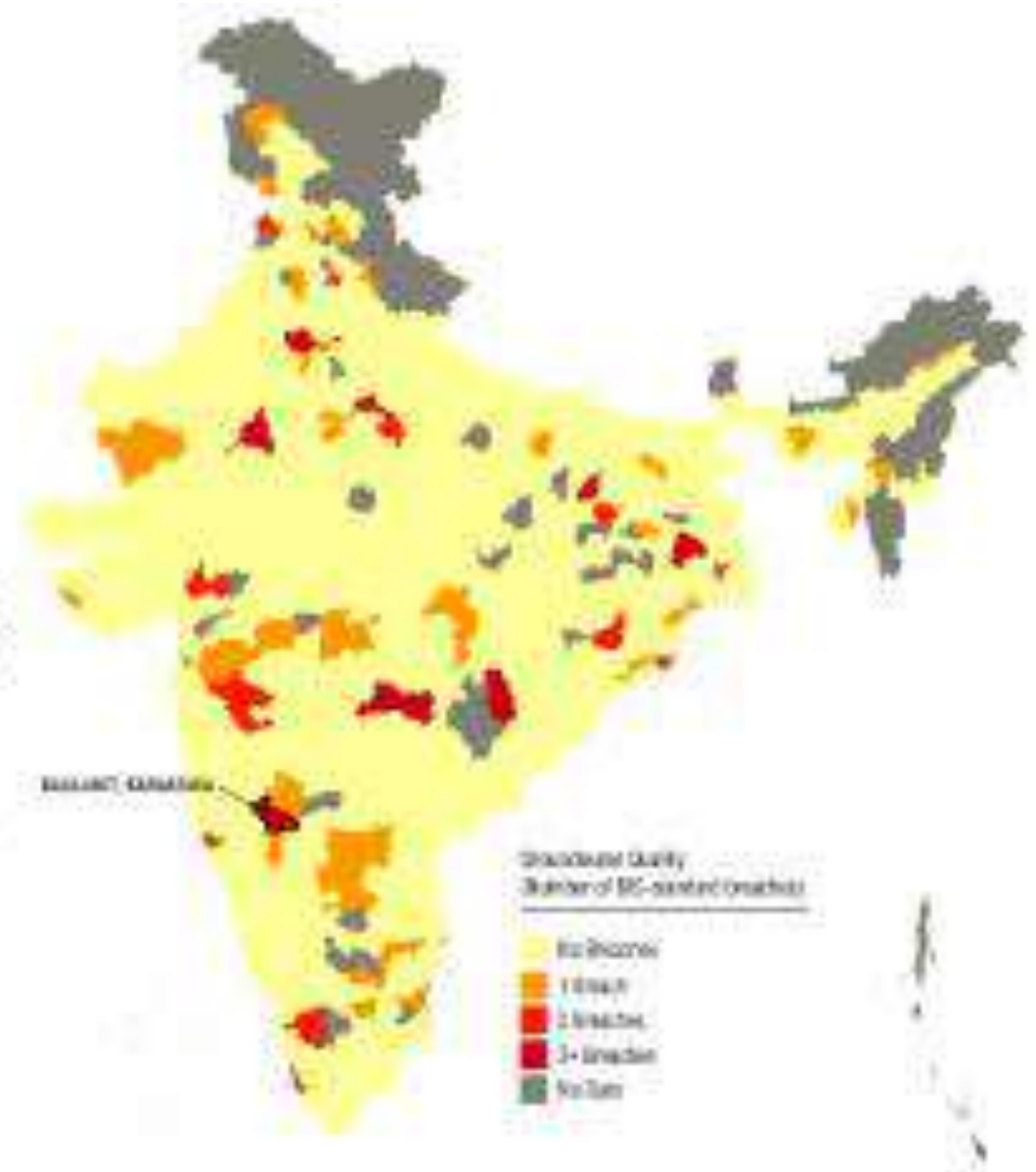
GROUND WATER YEAR BOOK - INDIA 2017-18



The Status of Arsenic Contamination in India



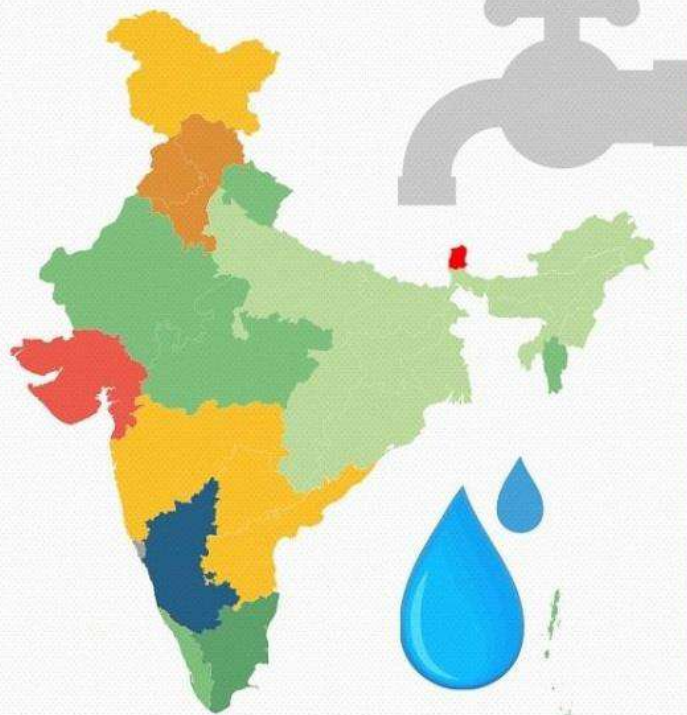
More than
100
MILLION
People Live
in Areas of
Poor Water
Quality



Forbes

ACCESS TO PIPED WATER

% of rural households with piped water supply



| | |
|-------------------|-------|
| SIKKIM | 99.34 |
| GUJARAT | 78.46 |
| HIMACHAL PRADESH | 56.27 |
| HARYANA | 53.47 |
| PUNJAB | 53.28 |
| PUDUCHERRY | 50.35 |
| KARNATAKA | 43.81 |
| MAHARASHTRA | 38.44 |
| TELANGANA | 33.53 |
| ANDHRA PRADESH | 33.52 |
| JAMMU & KASHMIR | 30.02 |
| TAMIL NADU | 29.74 |
| KERALA | 16.75 |
| MIZORAM | 15.74 |
| UTTARAKHAND | 14.32 |
| RAJASTHAN | 12.38 |
| MADHYA PRADESH | 12.2 |
| ANDAMAN & NICOBAR | 10.15 |
| ARUNACHAL PRADESH | 9.09 |
| CHHATTISGARH | 8.93 |
| JHARKHAND | 5.75 |
| MANIPUR | 5.58 |
| NAGALAND | 4.89 |
| ODISHA | 3.94 |
| TRIPURA | 3.18 |
| ASSAM | 2.21 |
| BIHAR | 1.88 |
| UTTAR PRADESH | 1.33 |
| WEST BENGAL | 1.31 |
| MECHALAYA | 0.95 |
| GOA | 0 |

As in June 2019

Source: National Rural Drinking Water Programme

NEWS creative

MODI GOVERNMENT IN MISSION MODE TO ENSURE HAR GHAR JAL BY 2024



PM Modi laid the foundation stone
for the Manipur Water Supply Project

- The Mission aims to provide Freshwater Household Tap Connections (FHTCs) in 25 towns and 1,731 rural habitations in Greater Imphal
- This project will benefit 2,80,756 families in 16 districts of Manipur
- The Manipur Water Supply Project is being implemented at a cost of Rs. 3000 crore



[f](#) [t](#) [i](#) [v](#) [B](#) [J](#) [P](#) [I](#) [n](#) [d](#) [i](#) [a](#) [www.bjp.org](#) Read full at bit.ly/2WQM7Zg



Ramsar Sites In India



Deepor Beel



Disappearing springs

In Sikkim, **over 80%** of the rural households depend on dhara for drinking water. Two of the state's four districts, West Sikkim and South Sikkim, are rain shadow and, thus, drought prone. "After monsoon, there is a long queue at our spring to collect water," said Rita Rai, a resident of Gupti. "In April and May, we have to wait for two to three hours to fill a pot of water."

Brahmaputra's dry city: Why Guwahati faces crippling water crisis

Despite receiving an average rainfall of 1,722 mm per year -- which is equivalent to 5,64,816 million litres of water, enough to serve 37,65, 440 people -- residents of the city struggle each day to access their share of water.

Assam floods: Over 14 lakh affected in 23 districts

At present, 25,461 people are staying in 265 relief camps, said officials.



A health crisis

- Forty-five per cent of India's children are stunted and 600,000 children under the age of five die each year, largely because of inadequate water supply and poor sanitation. (UNICEF, FAO)



An economic crisis

Loss of productivity to water and sanitation related diseases costs many countries up to 5% of GDP (WHO 2012)



A women's crisis

Women spend 150 million workdays every year for fetching water (UN Water)



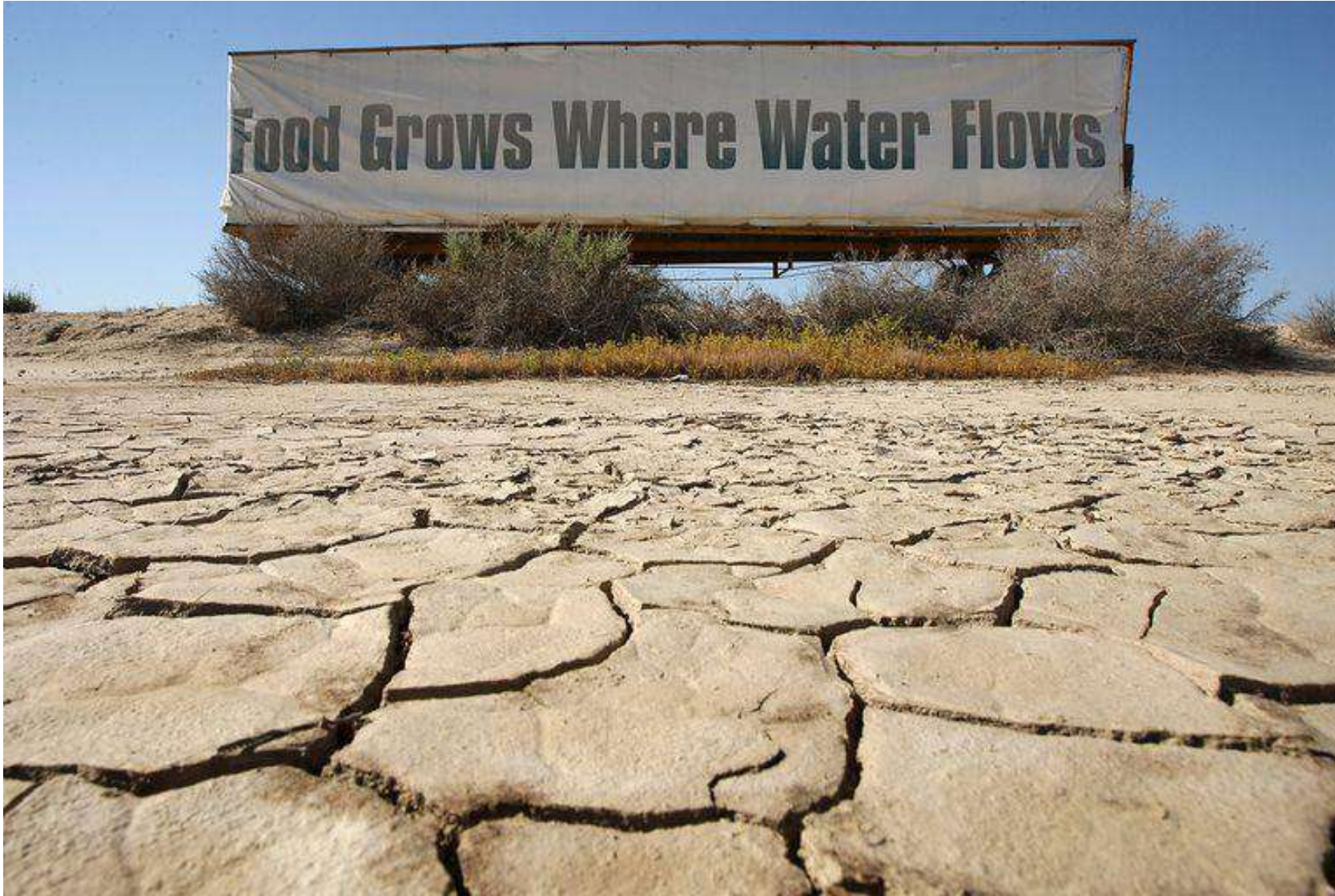
An education crisis

Children are often responsible for collecting water to help their families.



A hunger crisis

The Global hunger index 2020 report has placed India at 94th position among 107 countries



What we have? – A rich traditional water management knowledge

A Baoli in Ferozshah Kotla, New Delhi



Jhalara, Rajasthan



Ahar Pynes of South Bihar



Tanka from Rajasthan



A Johad in Rajasthan



Tank System in Tamilnadu



TK 9- Apatani- Arunachal Pradesh

- Wet rice cultivation cum fish farming system practiced by Apatani Tribes in elevated regions of about 1600 m and gentle sloping valleys, having an average annual rainfall about 1700 mm.
- Tap several small streams and springs found in those hill regions by making temporary walls, which act as barriers and can divert the flow of water towards terraced and valley lands.
- Water harvested from the hilltops is mixed with domestic wastes as it passes through the village through small channels.
- Valleys are terraced into plots separated by 0.6 meters high earthen dams supported by bamboo frames.
- All plots have inlet and outlet on opposite sides. The inlet of low lying plot functions as an outlet of the high lying plot.
- Deeper channels connect the inlet point to outlet point.
- Plots can be flooded or drained off with water by opening and blocking the inlets and outlets as and when required. The stream water is tapped by constructing a wall of 2-4 m high and 1 m thick near forested hill slopes.
- The local drainage system is merged with the irrigation system which, in turn, improves the nutrient content of water required for rice cultivation.
- (Agarwal and Narain, 1997).

Apatani- Arunachal Pradesh



Integrated management of water and forest for irrigation and drinking purpose is nicely fitted in the theme.



Traditional irrigation and indigenous management to check bank erosion using locally available materials



Traditional check dam of Apatani is the unique system of traditional irrigation known as Bogo.



Unique rice-millet-fish culture practice

http://www.icimod.org/photocontest/2013/mi-hin-dollo/20130517_174428.jpg.php

Dongs of Assam

Dongs



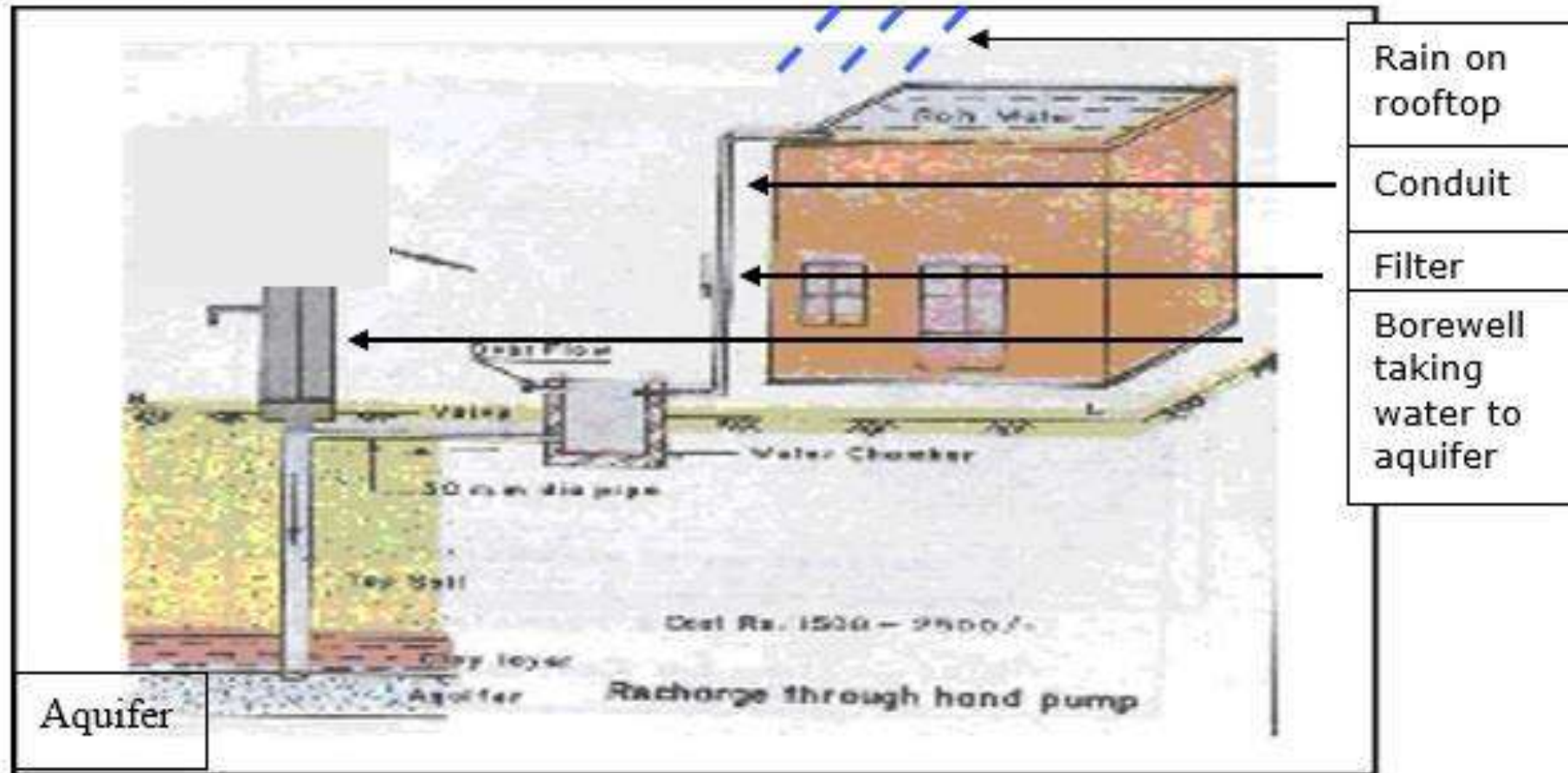
- The Dong system is traditionally prevalent among the Bodo people in Assam and North Bengal, which ensures provision of water for mainly wet paddy cultivation, *Xali* variety, in cultivating lands
 - where rainwater is not sufficient or
 - due to higher altitude and
 - soil type with low water retention capacity.
- The main features of the Dong system are sustainable use of available natural water resources, and largely traditional community norm based governance.
- Dongs are akin to canals, to route water from available water sources, which are usually perennial, to the paddy cultivating fields.
- The water sources are small rivers, perennial swamps, *beel*, streams, etc.



Woman in Baksa participating in the renovation of a dong (Simlaguri village)

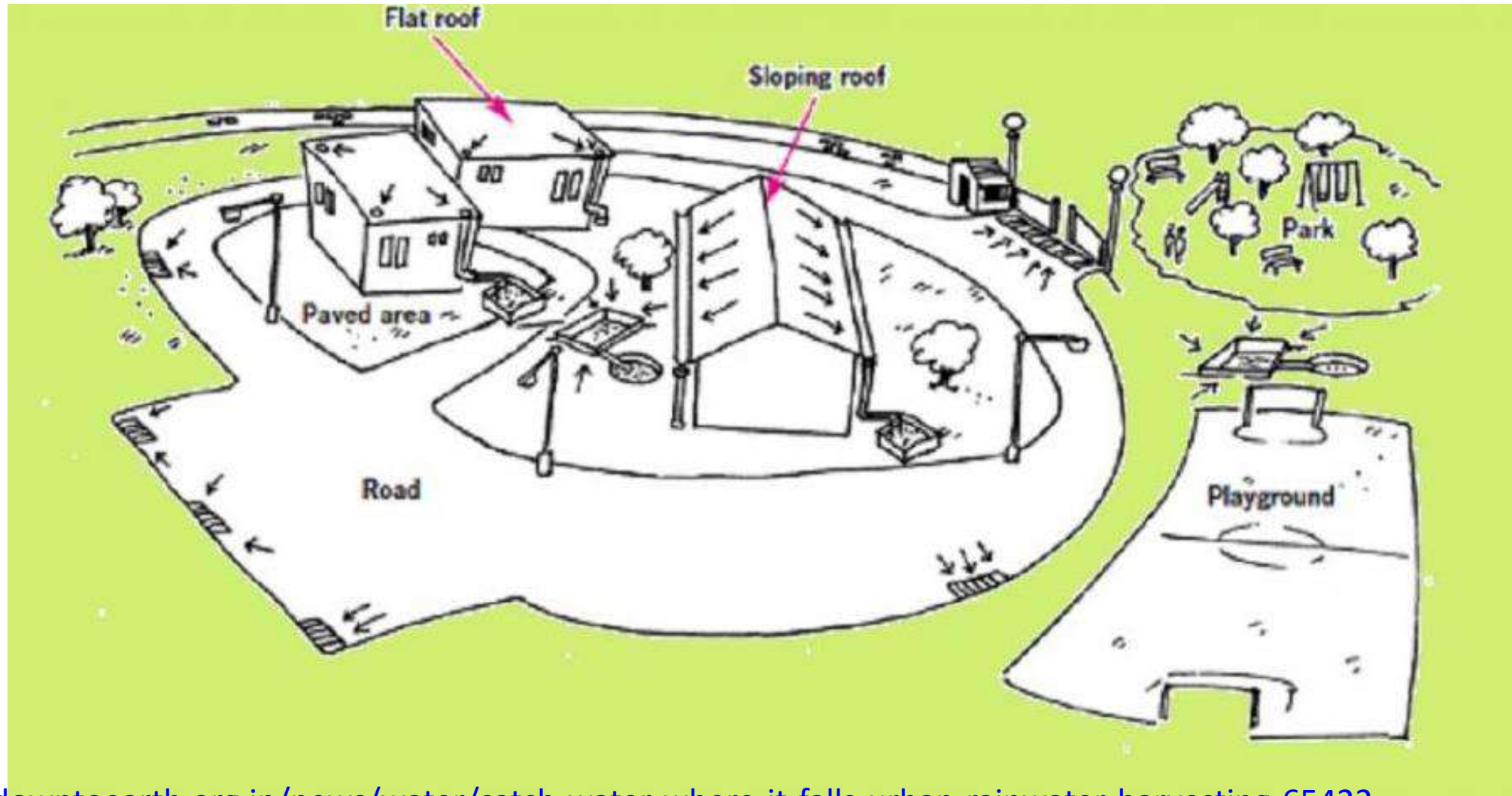
- In Baksa the Dong system is the only source of water both for irrigation and also for household needs. The Dong Bandh Committees have their own constitution for management of dongs
- 11 kms. Of dongs has been restored by the community to better the irrigation system

Rainwater harvesting



The catchments

- The catchment is a structure or land area that is used to collect rainwater and drain run-off.
- Can be either paved (roofs, courtyards, roads, etc) or unpaved (lawns, playgrounds, open spaces, etc).



Rainwater harvesting and management of water in steep slopes for cultivation.-Along (Aalo) district headquarter of West Siang District, Arunachal Pradesh.



Rainwater harvesting and management of water for dual fish-cum-paddy cultivation-Lower Subansiri district (Ziro valley), Arunachal Pradesh



**Revival of stream-Chal Khal method,
Pauri District, Uttarakhand**



Diversion Bunds



Tie Ridging



Contour Farming



Farm Ponds



Use of Abandoned dugwells

<http://upgovernor.gov.in/en/page/explore-raj-bhavan>



Gabion Check Dam

https://www.youtube.com/watch?v=StEoS7wJiq4&feature=emb_logo

https://www.youtube.com/watch?v=u_6Eh8UhrGo

Action:

How can NYK Youth fellows contribute?

- **Public awareness and sensitization**

- Posters, banners and other publicity material
- Street plays, songs and Slogans
- Awareness on Traditional Water Wisdom using Folk Performers
Bahurupiya, Acrobats

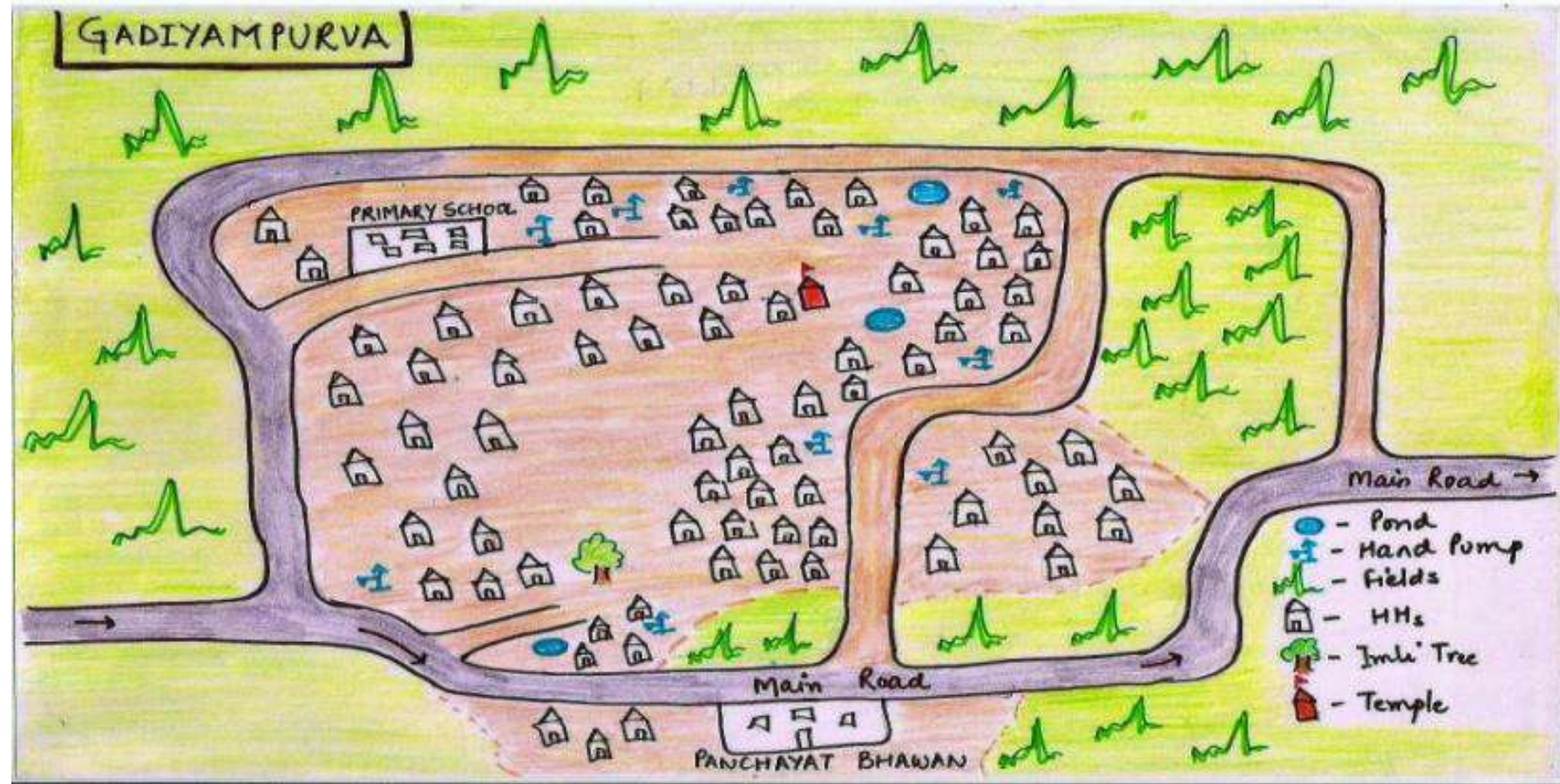
<https://www.youtube.com/watch?v=JEkPS5m8rBY>

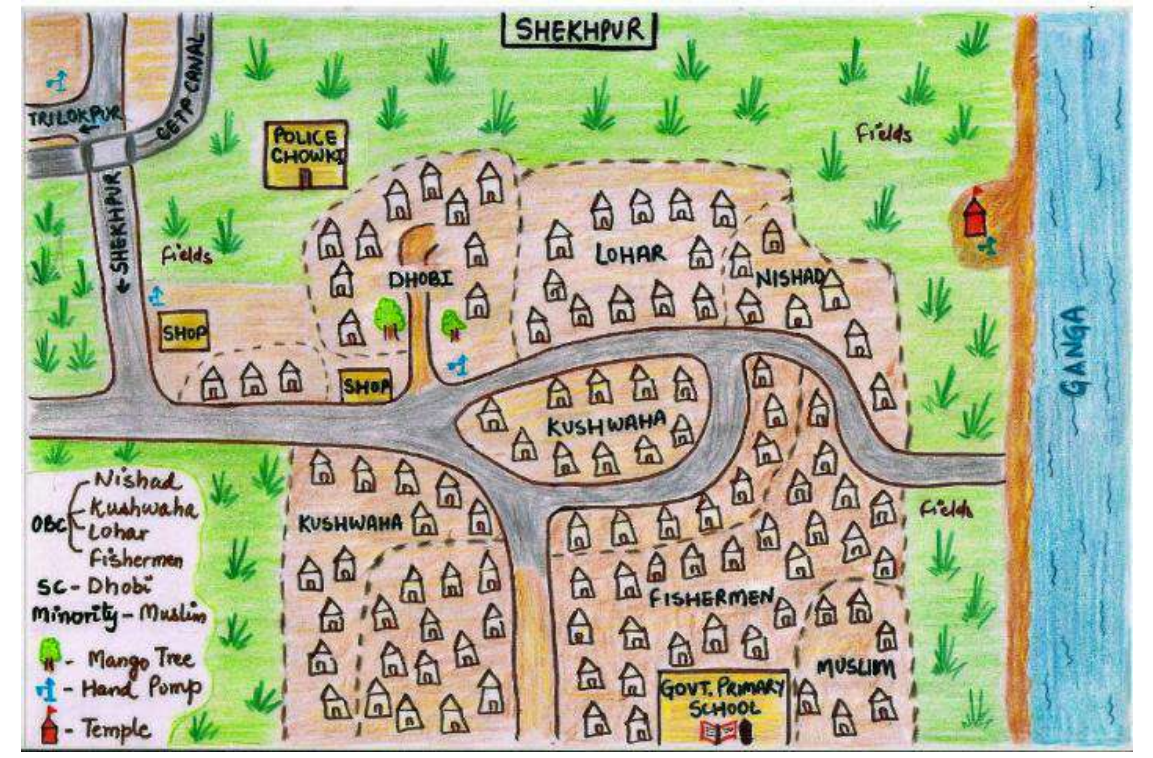
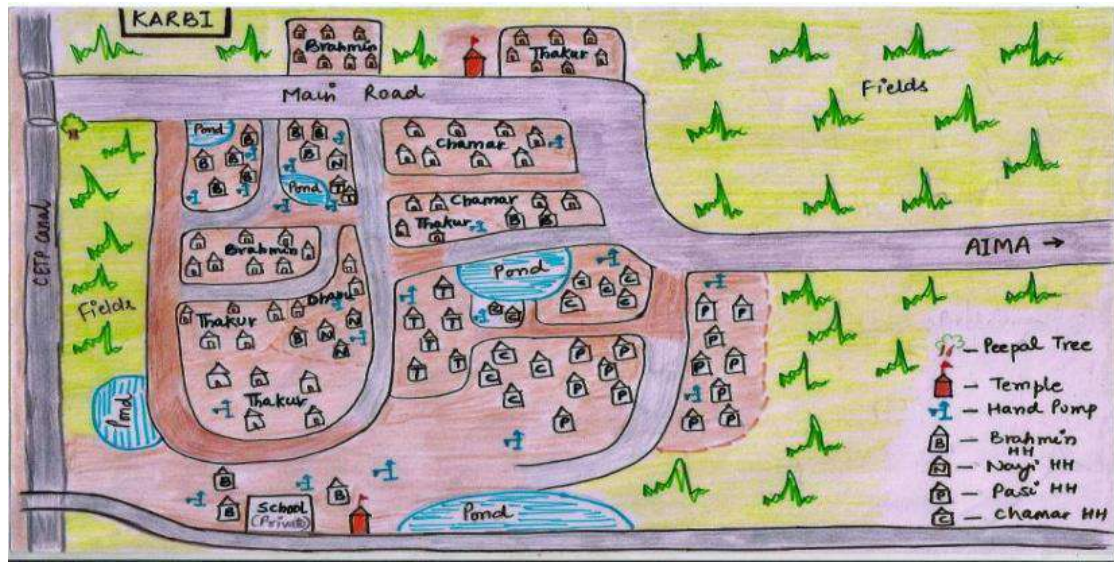
- Walking the tight rope for water

<https://www.youtube.com/watch?v=4qgbJ0vfn-Y>

Resource Mapping - Major Water Repositories with GPS points – Geotag app

- Traditional water bodies
- Man-made reservoirs
- Lakes and rivers
- Springs
- Forests, fields
- Wetlands





Documentation

- Government schemes to promote water conservation –RWH and revival of traditional ponds
- Basic Data on the village visited (Google forms) <https://forms.gle/HXardnSM1zGNx7Cv8>
 - Name of the state, district and village
 - Name and contact number of the youth fellow
 - Name and contact of Sarpanch
 - Number of Houses
 - Population
 - Public buildings – School, Panchayat office, Community Center, Primary health care center
 - Average rainfall
 - Soil type (Sandy, Loamy, Clayey, Mixed)
 - Topography (Plain/ Hilly)
 - Number of ponds/lakes/wetlands/well/government borewells and condition (clean, silted, filled with garbage)
 - Water User Association /Jal Samiti/Pani Panchayat/ Other groups details if present

Establishing an Information Center



- **Jal Shakti Kendra/ Water Knowledge Center**
 - One stop information hub on water conservation (**A helpline number**)
 - Who to approach for Rainwater harvesting?
 - What will be the cost?
 - How much water can I harvest ?
 - Any support from the government?
 - Any information manual?
 - How do I maintain the structure? etc

A
C
T

ACTION

CHANGES

THINGS

