

Water Conservation and Rainwater Harvesting



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Water conservation and rainwater harvesting



Renovation of traditional and other water bodies/tanks



Reuse water and recharge structures



Watershed development

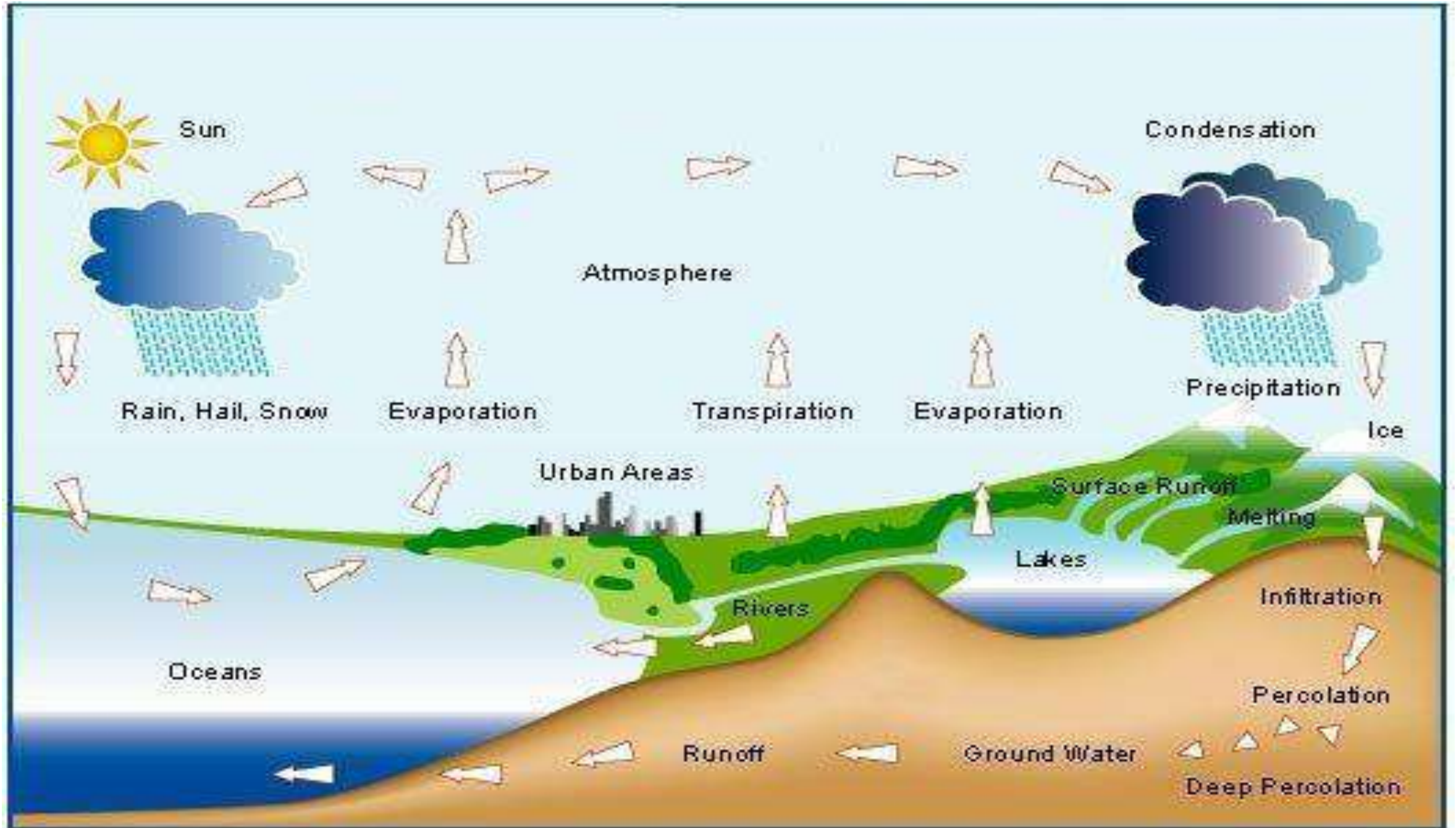


Intensive afforestation

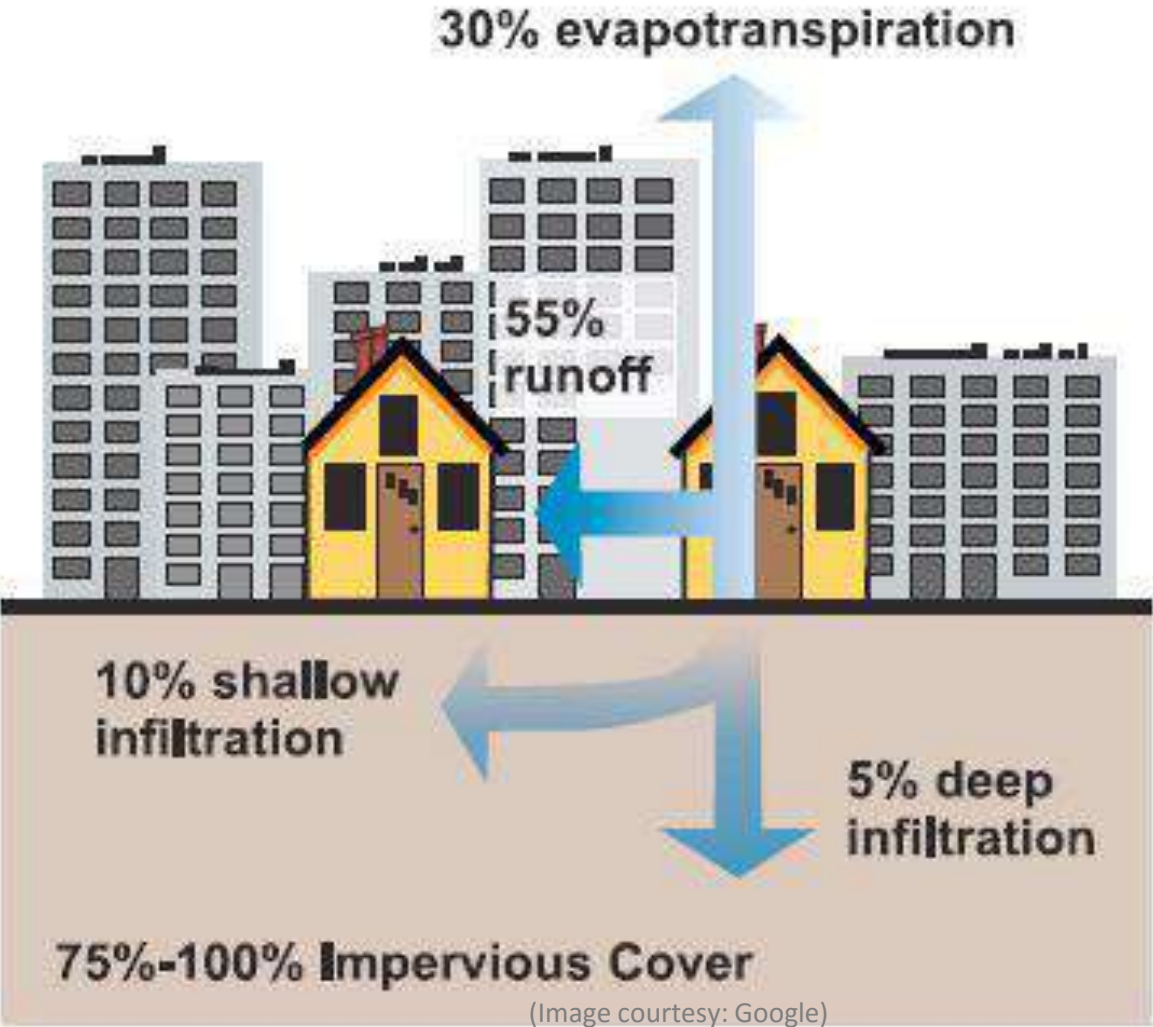
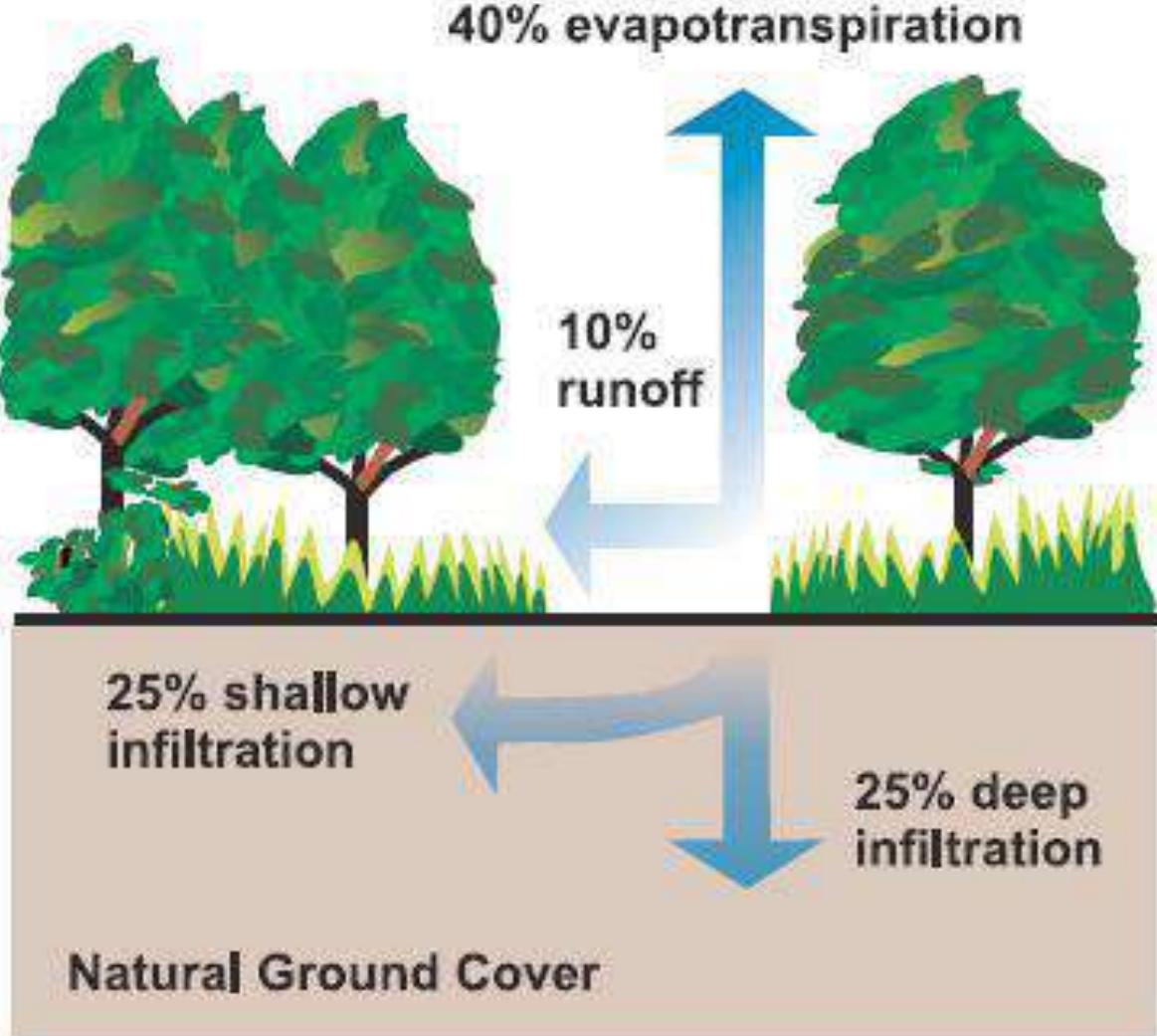
Focused on integrated demand and supply-side management of water at the local level, including creation of local infrastructure for source sustainability

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



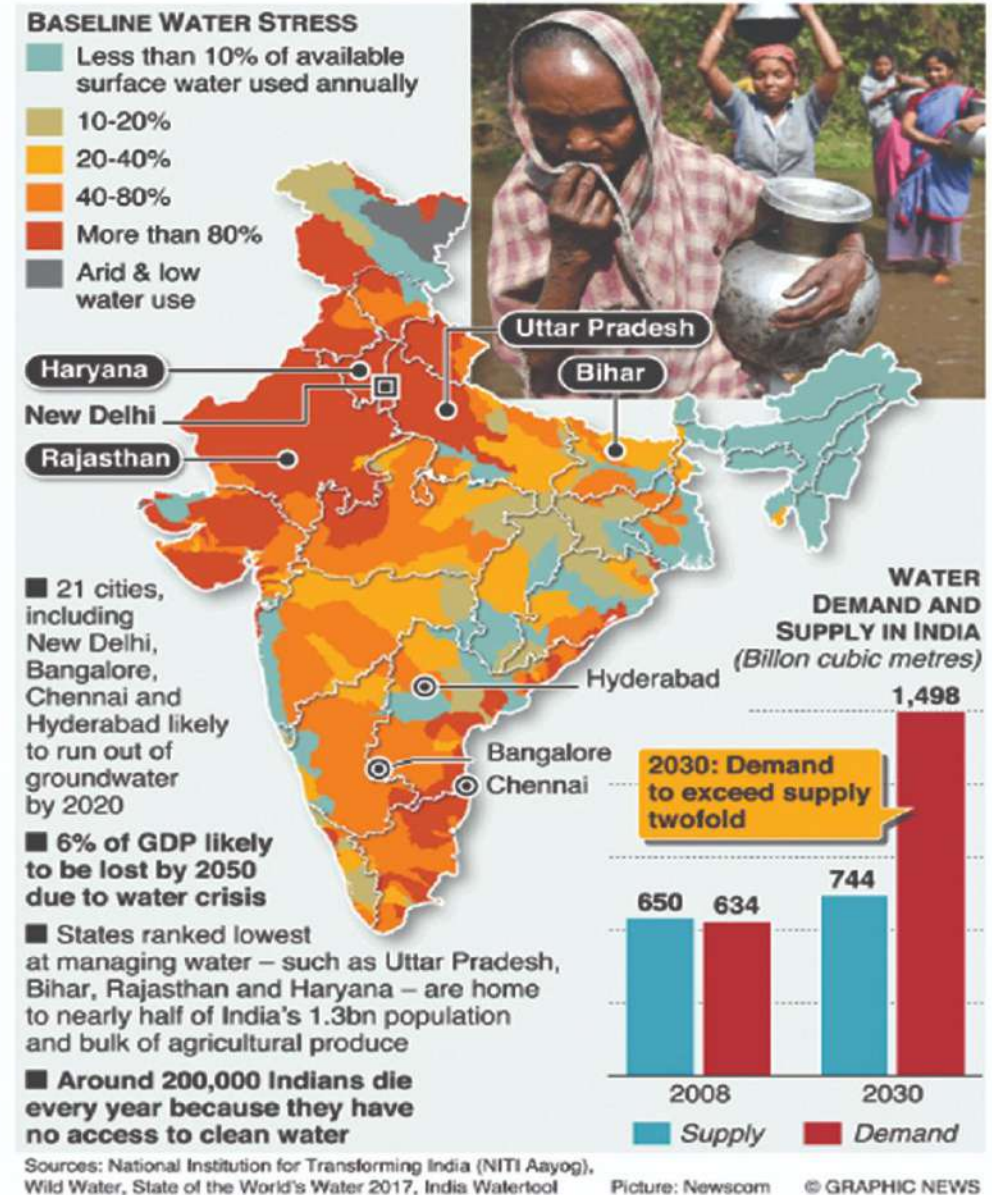
Water Stress

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

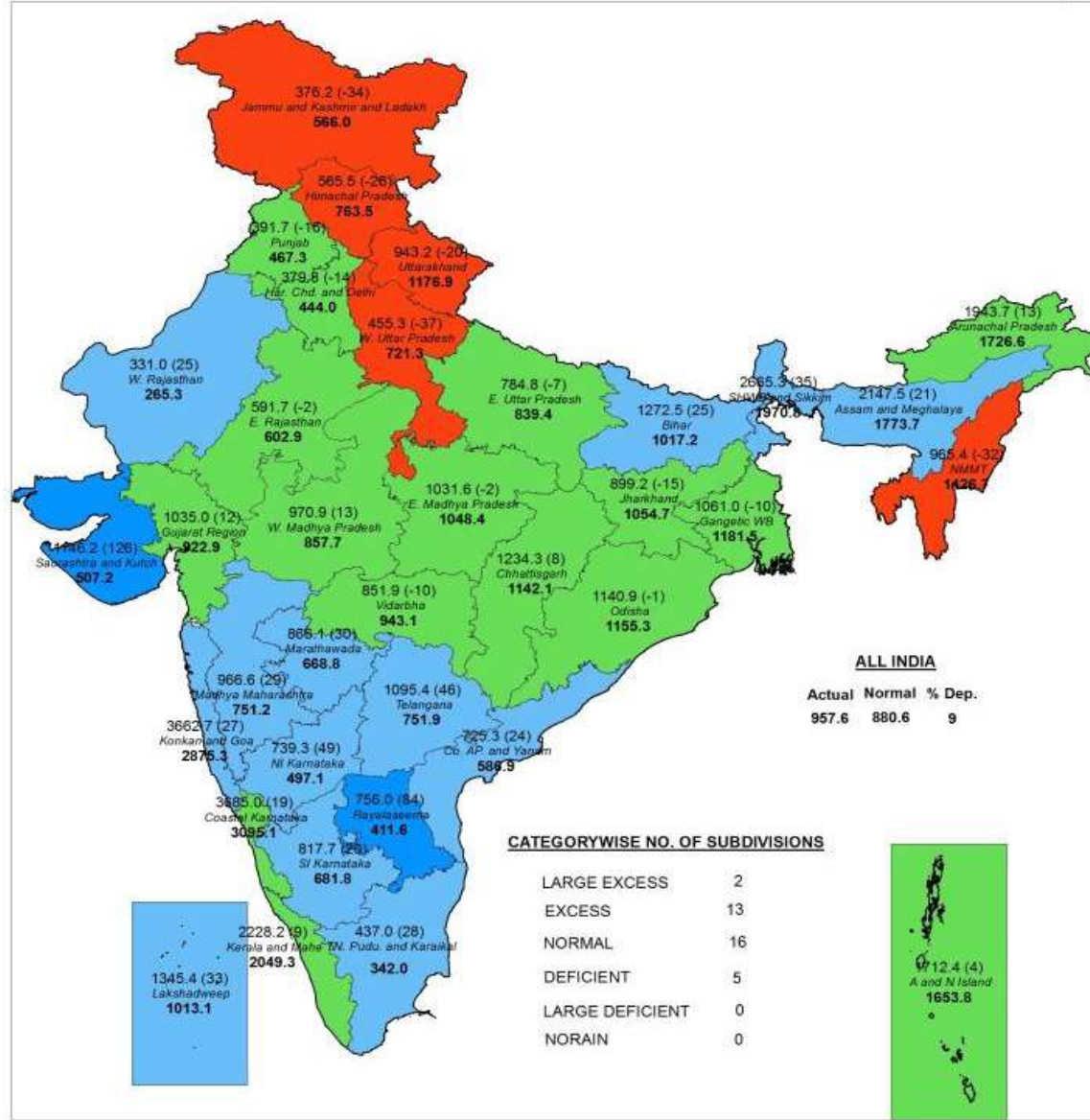
India is suffering from the worst water crisis in its history with some 600 million people facing acute water shortage. The crisis will worsen as demand is projected to be twice the available supply by 2030





SUBDIVISION RAINFALL MAP

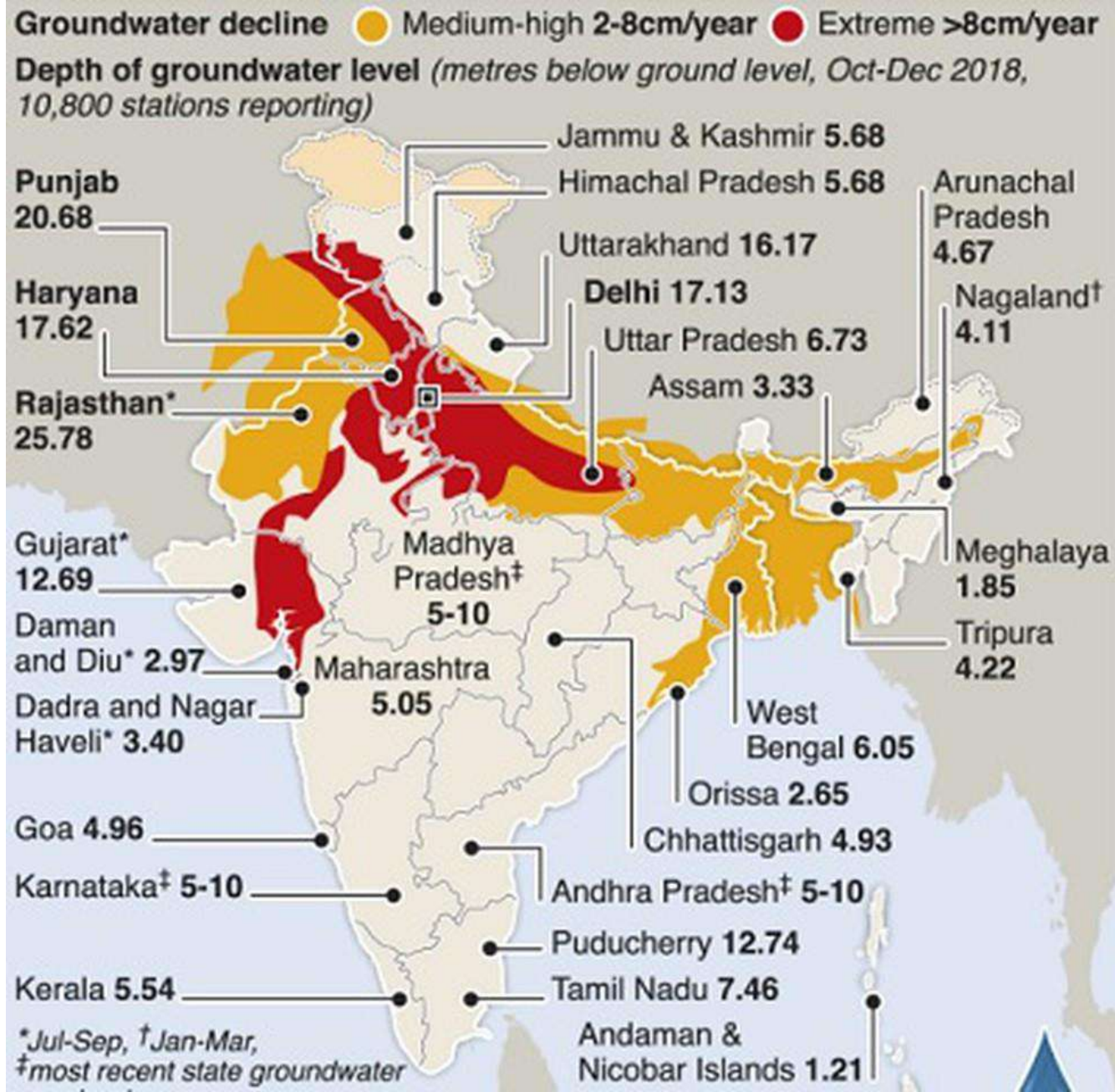
Period : 01-06-2020 To 30-09-2020



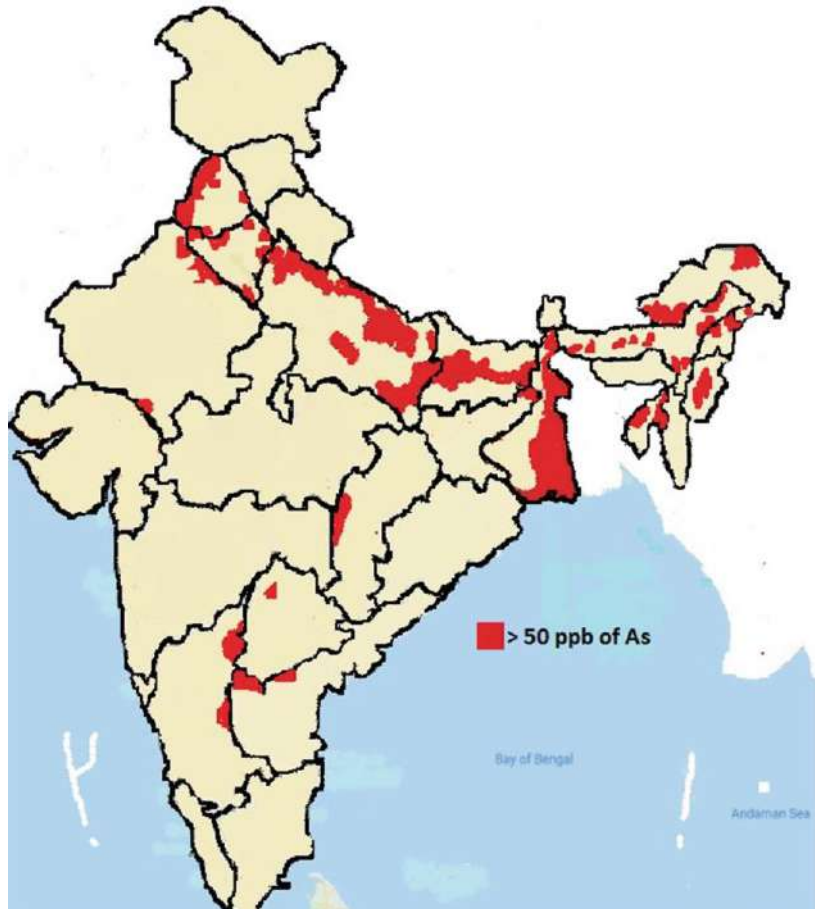
Legend

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

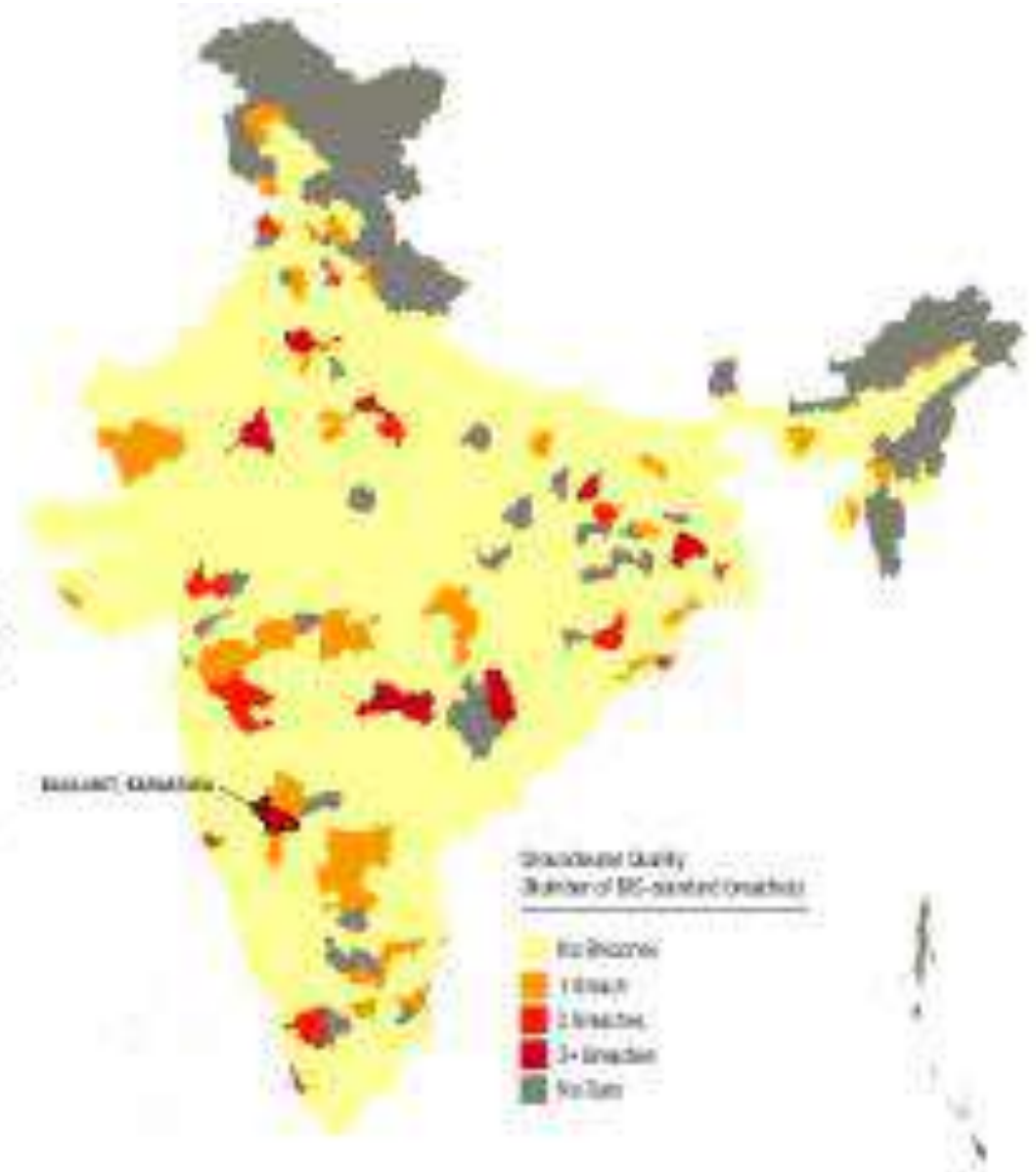
GROUND WATER YEAR BOOK - INDIA 2017-18



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



Rudrasagar Wetland



Evolution of state rankings over time for north-eastern and Himalayan states based on Water Index composite scores (FY 15-16, FY 16-17, FY 17-18)

North-eastern and Himalayan states	FY 2017-18	FY 2016-17	FY 2015-16
Himachal Pradesh	1	2	1
Uttarakand	2	6	4
Tripura	3	1	2
Assam	4	4	5
Sikkim	5	3	3
Nagaland	6	5	6
Meghalaya	7	7	7
Arunachal Pradesh*	8	Not applicable	Not applicable

**Excludes Arunachal Pradesh as it was not assessed on the Index for FY 15-16 and FY 16-17, and therefore previous year comparisons could not be made.*

NAGALAND

- Nagaland receives very high rainfall where the average annual rainfall is around 250 cm to 300 cm. we receive rainfall for seven long months i.e. from April to October.
- Most villages in Nagaland were established at hill tops to improve their security.
- These villages drew drinking water from surface sources, either by gravity or by pumping.
- Catchment areas of such water sources were small and delicate.
- With unabated destruction of forests due to logging, Jhum cultivation and other human activities, the problem of diminishing water quantity at these sources is a real threat.
- Measures like afforestation to conserve the natural environment of the areas where water collects, construction of small structures to stop flowing water and increase its percolation in the soil and tapping of groundwater can be explored.
- Presence of chemical contamination in ground water need to be tackled through appropriate cost effective technology.

60% of rural population without piped water supply in Nagaland



In this file photo, people wait in queue to collect water from a well at Dzuvürü colony in Kohima.

Meghalaya , the wettest place on Earth

The state receives 2818 millimetres of average annual rainfall.



Source: Draft Integrated State Water Policy, Meghalaya

What's making the water in Shillong oily and undrinkable?

July 9, 2019 · Linda Chhakchhuak

DRINKING WATER CONTAMINATION IN SHILLONG



The reservoir at Mawphlang. Pic: Flickr/CC BY 2.0

- Rivers are being polluted by unchecked sand mining, quarrying, rapid urbanization and other “developmental’ activities in the ecologically sensitive regions of this hilly state, causing a deterioration in water quality
- The resultant high turbidity due to heavy presence of soil and other particles in the once pure rivers and springs means more chemicals have to be used to make the water fit for drinking.

One of the key components of community participation would involve payment for environmental services (PES) based on the “beneficiary pays principle”. The PES model would be adopted and implemented by upstream and downstream communities for conserving water resources and revitalising the catchment upstream and stopping further degradation

TRIPURA

Annual rainfall ranges from 1922 mm to 2855 mm. The rainfall generally increases from south-west to north-east.

- Reports received from Amarpur, Kumarghat and Teliamura said that with the advent of the dry season, people are facing a serious crisis as in most of the places, sources of drinking water are not working.
- In some areas, the government is supplying water through tankers but these are too inadequate compared to the demand.
- Often reports are coming about disputes among the villagers over a collection of water.

<https://www.sentinelassam.com/north-east-india-news/tripura-news/coronavirus-overshadows-severe-drinking-water-crisis-in-tripura/?infinitemscroll=1>



Women of Echai tal Charra village in Tripura collecting water from a dirty brook. Photo: Panna Ghosh

Although Mizoram receives an annual rainfall of about 254 centimetre, people living on the hill tops usually suffer from water scarcity as the rain water runs off quickly.

- In recent years, increased temperature and rainfall variations due to climate change have worsened the degradation of water catchments because of accelerated soil erosion and surface water runoff.
- Combined with mismanagement of water resources, a lack of regulatory framework and growing demand, water bodies in Mizoram are increasingly drying up or becoming seasonal, leading to acute shortage, particularly from November to March.

Revive springs for water security in Mizoram

by Vijeta Rattani, Indrani Phukan | Jan 24, 2020

Community-led watershed management in climate-vulnerable Mizoram can ensure water security during the lean season



Many villages in the mountainous areas of Mizoram face acute water scarcity in the dry season (Photo by Flickr)

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)



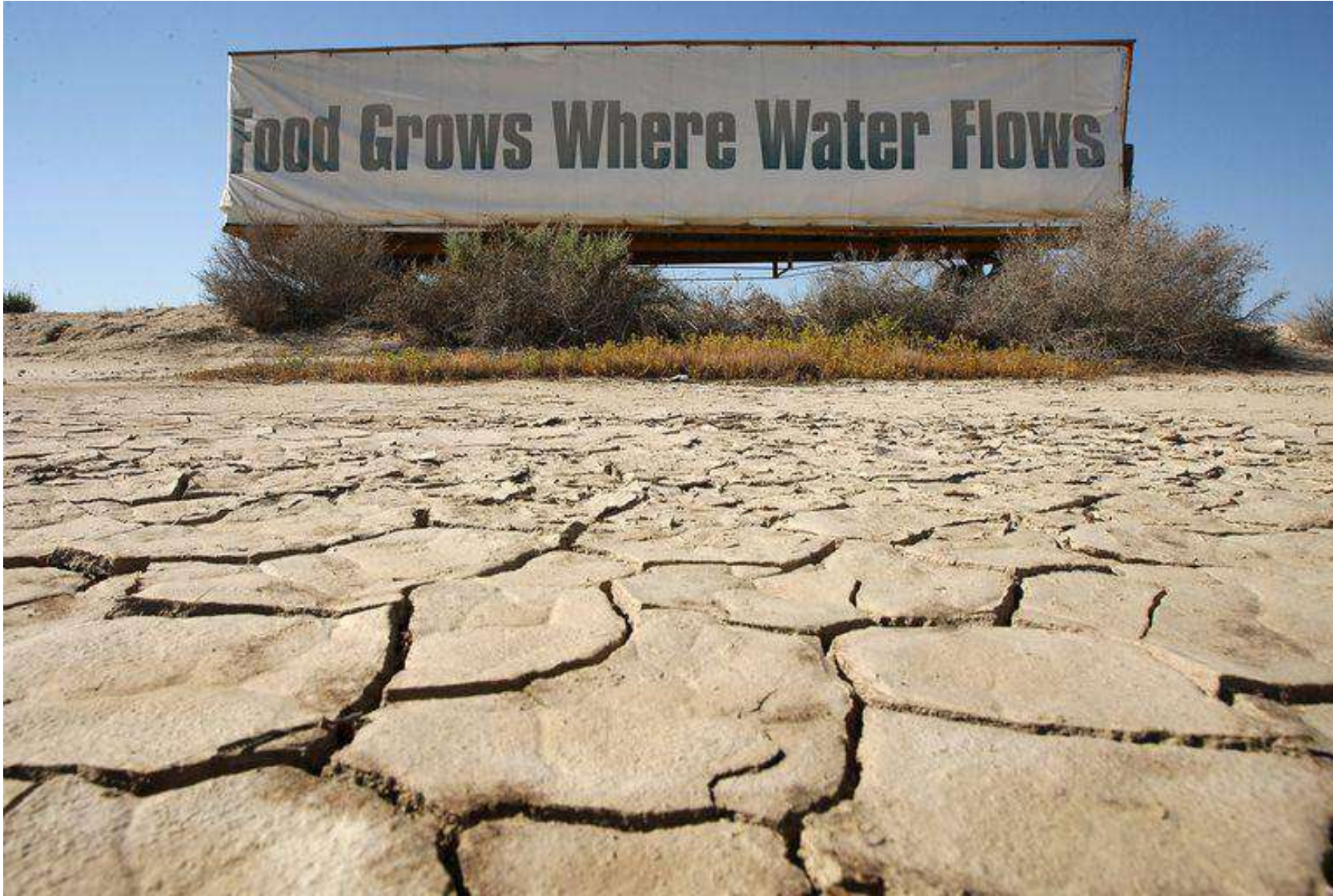
An education crisis

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



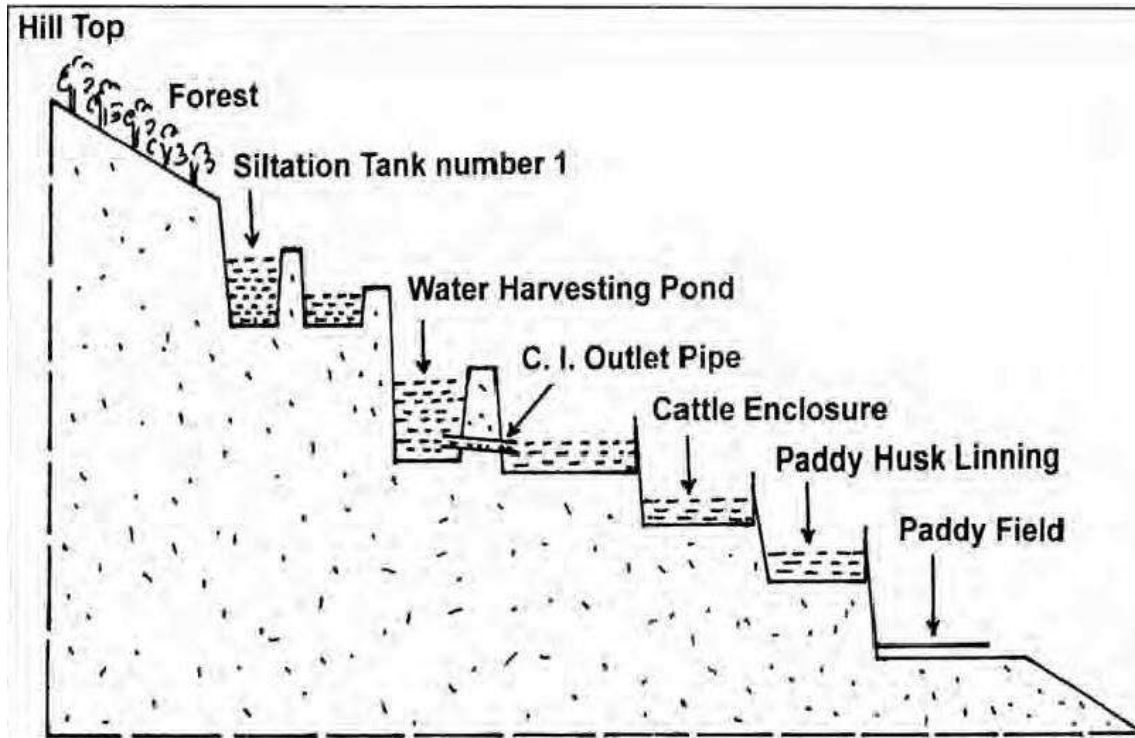
A Johad in Rajasthan



Tank System in Tamilnadu



Zabo System- Nagaland



- Dabo means 'impounding run-off'.
- Also known as the ruza system
- Combines water conservation with forestry, agriculture and animal care and promotes soil management, environmental protection and sustainable water management.

Bamboo Drip Irrigation -Meghalaya

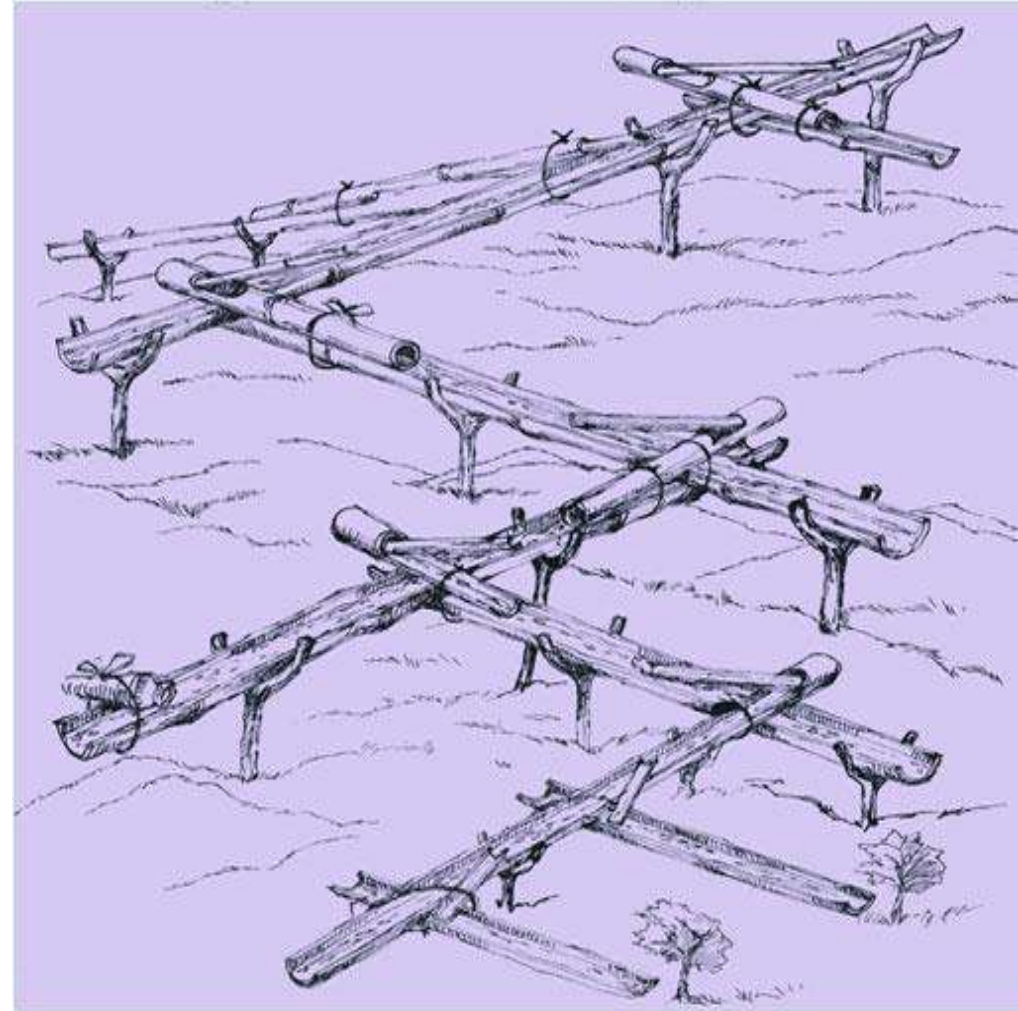
Over 200 years old tradition

Harnessing forces of gravity

Holed bamboo shoots zig-zag downhill, diverting the natural flow of streams and springs across terraced cropland.

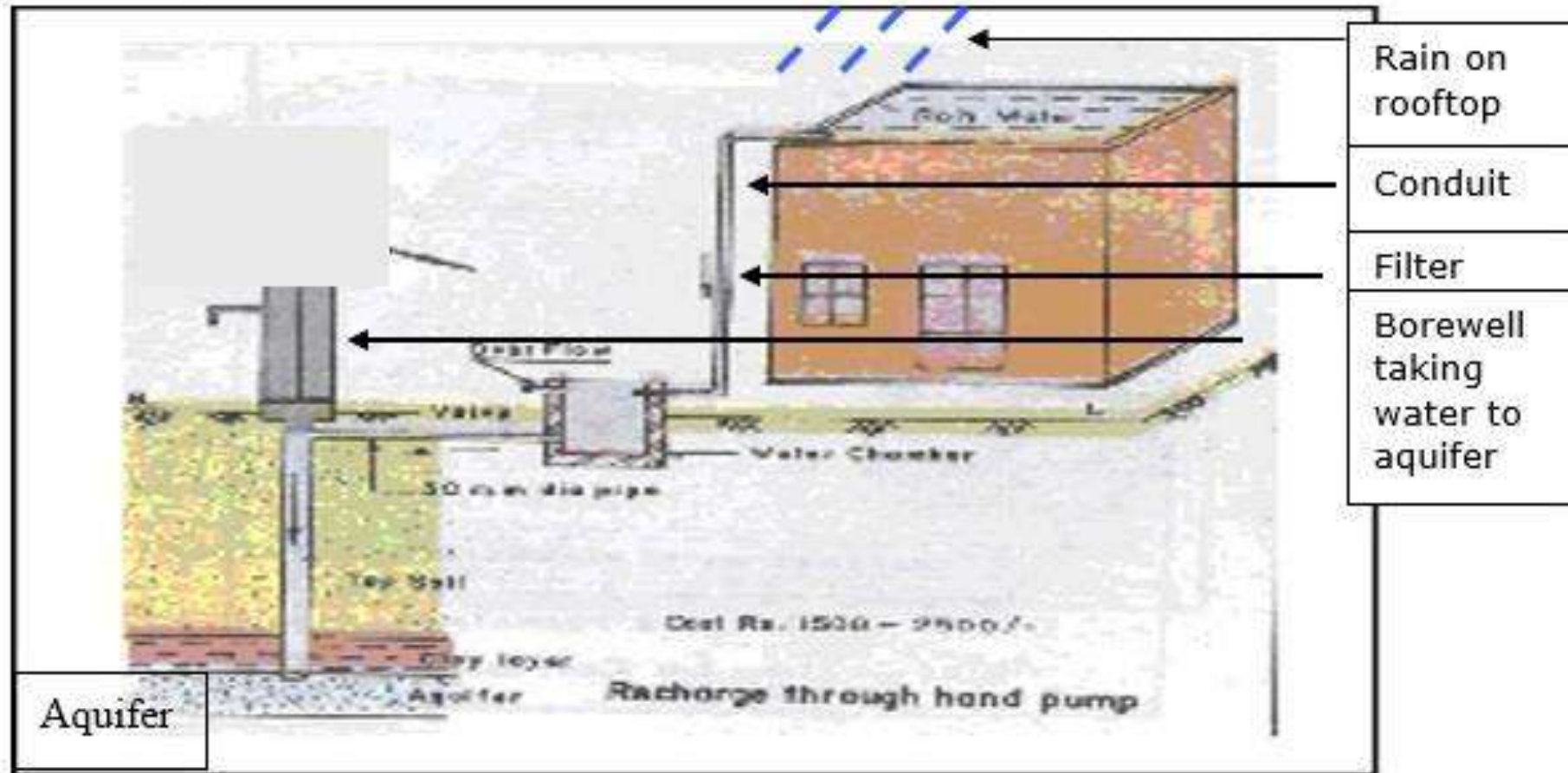
Advantages of using bamboo are two-fold-

- prevents leakage, increasing crop yield with less water
- makes use of natural, local, and inexpensive material



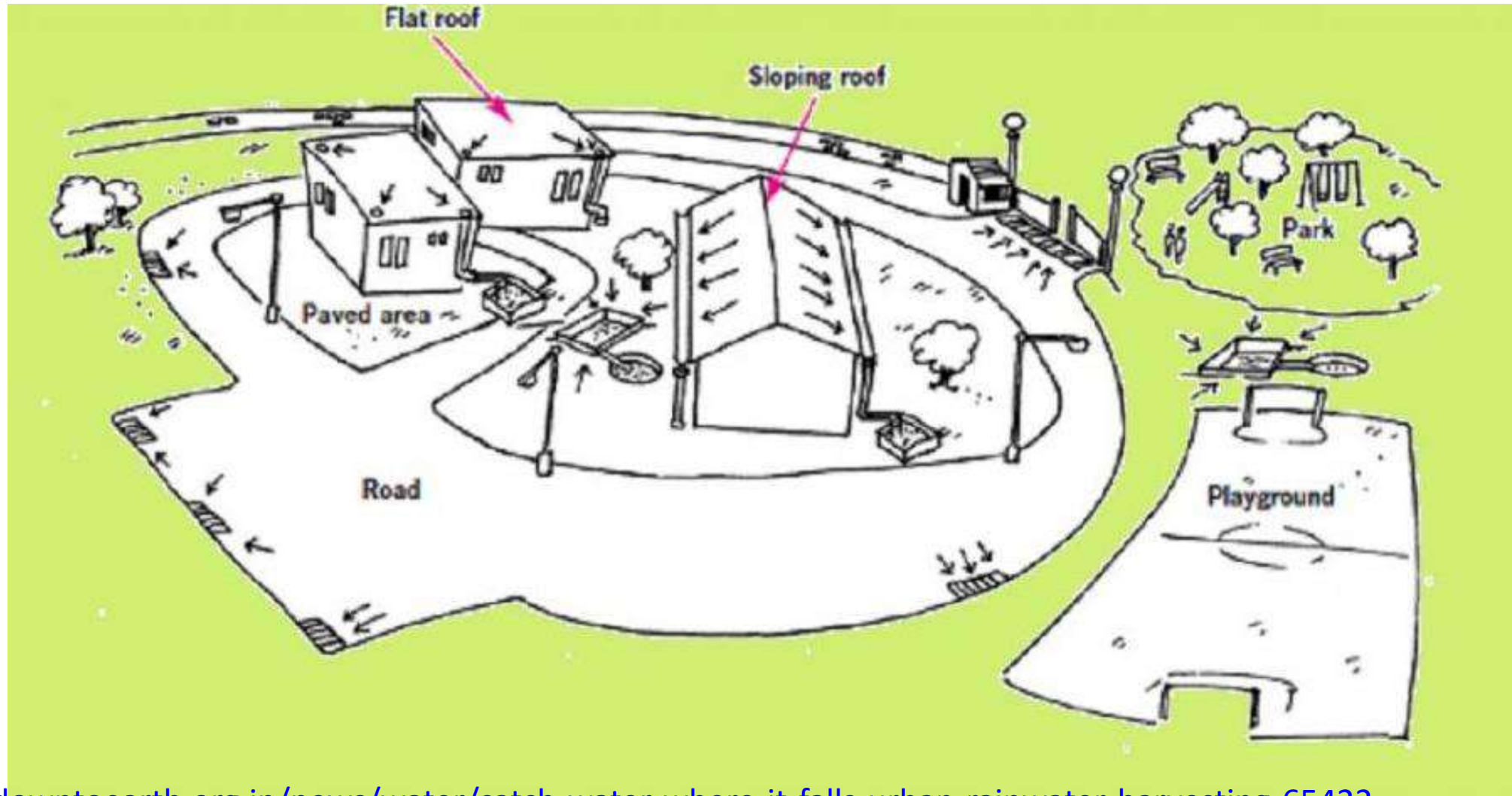
Bamboo drip irrigation system (Extracted from *Dying Wisdom* (1997))

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

https://nwa.mah.nic.in/sdmc/rwh/02_methods.htm



Use of Abandoned dugwells

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



Gabion Check Dam

<https://www.youtube.com/watch?v=aWTq5Gbnjt8>

<https://www.youtube.com/watch?v=LAhSEBM0YIM&t=4s>

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

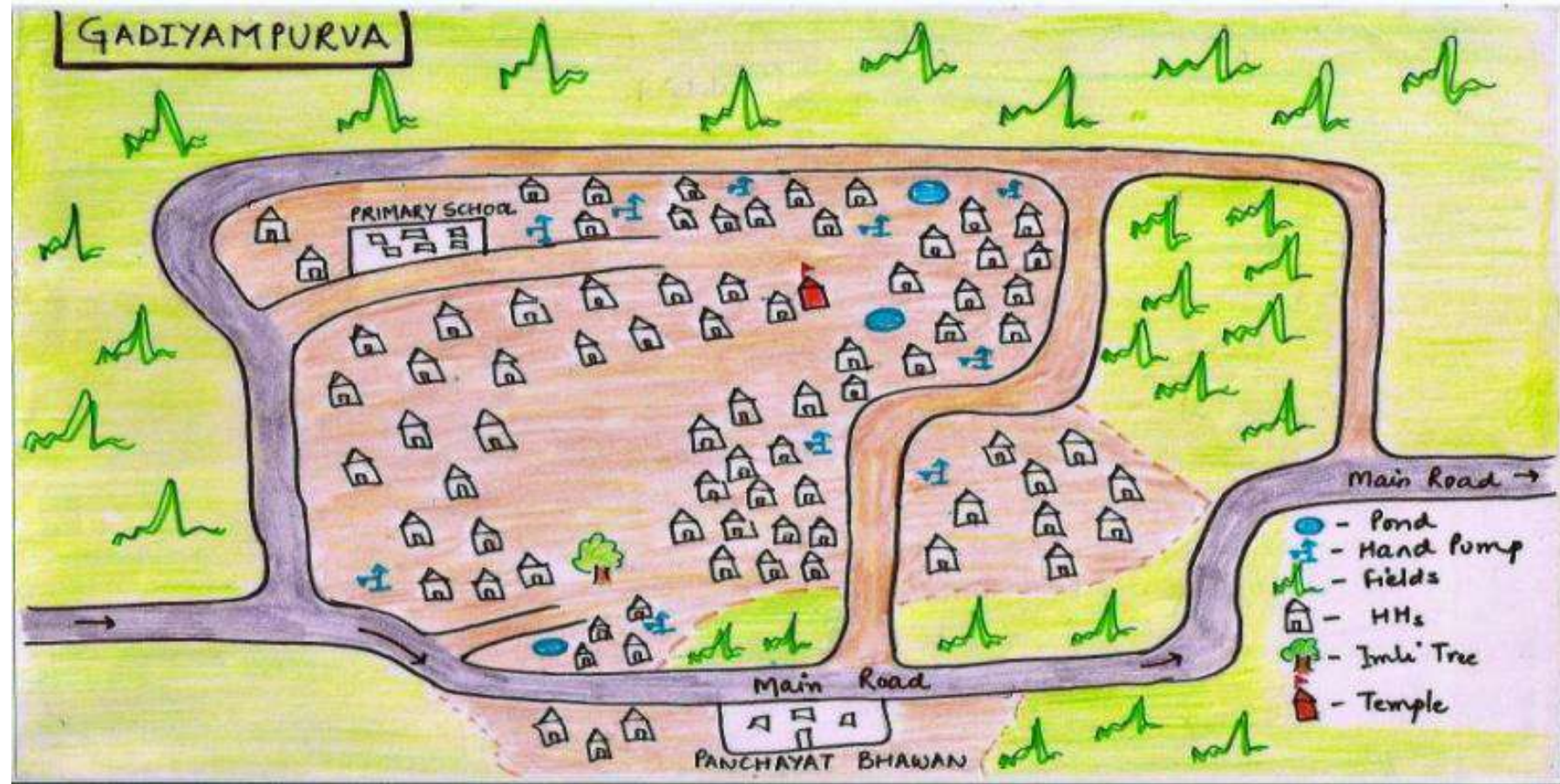
<https://www.youtube.com/watch?v=JEkPS5m8rBY>

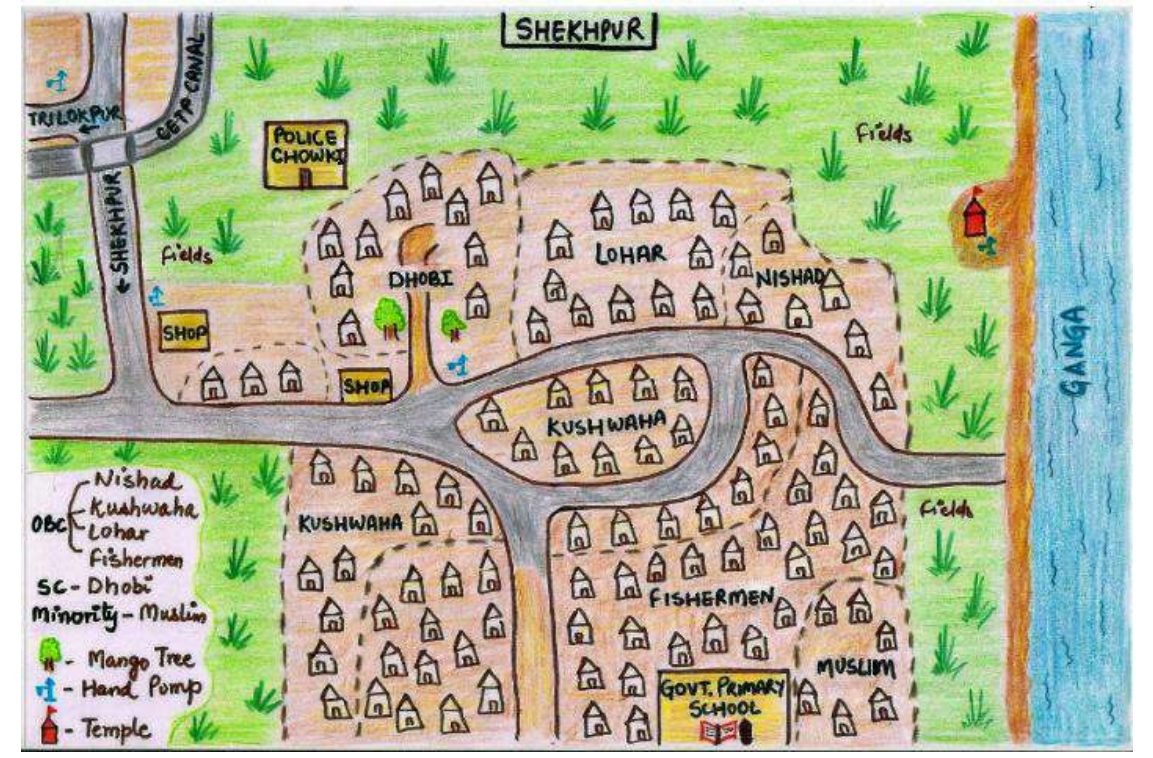
- Walking the tight rope for water

<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



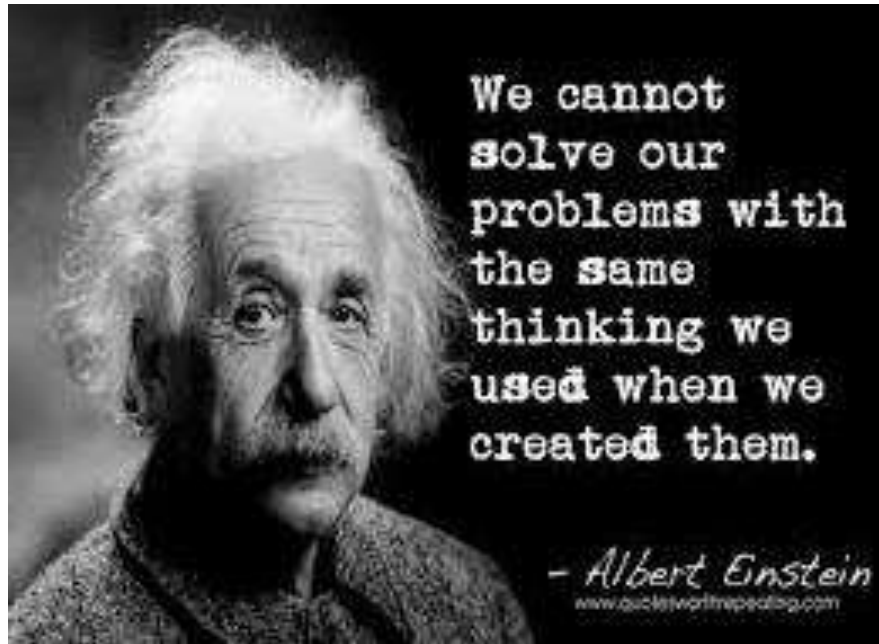
- **Jal Shakti Kendra/ Water Knowledge Center**
 - One stop information hub on water conservation (**A helpline number**)
 - Who to approach for Rainwater harvesting?
 - What will be the cost?
 - How much water can I harvest ?
 - Any support from the government?
 - Any information manual?
 - How do I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

A
C
T

ACTION

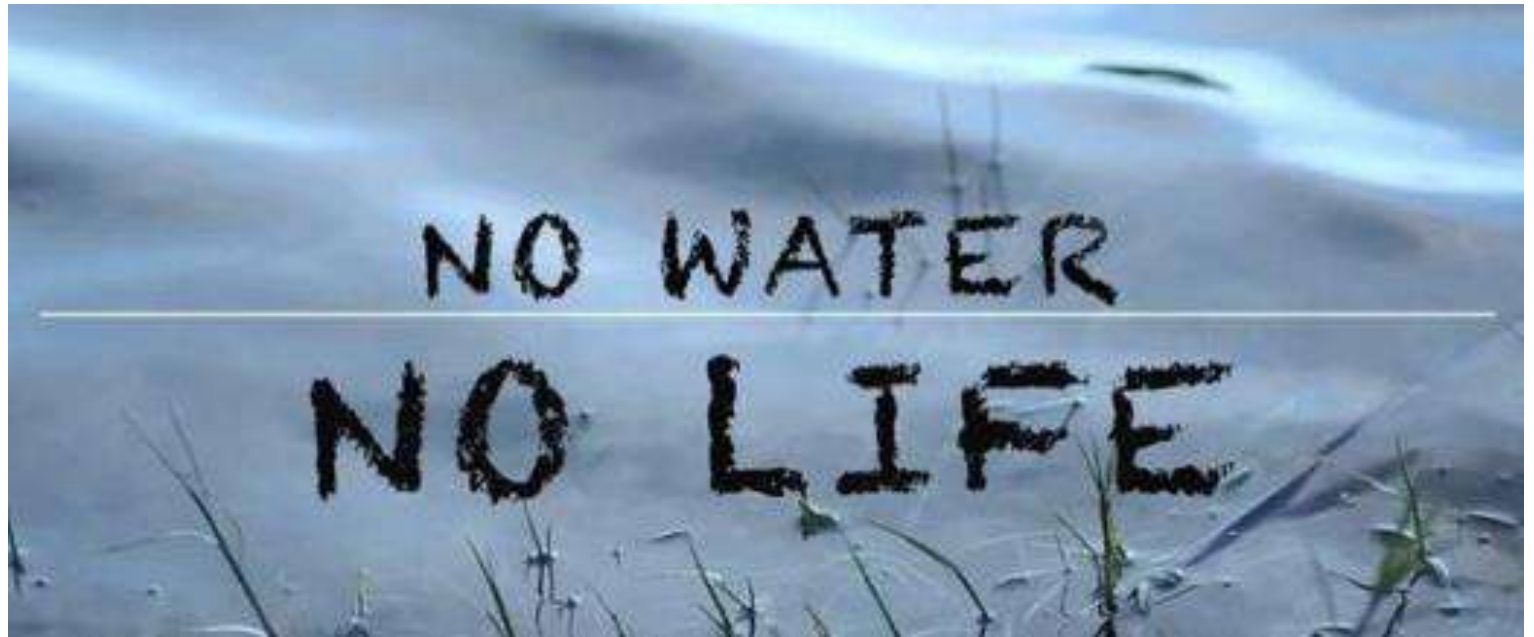
CHANGES

THINGS



We cannot solve our problems with the same thinking we used when we created them.

- Albert Einstein
www.quotesworthrepeating.com



NO WATER
NO LIFE



If you are going to change the world then start with yourself.



THANK YOU

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