Water Conservation and Rainwater Harvesting

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Jal Shakti Abhiyan

Water conservation and rainwater harvesting

Renovation of traditional and other water bodies/tanks

Reuse water and recharge structures

Watershed development

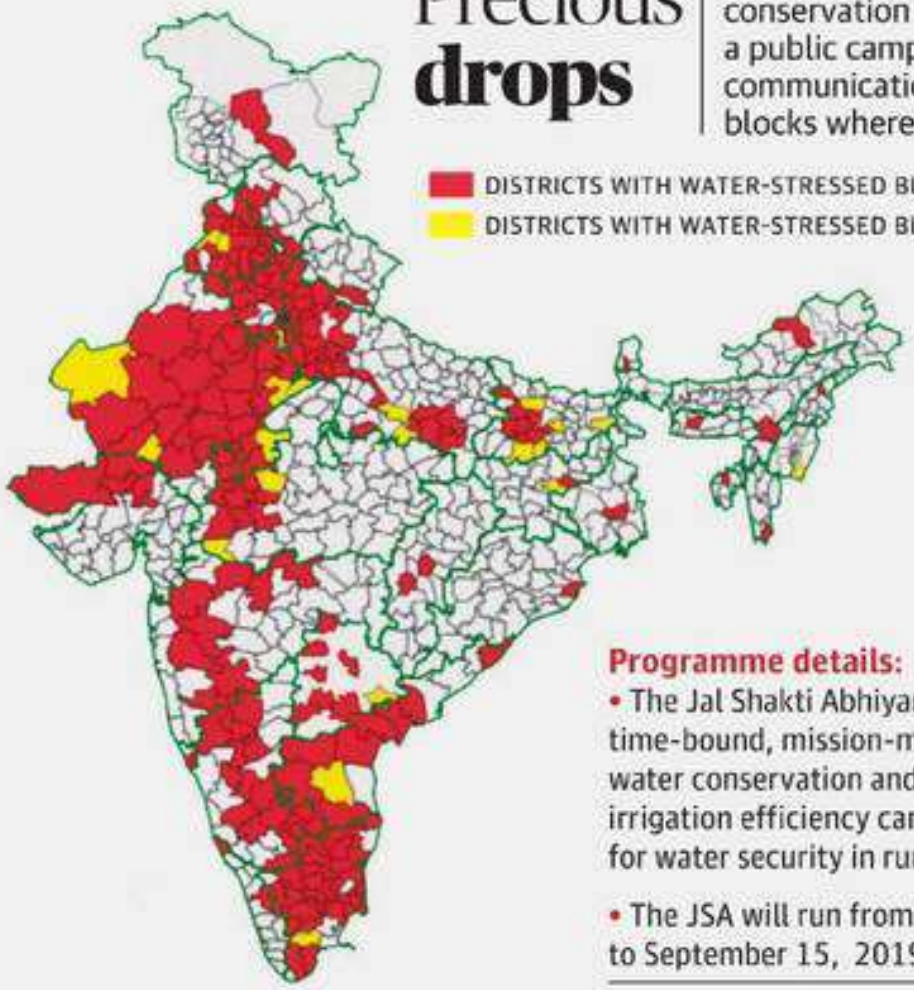
Intensive afforestation

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

Precious drops

The Jal Shakti Abhiyan aims at making water conservation and promotion of irrigation efficiency a public campaign through asset creation and communication campaigns. The map shows districts/ blocks where the measures will be carried out



SOURCE: JAL SHAKTI ABHIYAN

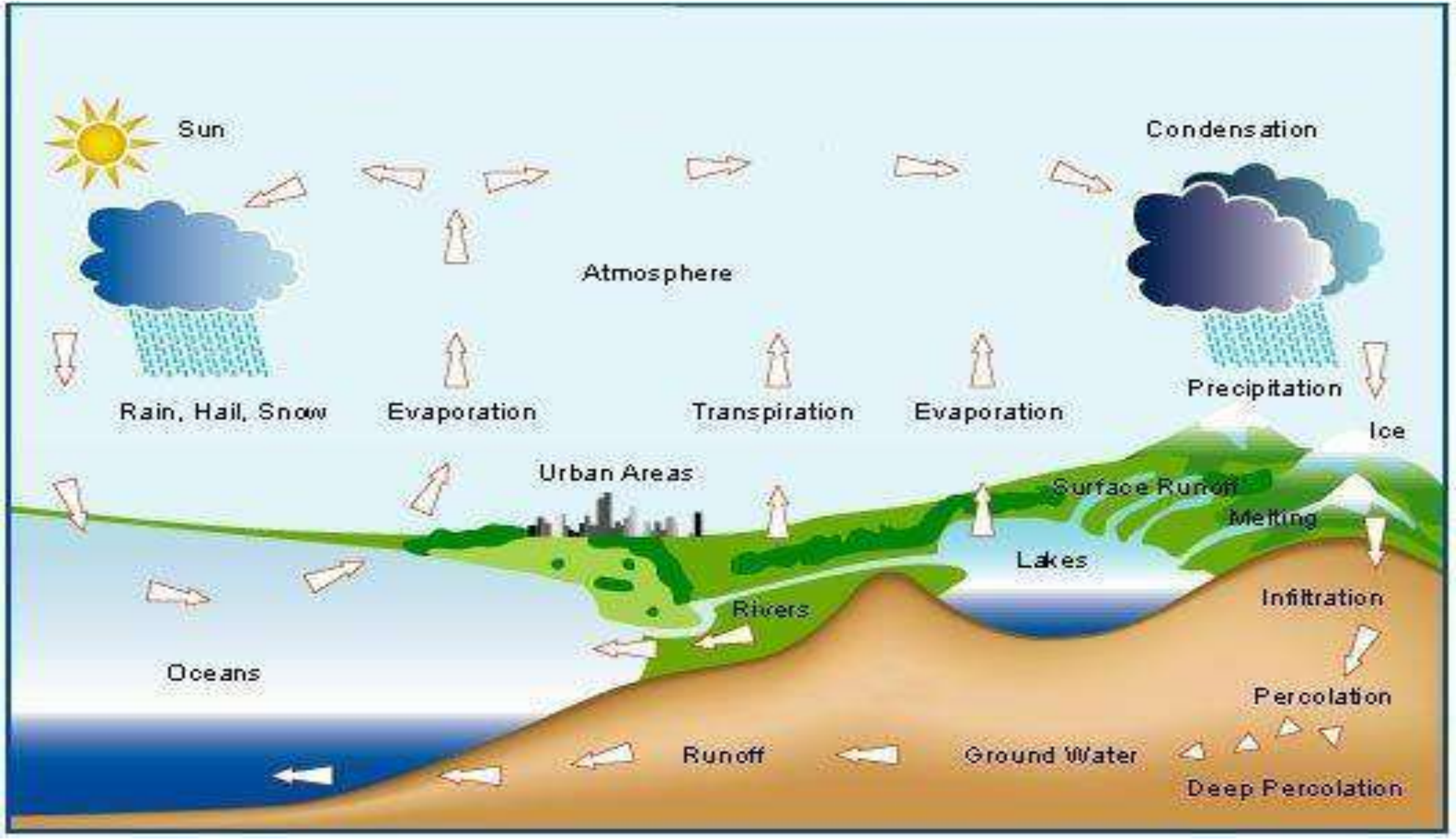
Programme details:

- The Jal Shakti Abhiyan is a time-bound, mission-mode water conservation and irrigation efficiency campaign for water security in rural India.
- The JSA will run from July 1 to September 15, 2019
- During this time, officers, groundwater experts and scientists will work together with State and district officials in the country's water-stressed districts for water conservation, resource management and irrigation efficiency

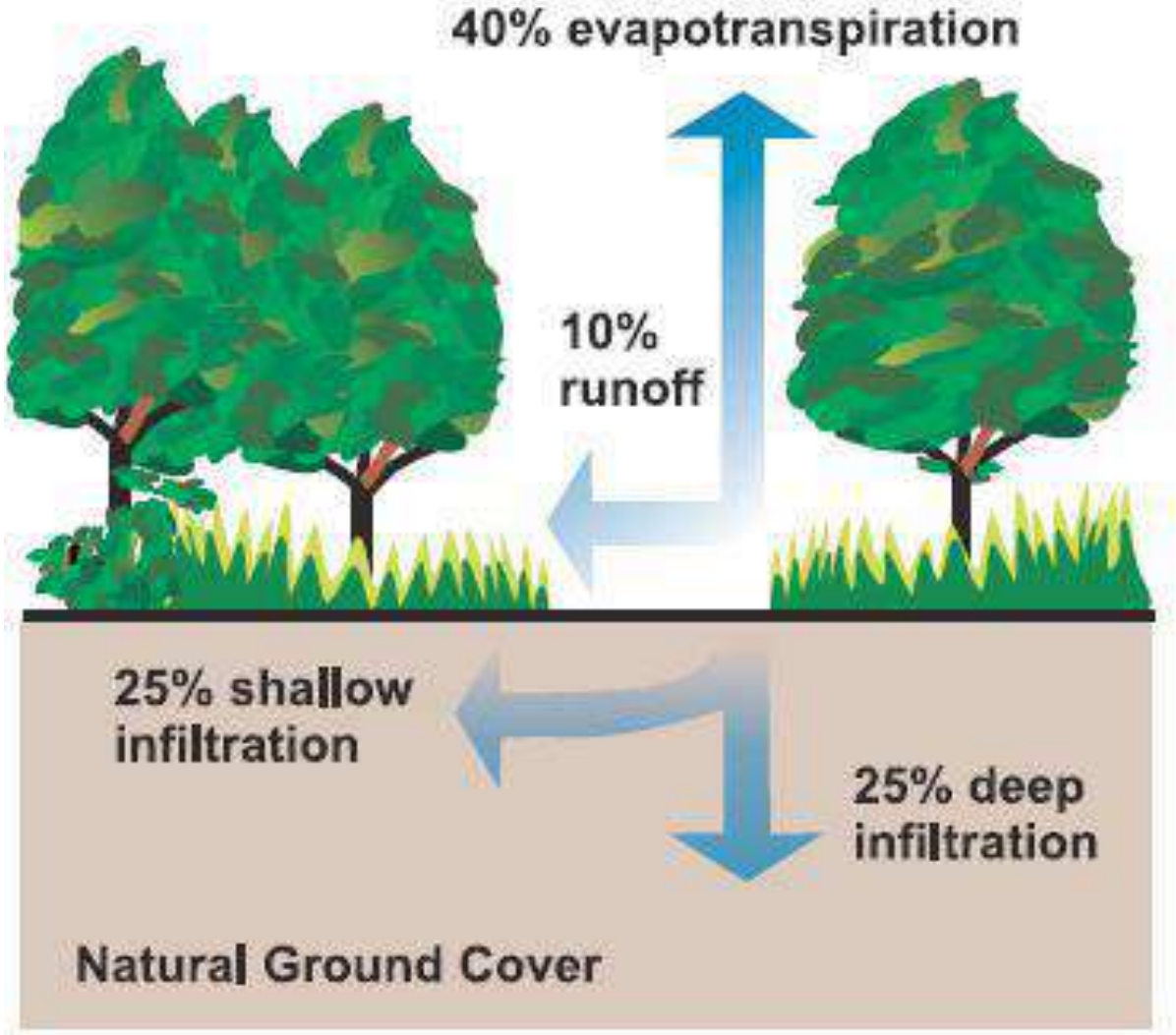
Intervention areas:

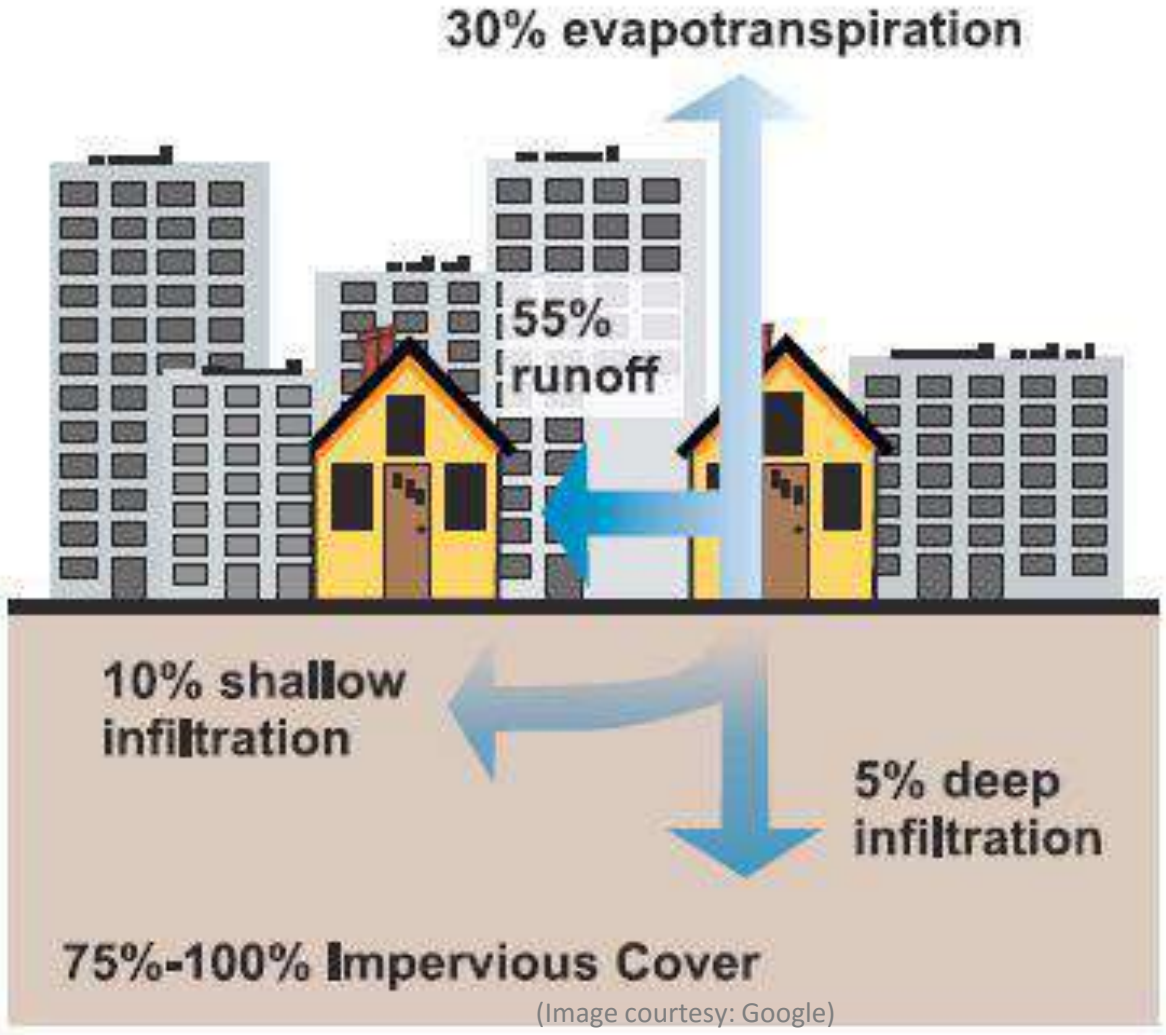
- Water conservation and rain water harvesting
- Renovation of water bodies
- Renovation of borewell recharge structures
- Watershed development
- Intensive afforestation

The Water (Hydrologic) Cycle



Green and Blue Spaces (Recreate/Rejuvenate)





(Image courtesy: Google)

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[$]	water stressed#
2021	1345[a]	1486[$]	water stressed#
2031	1463[a]	1367[$]	water stressed#
2041	1560[a]	1282[$]	water stressed#
2051	1628[a]	1228[$]	water stressed#

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

Population Vs Water Needs

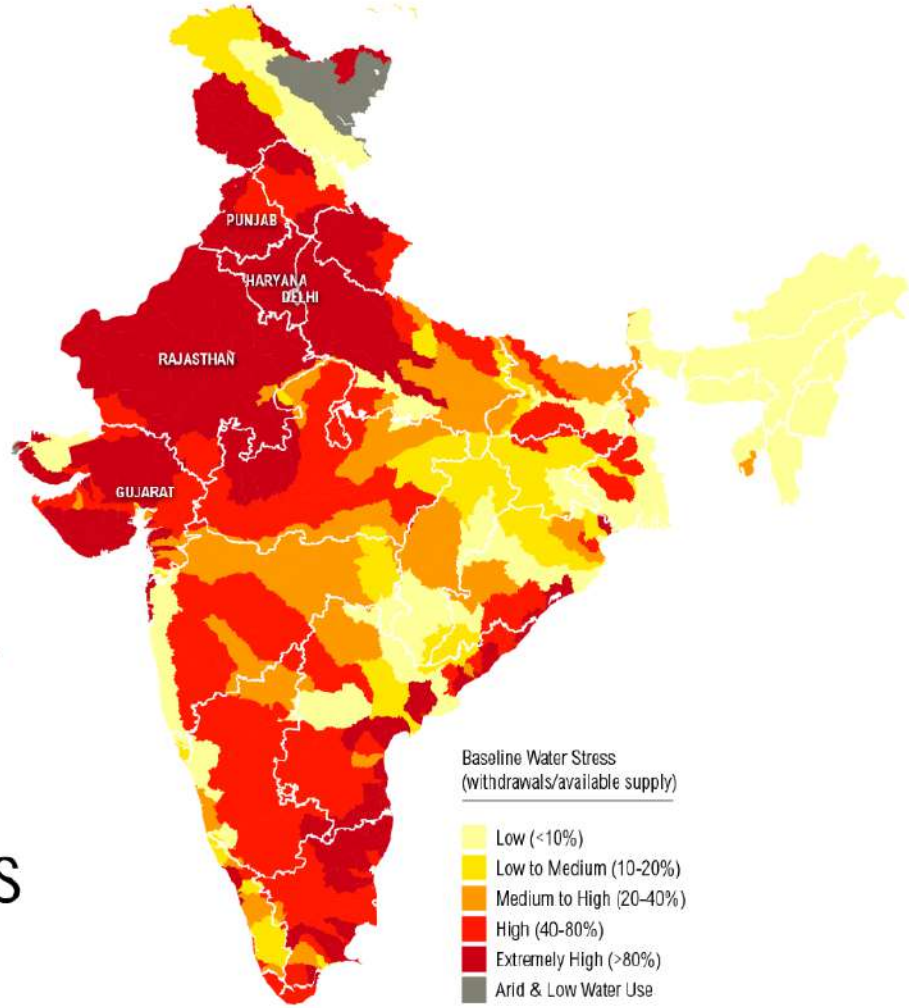
Source: http://www.cwc.gov.in/sites/default/files/main-report.pdf

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

54% of India Faces **High** to **Extremely High** Water Stress



www.indiawatertool.in

WORLD RESOURCES INSTITUTE

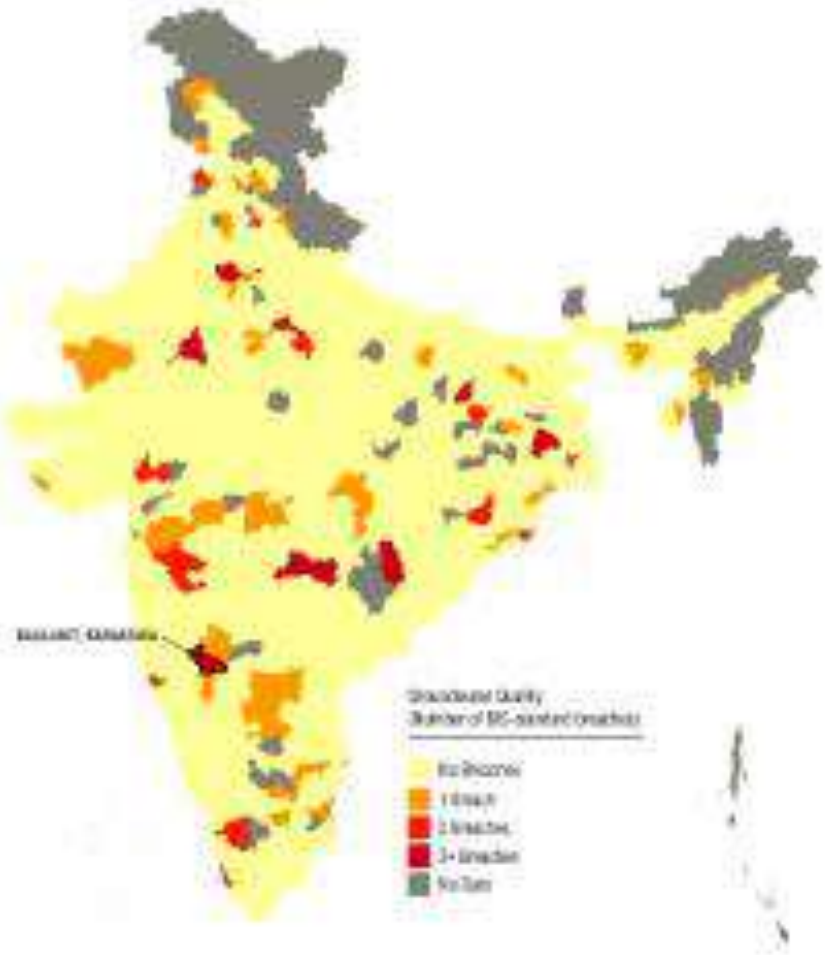
Source: World Resources Institute, 2016

More than

100

MILLION

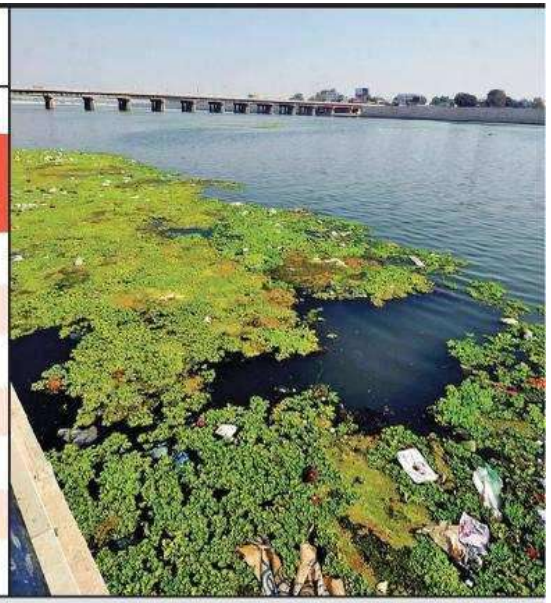
People Live in Areas of Poor Water Quality



STATE RANKINGS

States with most polluted rivers

State	Number of Polluted Rivers
➤ Maharashtra	49
➤ Assam	28
➤ MP	21
➤ **Gujarat**	20
➤ West Bengal	17
➤ Karnataka	15
➤ Kerala	13



Central funds to curb river pollution in Gujarat

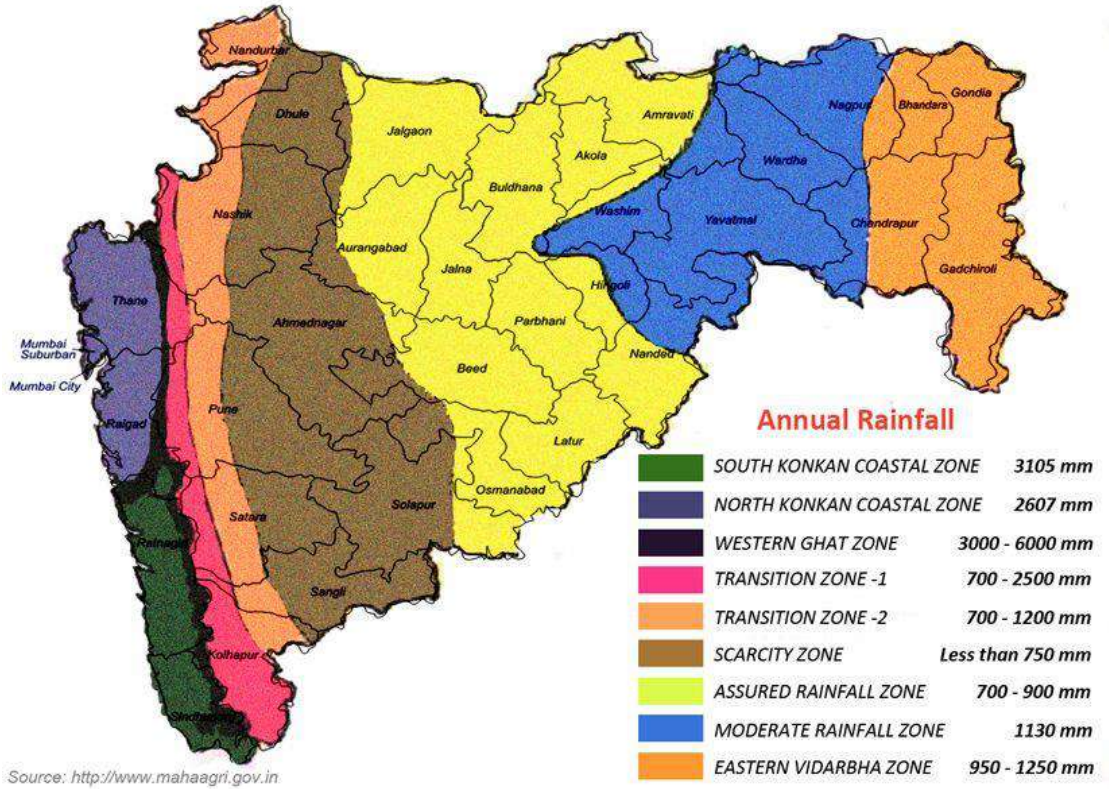
Rivers	2014-15	2015-16	2016-17	2017-18*	Total amount**
Sabarmati and Mindola	44.00	24.12	71.40	62.00	201.52

*November 17; **Amount in Rs crore

Source: MoEF data

https://timesofindia.indiatimes.com/city/ahmedabad/polluted-rivers-guj-ranks-4th/articleshow/62685910.cms

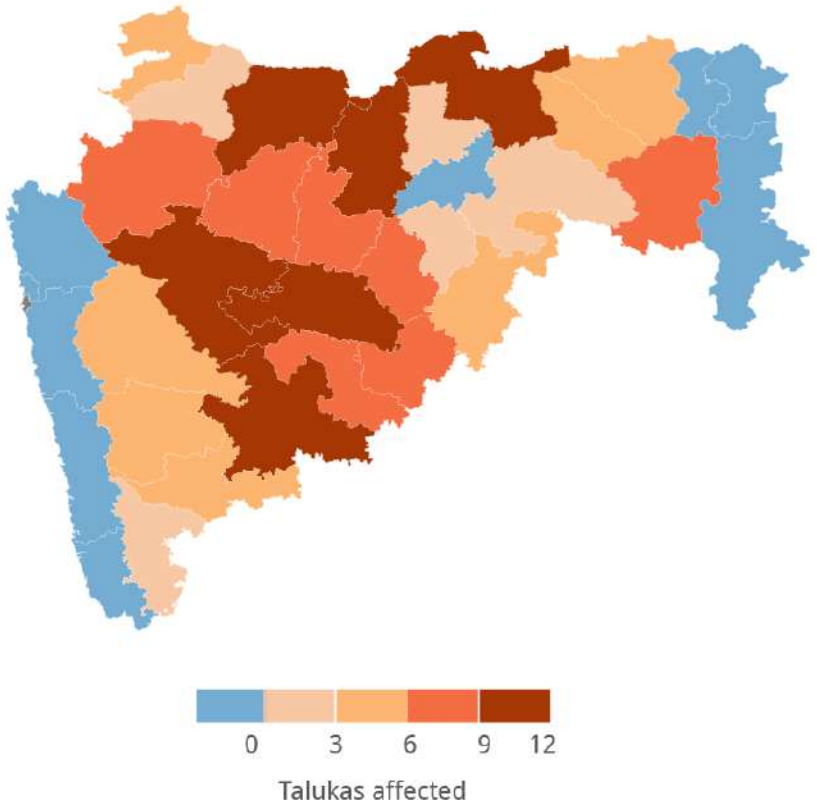
Rainfall Distribution Map of Maharashtra



Source: http://www.mahaagri.gov.in

Ground water depletion in Maharashtra

Number of talukas by district where water scarcity likely to begin in October 2018

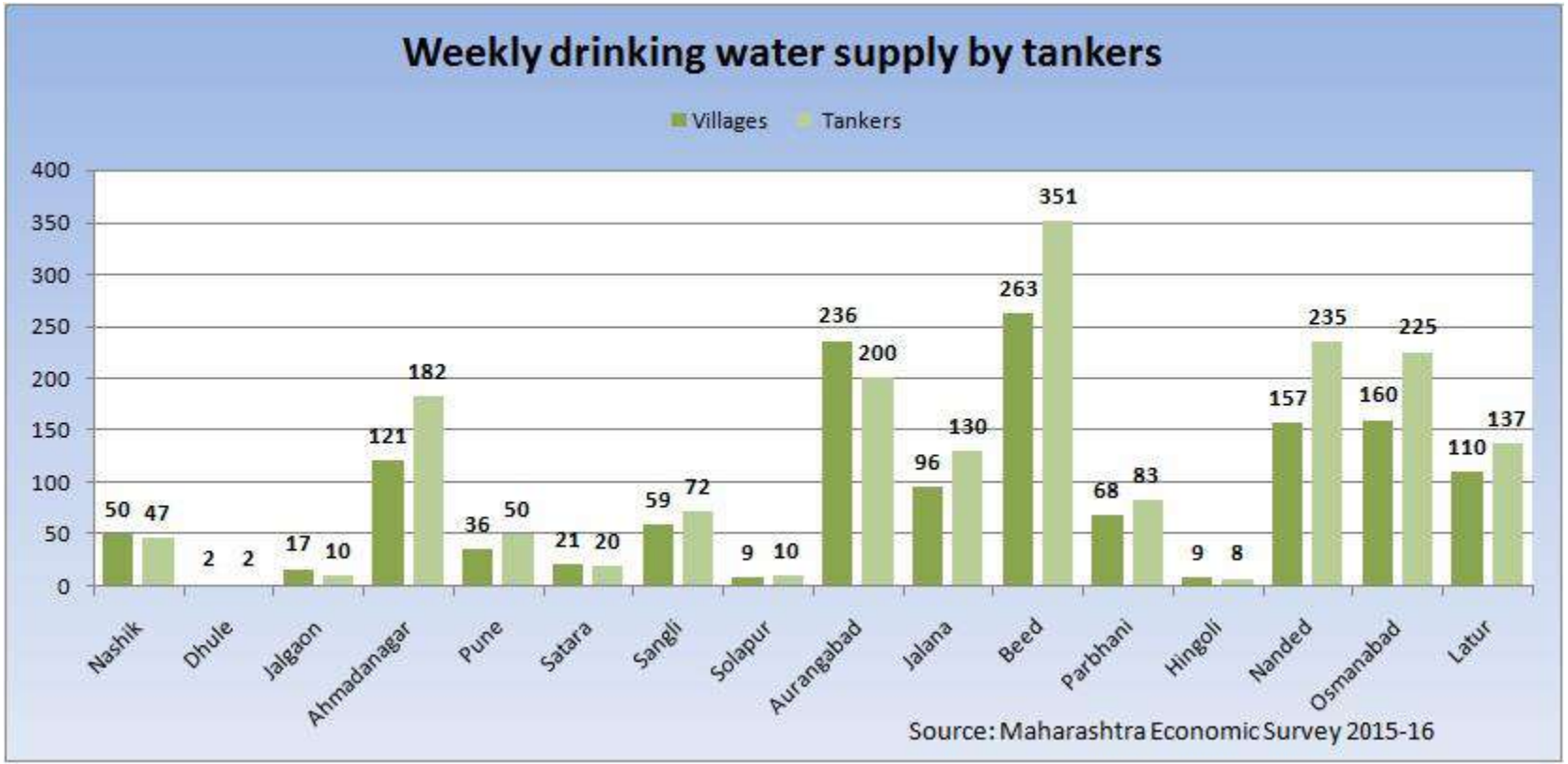


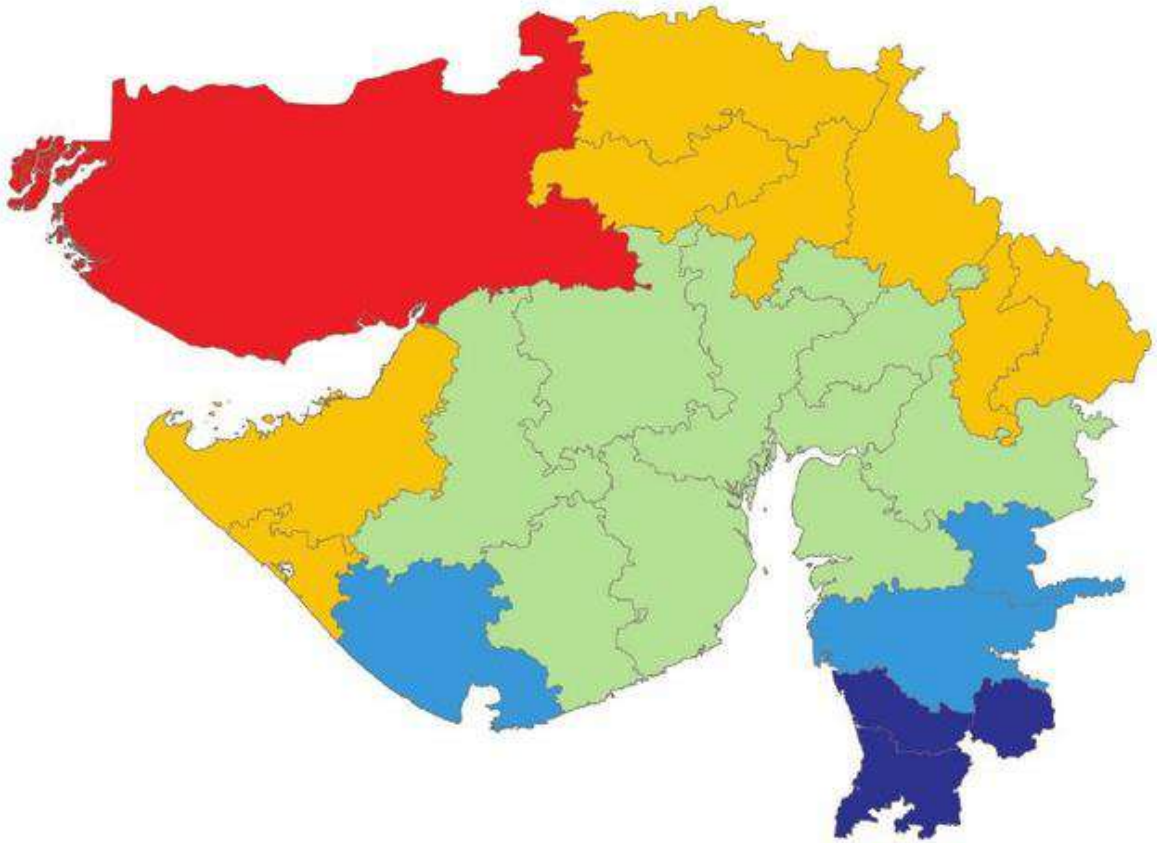
scroll.in

Source: State declared lists for drought blocks
According to GSDA calculations of blocks with more than 3 metres of groundwater depletion and more than 20% deficient rainfall

Tanker Mafia: Case of Latur

- The cost of pumping 6,000 litres of water from a borewell in a rural area is around **Rs 50,** as the agricultural meters are subsidised.
- The borewell owners sell the water to a supplier for **Rs 400,** making a profit of **800 percent.**
- The cost of a water tanker triples to **Rs 1,200** by the time it is sold in Latur town.
- Around 600 tankers of different capacities operate in Latur town. A rough calculation suggests that if **each tanker makes five trips a day and charges Rs 800 per trip then the turnover of the "water economy" is Rs 24 lakh per day**.





DECADE'S RAINFALL AVERAGE

Source: GSDMA

Year	Avg rainfall	Rainfall received	% of annual rainfall
2010	854	1026	**120.14**
2011	914	861	**94.20**
2012	798	574	**71.93**
2013	798	1175	**147.24**
2014	797	762	**95.61**
2015	797	650	**81.56**
2016	797	727	**91.22**
2017	810	909	**112.22**
2018	831	638	**76.77**
2019	816	817	**100**

Gujarat floods: Ahmedabad gets 200 mm rain in last 24 hours, normal life paralysed

Water tables in Gujarat fell by 20m each decade

2017- Too much Water

2018- too little water

TROUBLED WATERS

VILLAGES WITH DEEPEST WATER LEVELS (2017-18* READINGS)

Village and district	Water level (metres below ground level)
Charada, Gandhinagar	**194.6**
Magroda, Mehsana	**168**
Mahi, Banaskantha	**162.6**
Motipura, Mehsana	**162.5**
Takarwada, Banaskantha	**162**
Padusma, Gandhinagar	**161.7**
Mehsana, Mehsana	**155.3**
Balodhar, Banaskantha	**154.6**
Rajpur, Banaskantha	**152.9**
Morju Nava, Banaskantha	**150.8**

*Readings taken at the tubewells by Central Ground Water Board (CGWB) teams

OVEREXPLOITATION RAMPANT

According to the study, the districts with less groundwater recharge than withdrawal are termed overexploited. In these terms, Gandhinagar has the most exploitation with 145%, whereas Mansa reports exploitation of 189%. Banaskantha has 122% exploitation followed by Mehsana (121.5%) and Patan (106%). Ahmedabad district is semi-critical with rate of 76.89%

A health crisis

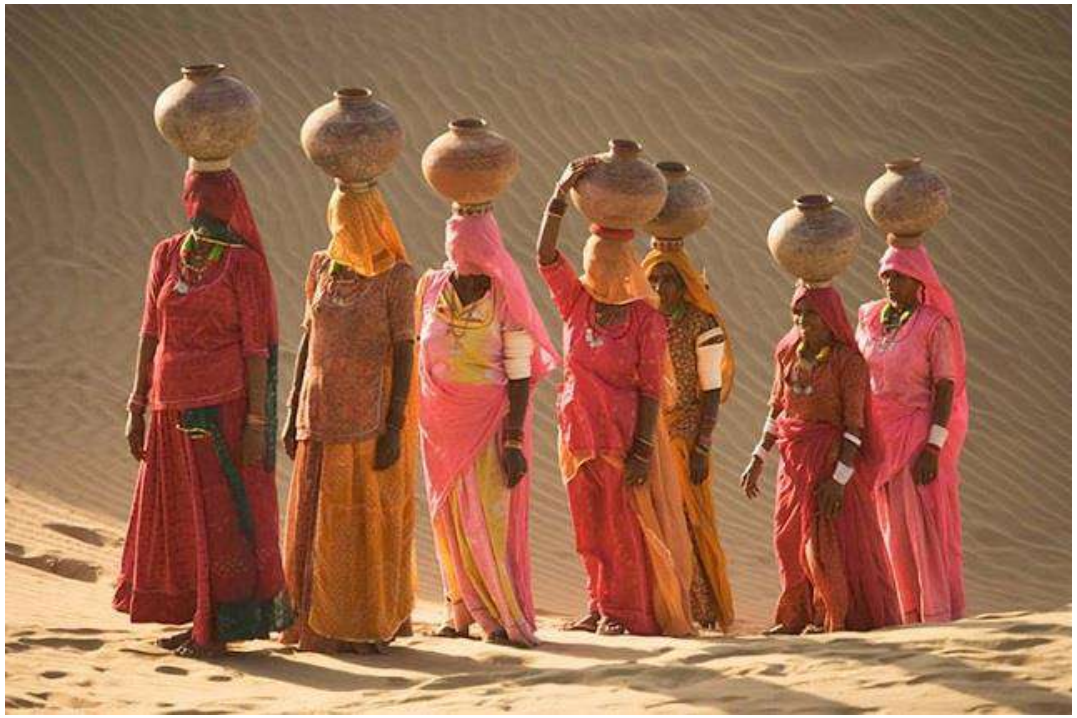
- Forty-five per cent of India's children are stunted and 600,000 children under the age of five die each year, largely because of inadequate water supply and poor sanitation. (UNICEF, FAO)

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

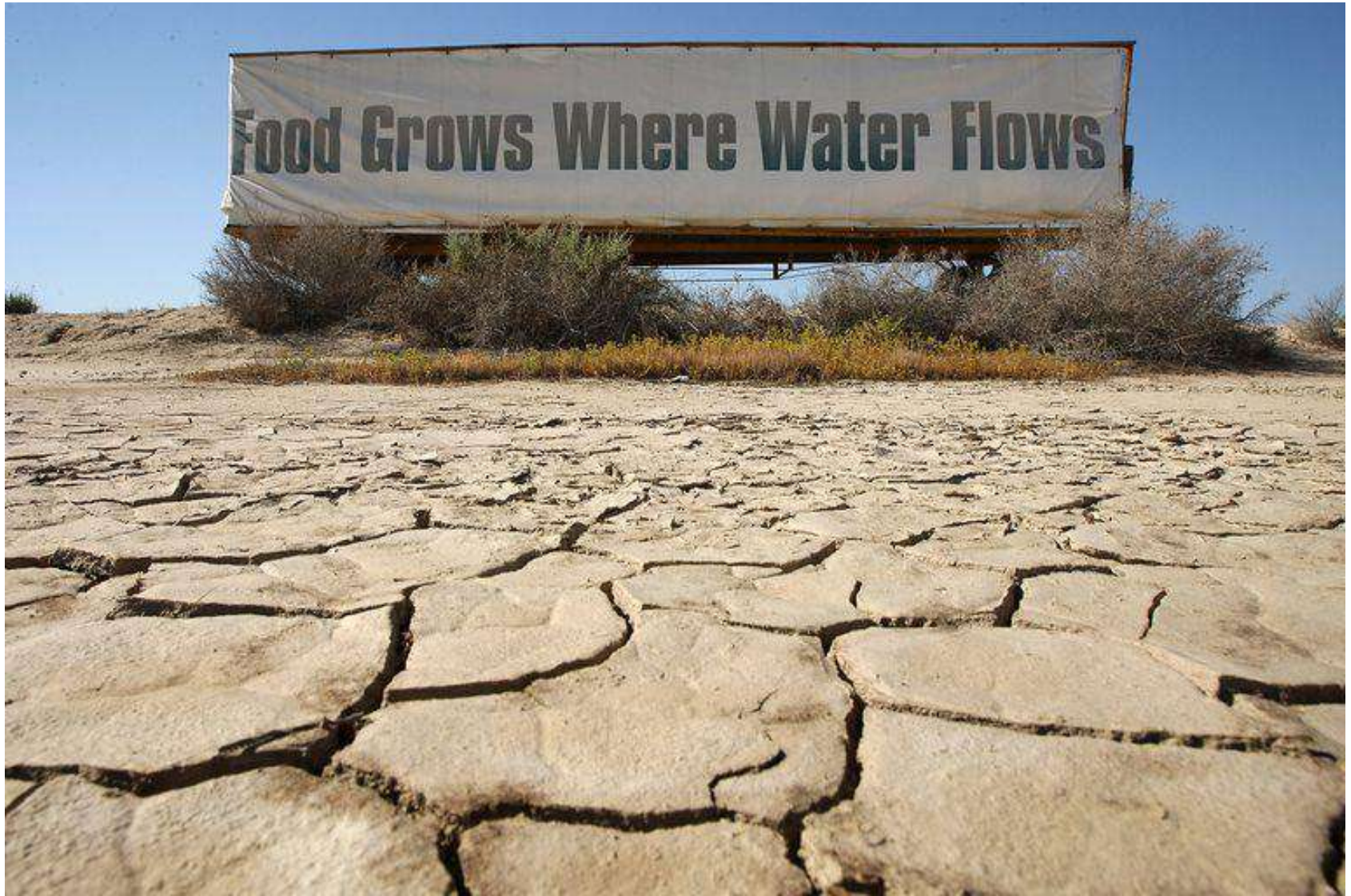
Children are often responsible for collecting water to help their families.

Sea Level Rise - Saline Water Ingress and Loss of Fresh Water Aquifers

In many coastal areas there has been heavy intrusion of sea water, making fertile agricultural lands unfit for cultivation

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 Binar

Tanka from Rajasthan

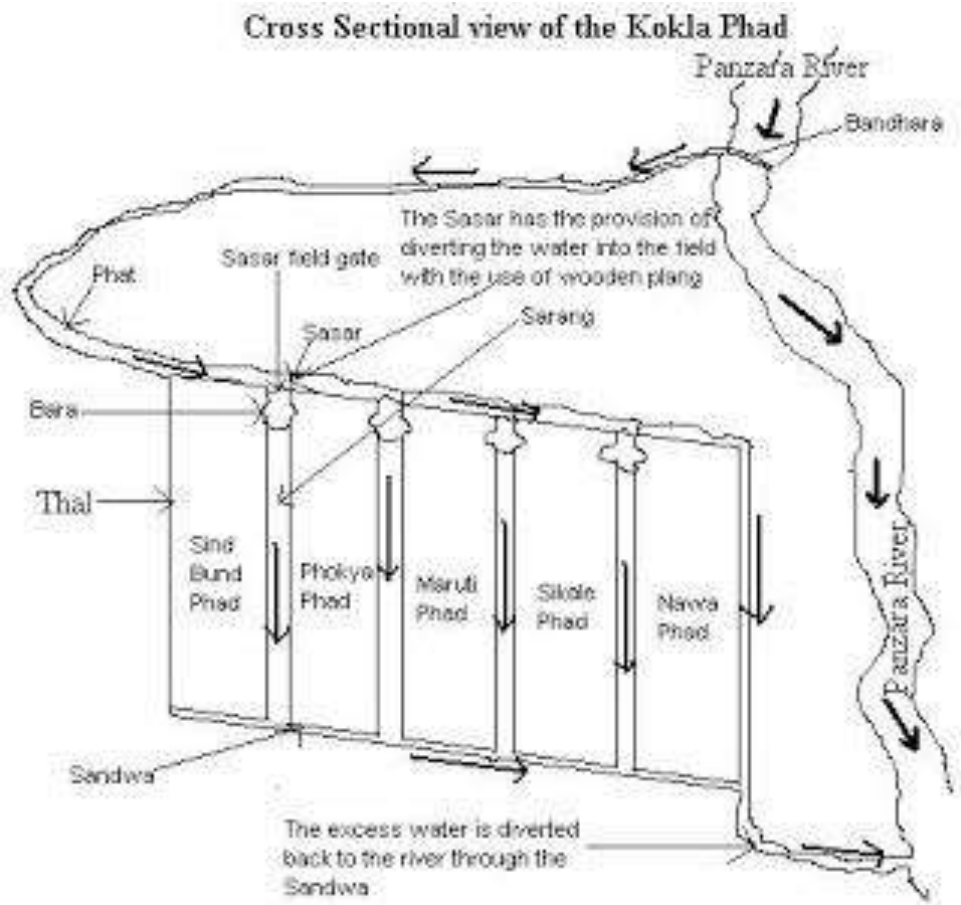
A Johad in Rajasthan

Tank System in Tamilnadu

http://jalshakti-dowr.gov.in/sites/default/files/eBook/eBook-Stepwell/mobile/index.html

Source: https://www.thebetterindia.com/61757/traditional-water-conservation-systems-india/

Phad System Maharashtra

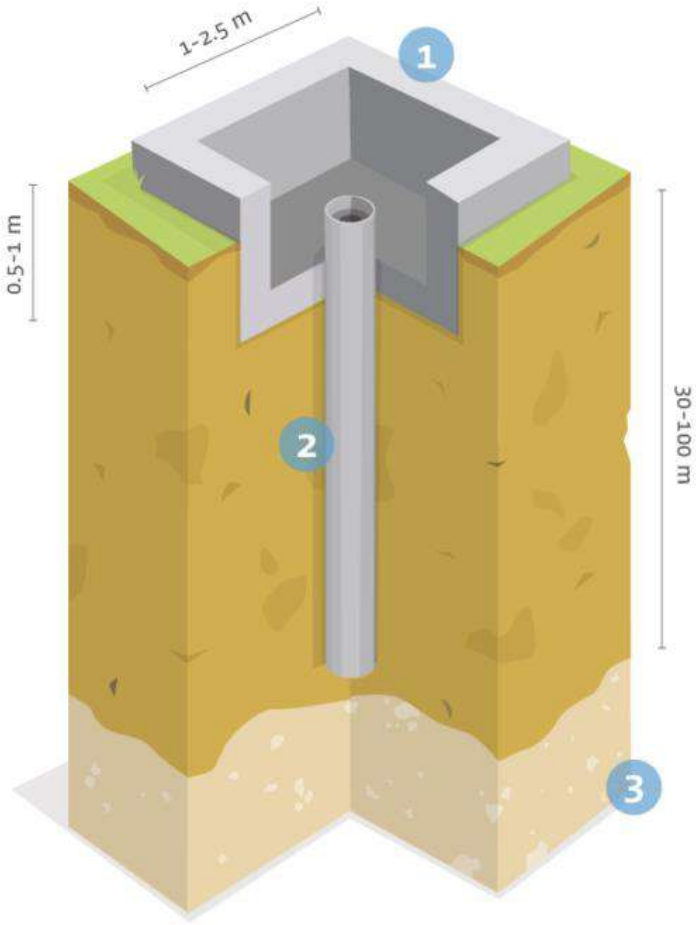


https://www.youtube.com/watch?v=alHiGx-whLY

https://www.youtube.com/watch?v=oi4P8QdX7R0

Bhungroo

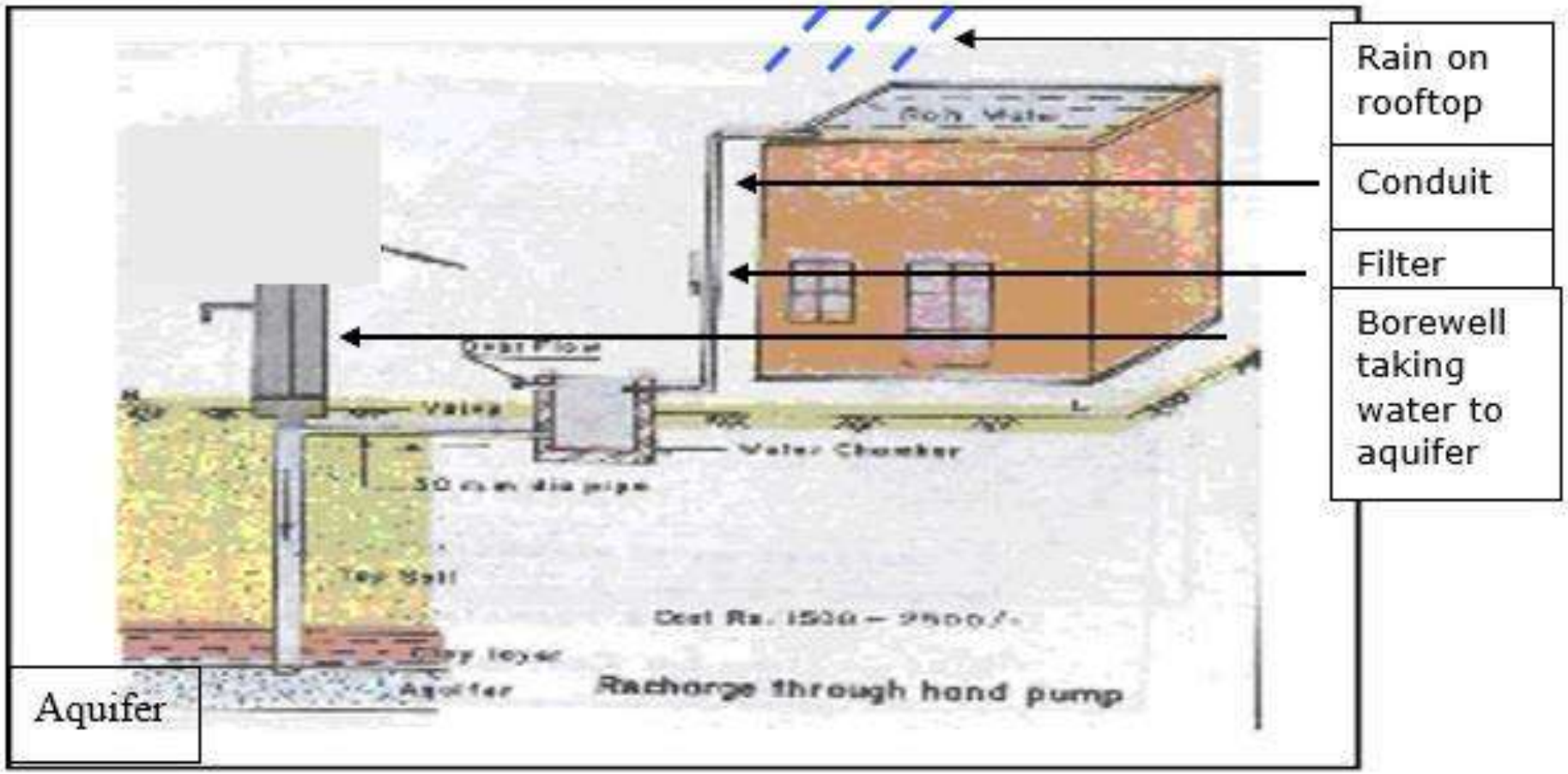
https://www.youtube.com/watch?v=fVh1jKuBVSw



1. The land on which the unit is made has a slight tilt or gradient to ensure drainage through the pit. The cemented area of the pit is usually 1 to 2.5 metres in width and breadth, and 0.5 to 1 metres in depth.
2. The pipe has a diameter of 10 to 15 centimeters, and goes to a depth of 30 and 100 metres.
3. The subsoil strata must have a coarse sand soil layer within a depth of 120 metres.

For more information, visit Momentum4Change.org

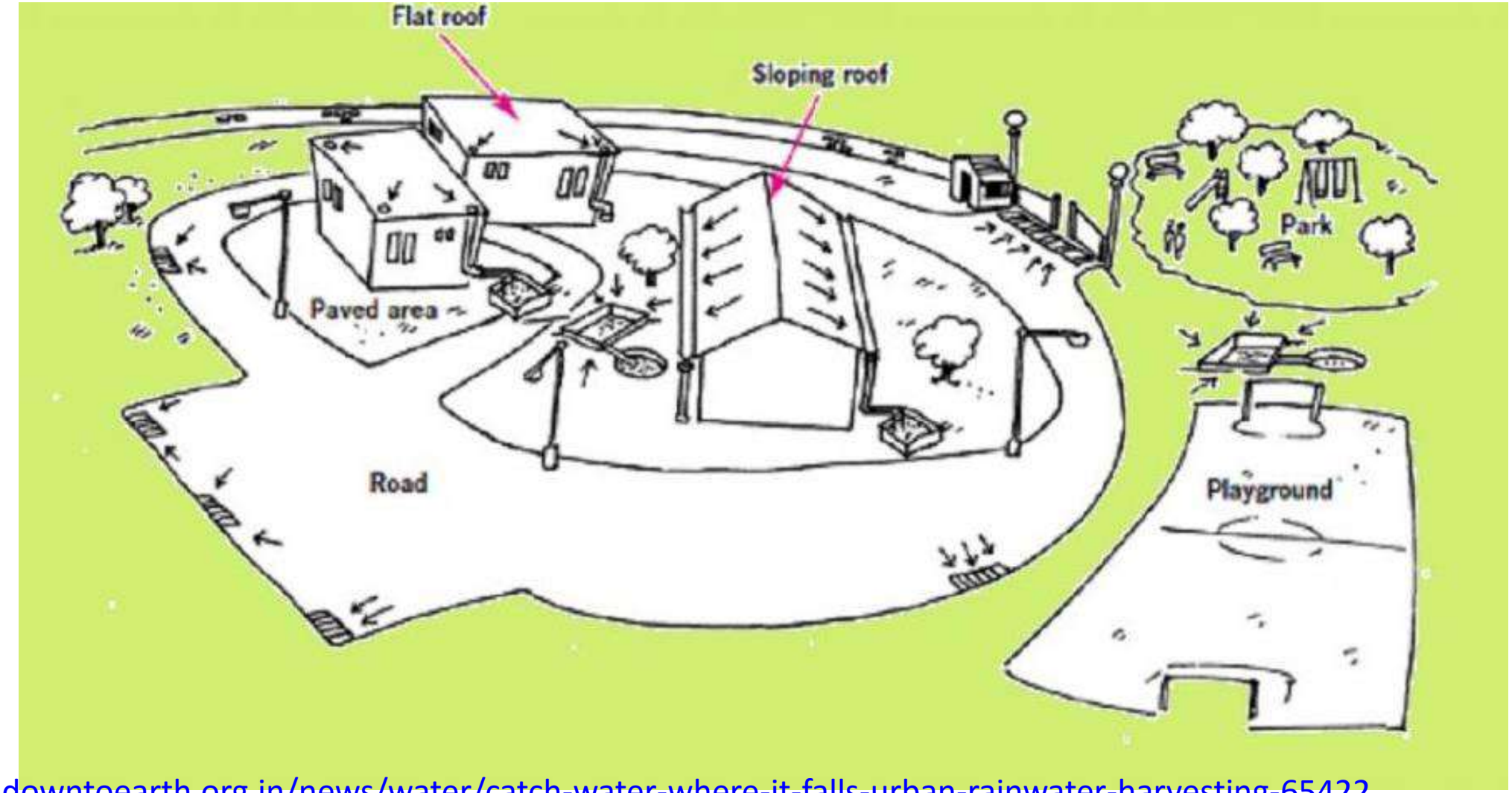
Rainwater harvesting



https://force.org.in/blue-india-program/rain-water-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).



https://www.downtoearth.org.in/news/water/catch-water-where-it-falls-urban-rainwater-harvesting-65422

Diversion Bunds

Tie Ridging

Contour Farming

Farm Ponds

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

Use of Abandoned dugwells

Gabion Check Dam

Action:
How can NYK Youth fellows contribute?

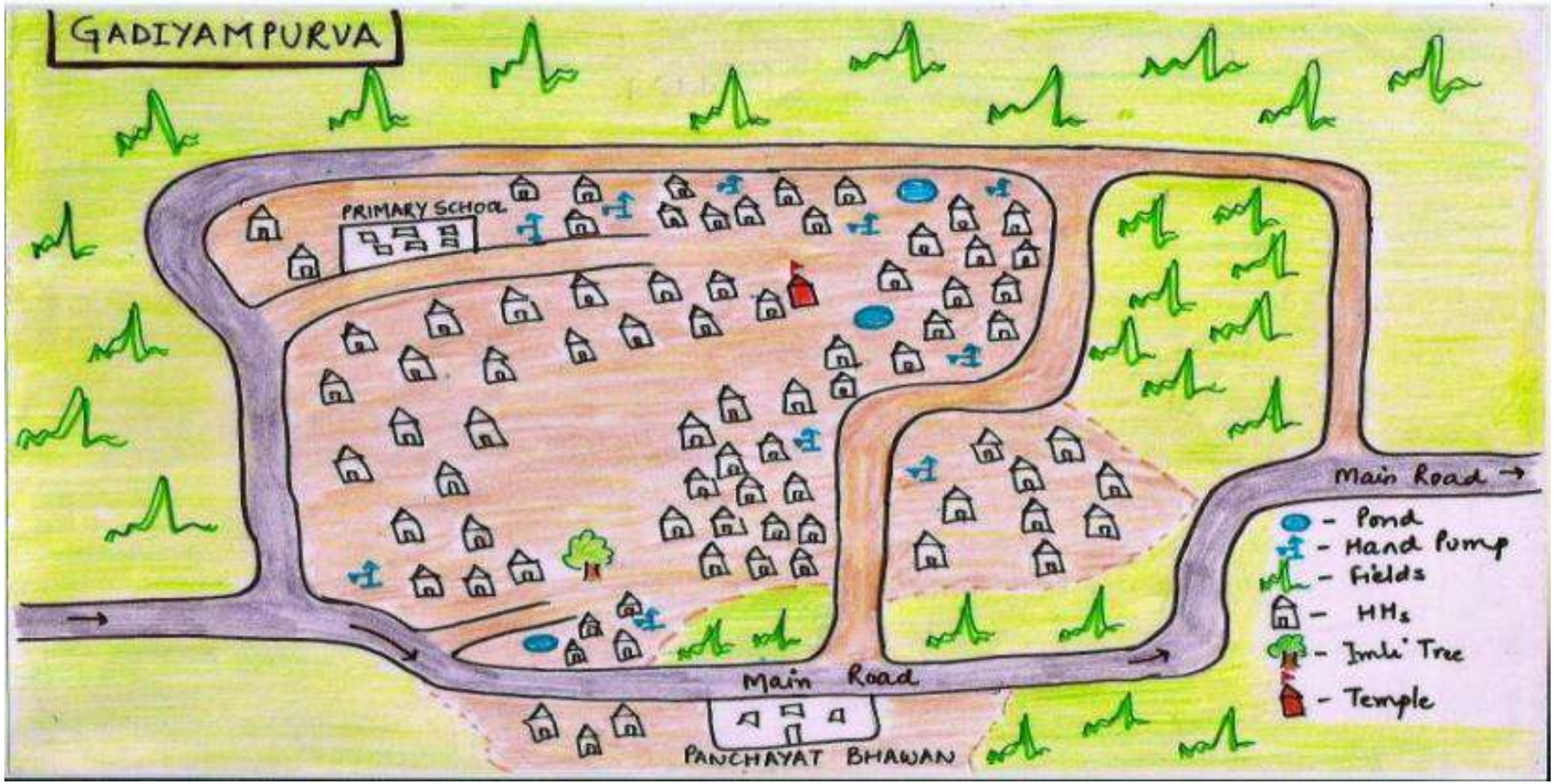
- **Public awareness and sensitization**
  - Posters, banners and other publicity material
  - Street plays, songs and Slogans
  - Awareness on Traditional Water Wisdom using Folk Performers Bahurupiya, Acrobats

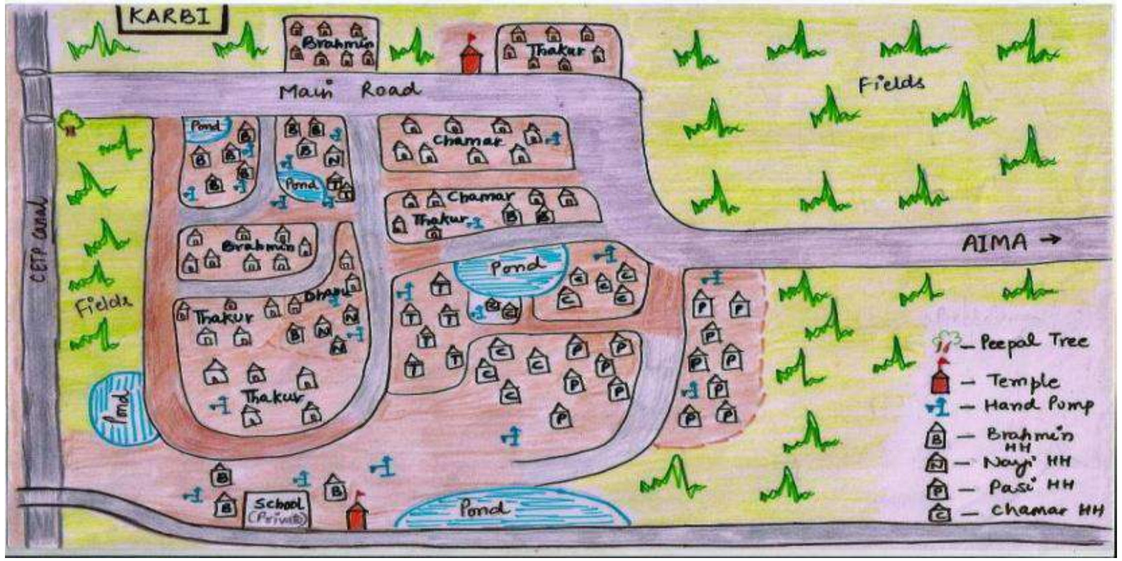
  https://www.youtube.com/watch?v=JEkPS5m8rBY
  - Walking the tight rope for water

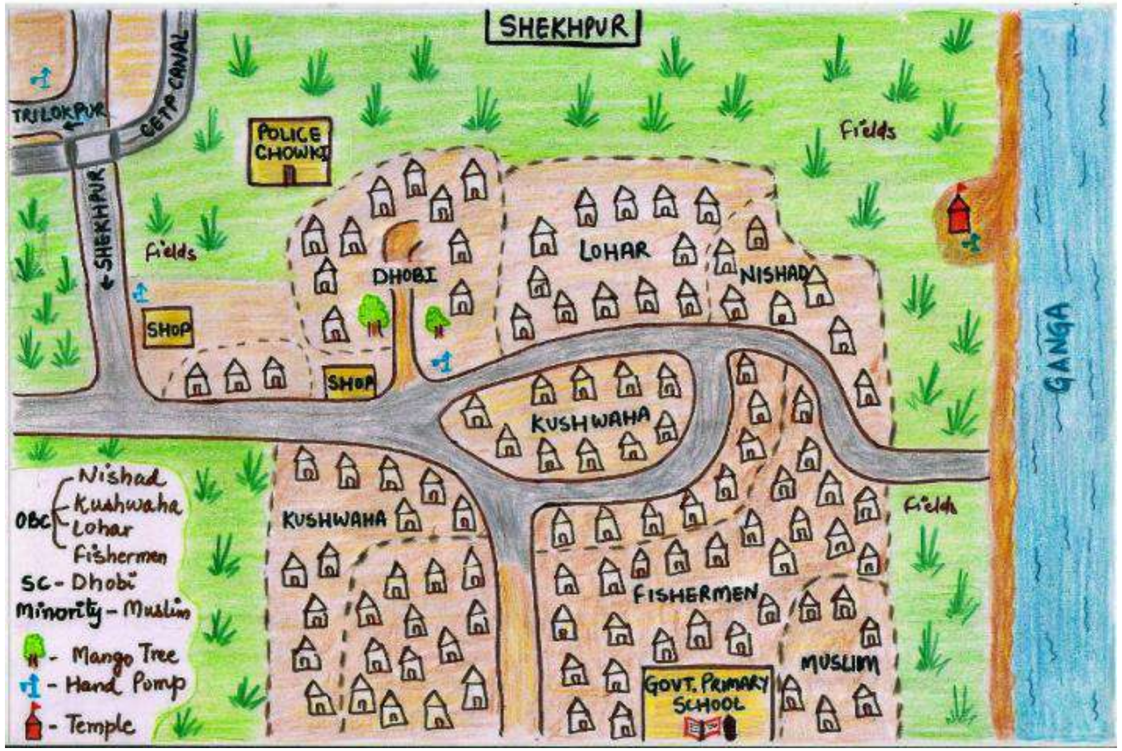
  https://www.youtube.com/watch?v=4qgbJ0vfn-Y

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

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




KARBI
Brahmin
Thakur
Main Road
Fields
CETP Canal
Pond
Chamar
Chamar
Thakur
Brahmin
Pond
AIMA →
Thakur
Thakur
Fields
Pond
School (Private)
Pond
Peepal Tree
Temple
Hand Pump
Brahmin HH
Nayi HH
Pasi HH
Chamar HH


SHEKHPUR
TRILOKPUR ←
CETP CANAL
← SHEKHPUR
POLICE CHOWKI
Fields
Fields
DHOBI
LOHAR
NISHAD
SHOP
SHOP
KUSHWAHA
KUSHWAHA
FISHERMEN
MUSLIM
GOVT. PRIMARY SCHOOL
Fields
GANGA
OBC - Nishad, Kushwaha, Lohar, Fishermen
SC - Dhobi
Minority - Muslim
Mango Tree
Hand Pump
Temple

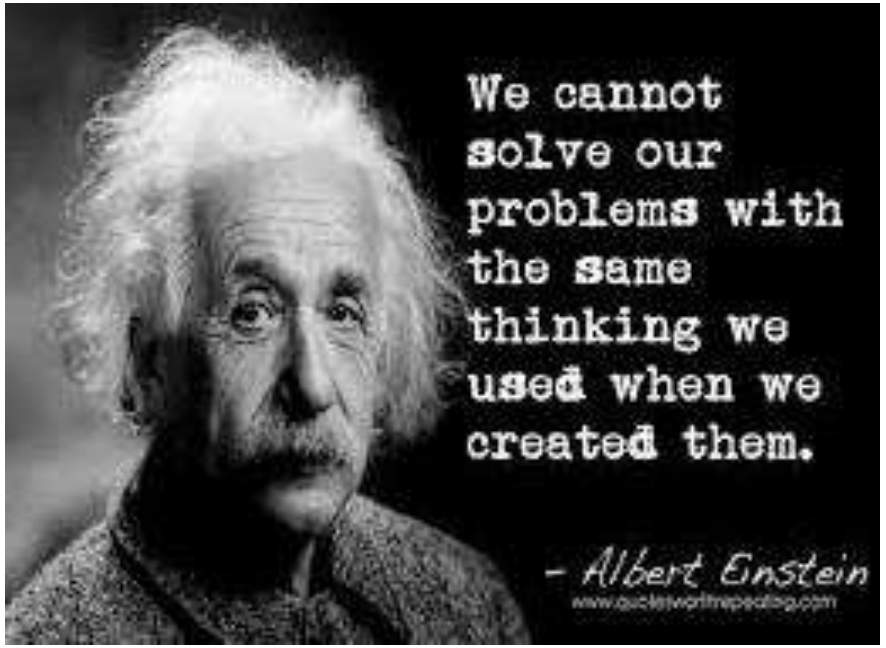
Documentation

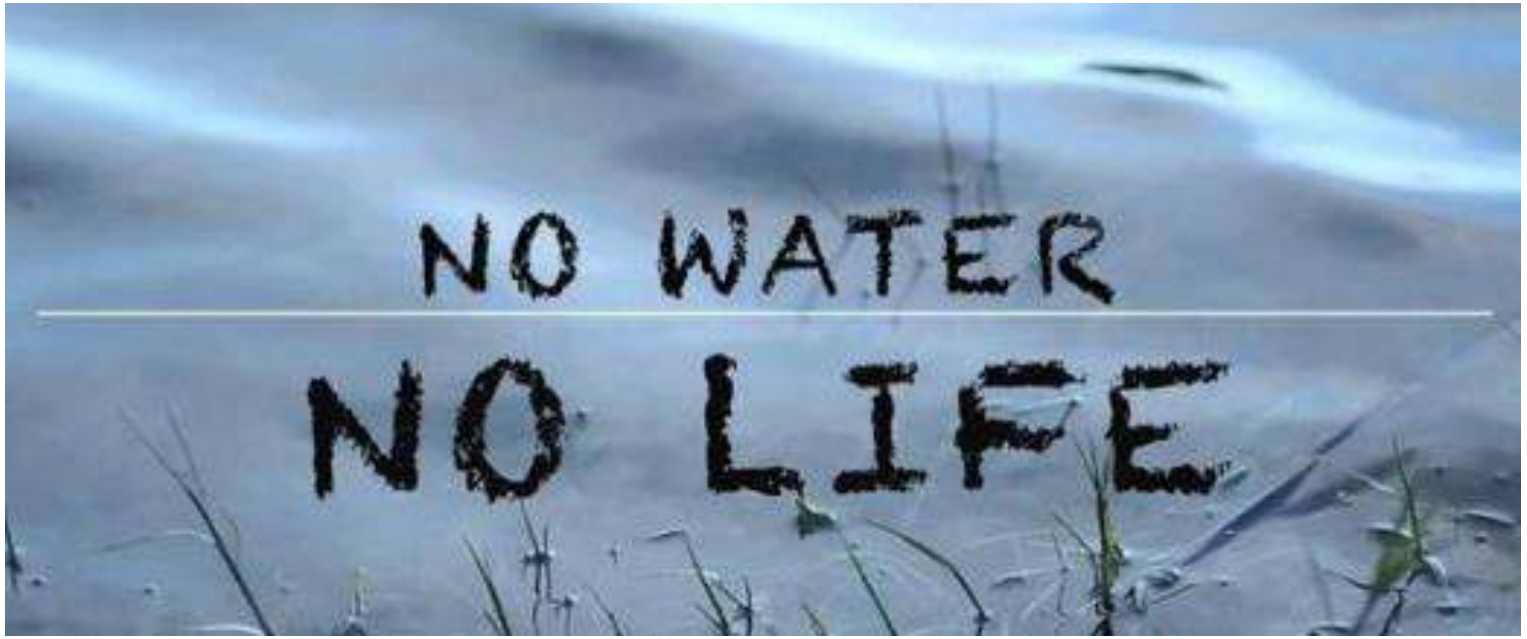
- Government schemes to promote water conservation –RWH and revival of traditional ponds
- Basic Data on the village visited (Google forms) https://forms.gle/HXardnSM1zGNx7Cv8
  - Name of the state, district and village
  - Name and contact number of the youth fellow
  - Name and contact of Sarpanch
  - 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

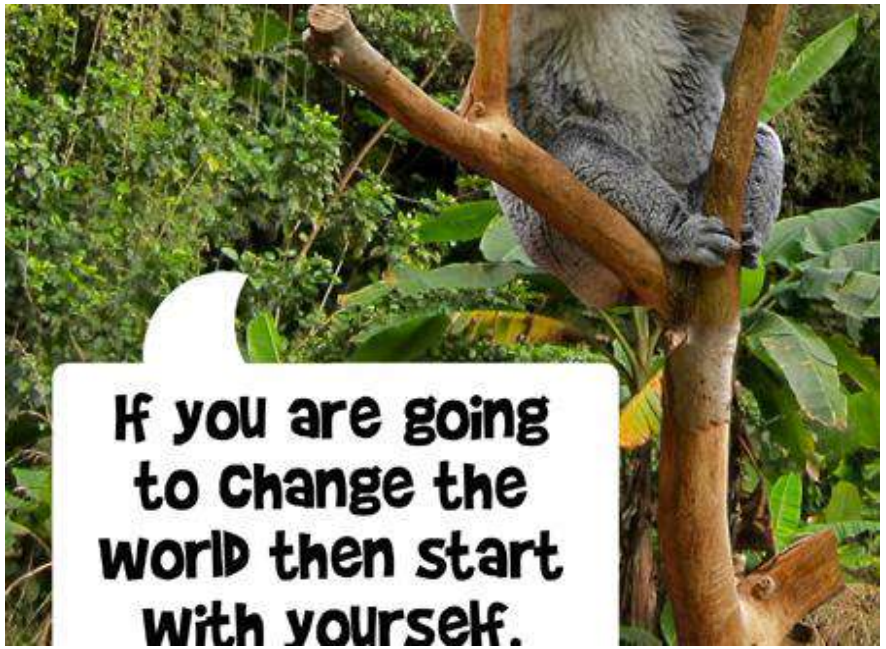
Establishing an Information Center

- **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


IDEAS
+ ACTION
= CHANGE







THANK YOU

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