Water Conservation and Rainwater Harvesting

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What is the goal?

IDEAS

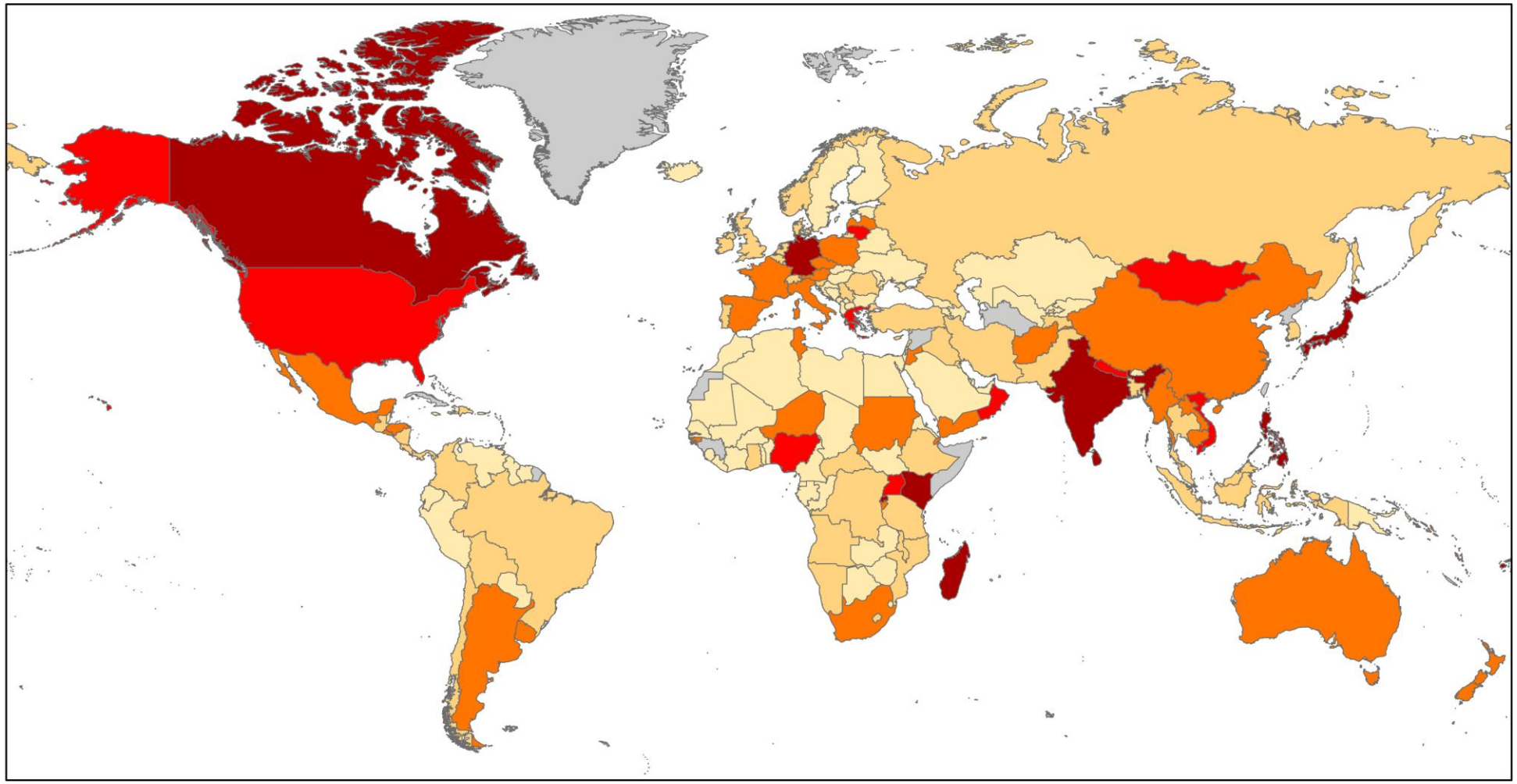
+ ACTION

= CHANGE

Why water conservation?

GERMANWATCH

Climate Risk Index 2020

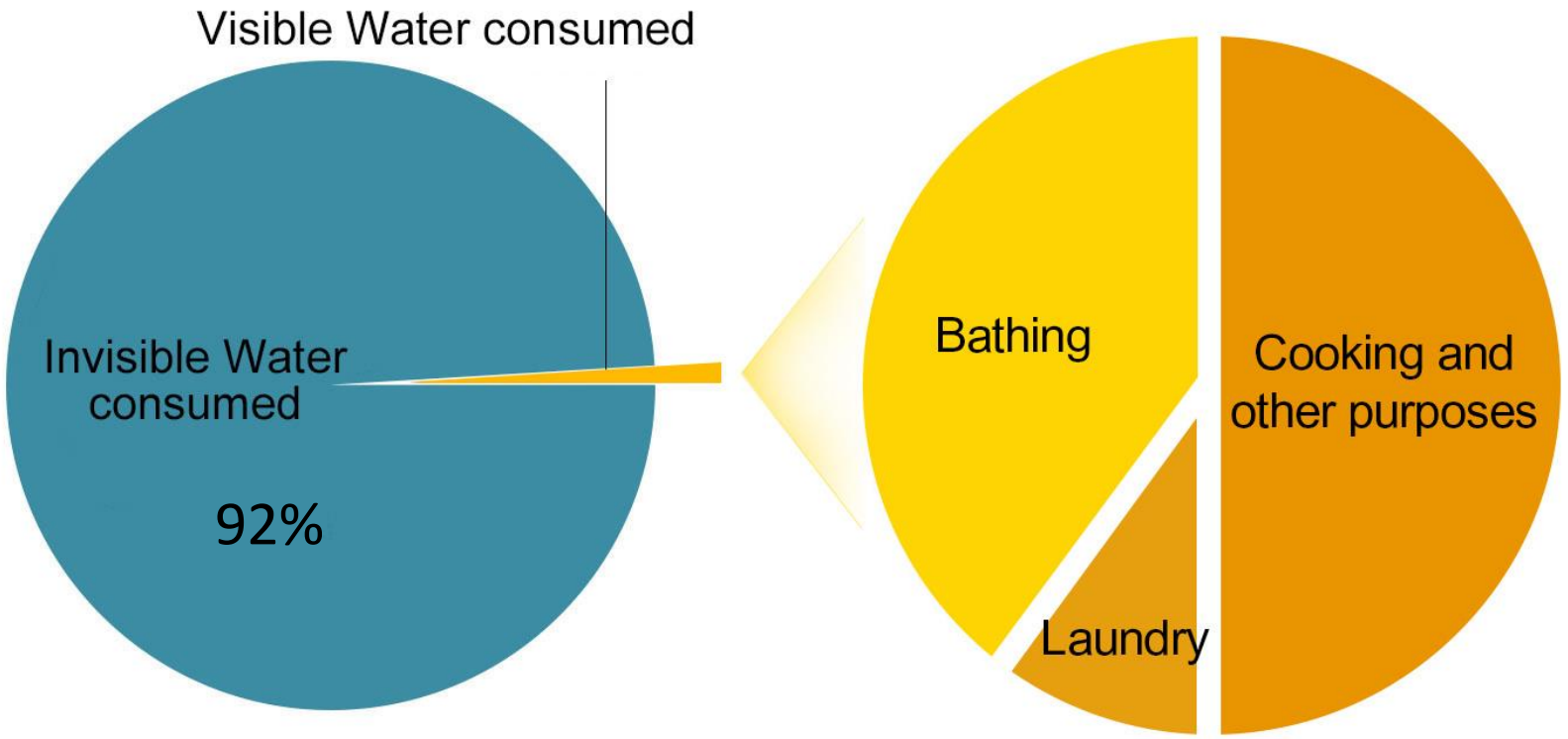


Climate Risk Index: Ranking 2018

1 - 10 | 11 - 20 | 21 - 50 | 51 - 100 | >100 | No data

www.germanwatch.org/en/cri

Visible Vs Invisible Water



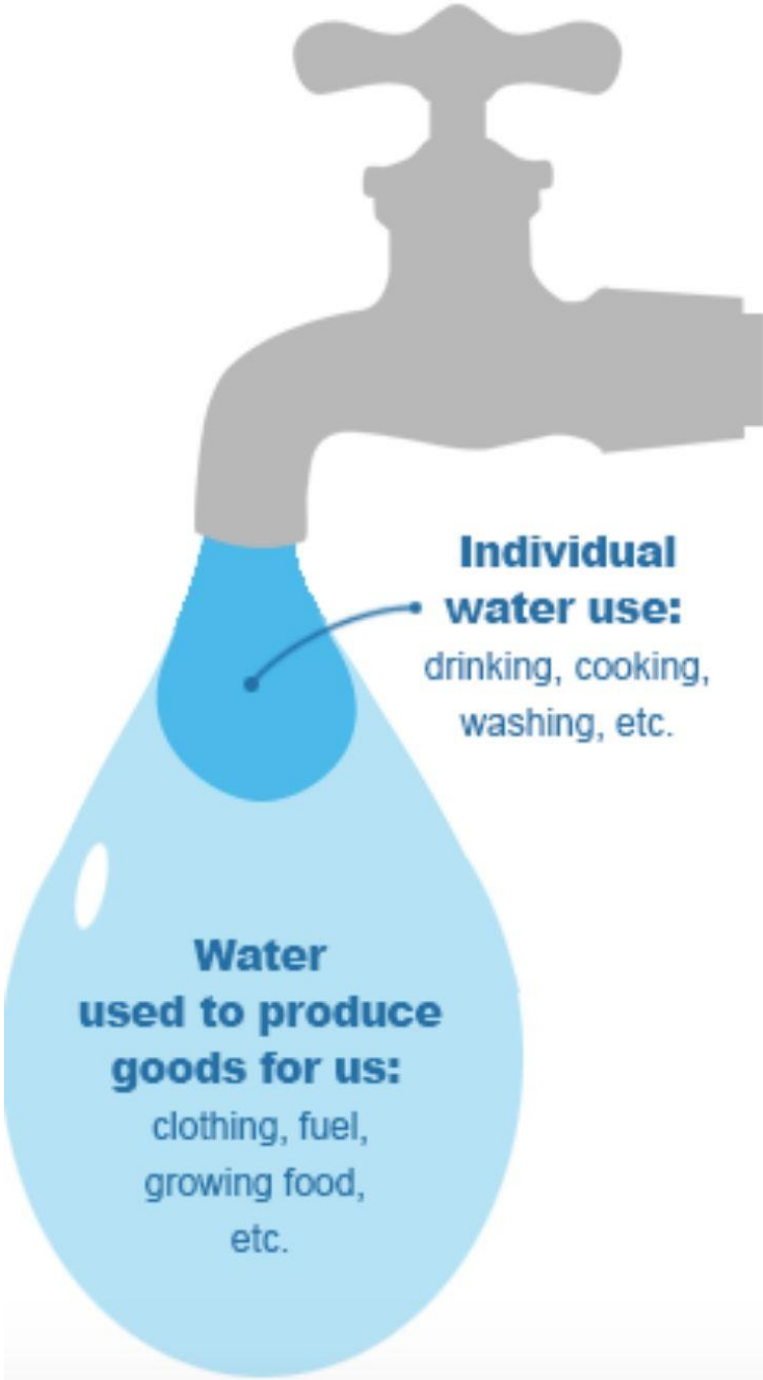


Table - 1 Per capita water availability in India

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

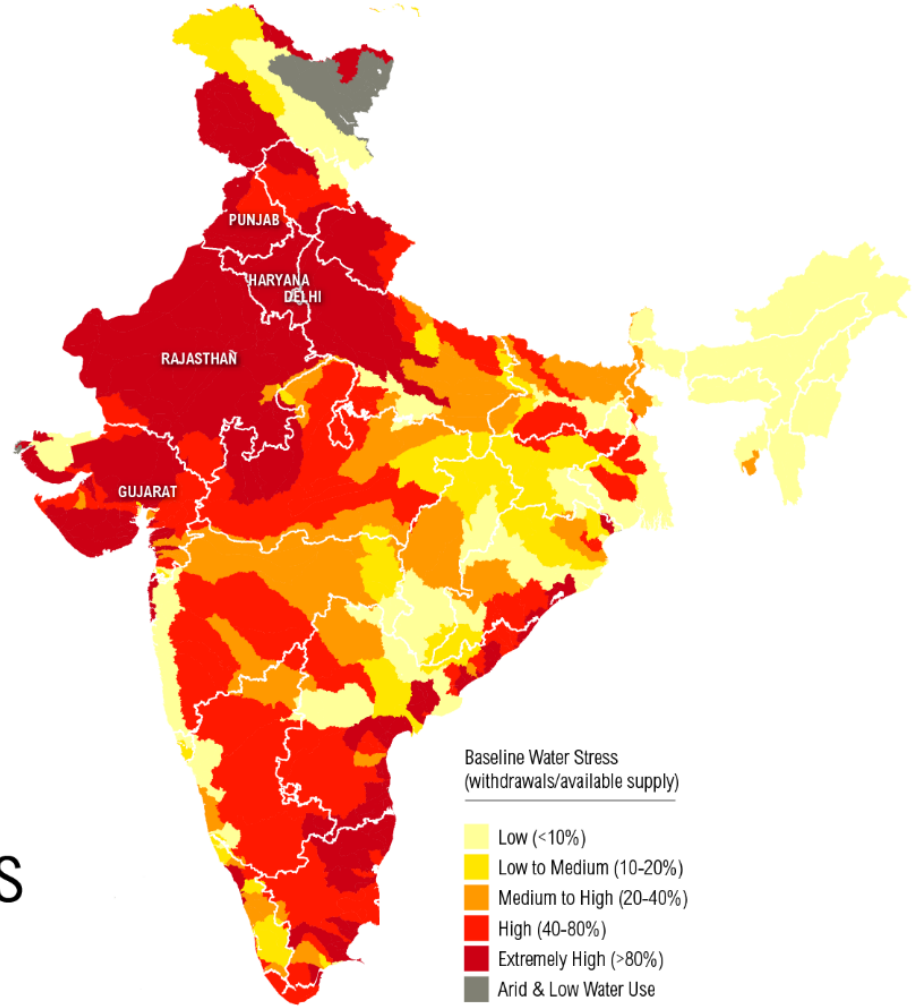
Source: http://www.cwc.gov.in/sites/default/files/main-report.pdf

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

Mumbai, India

- July 2, 2019

80 people were killed in flooding and building collapses caused by heavy rains.

Kerala, India

August 19, 2018

NEWS18 » PHOTOS

Not a Drop to Drink: Parched Chennai Stares at Bigger Water Crisis as Lakes, Reservoirs Run Dry

India | AFP | June 18, 2019, 12:18 pm

2015

2019

Women fetch water from an opening made by residents at a dried-up lake in Chennai. (Image: Reuters)

Chennai, India’s sixth largest city, was nearly out of water as its reservoirs ran dry.

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 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)

Caste and class system

SMARTNEWS *Keeping you current*

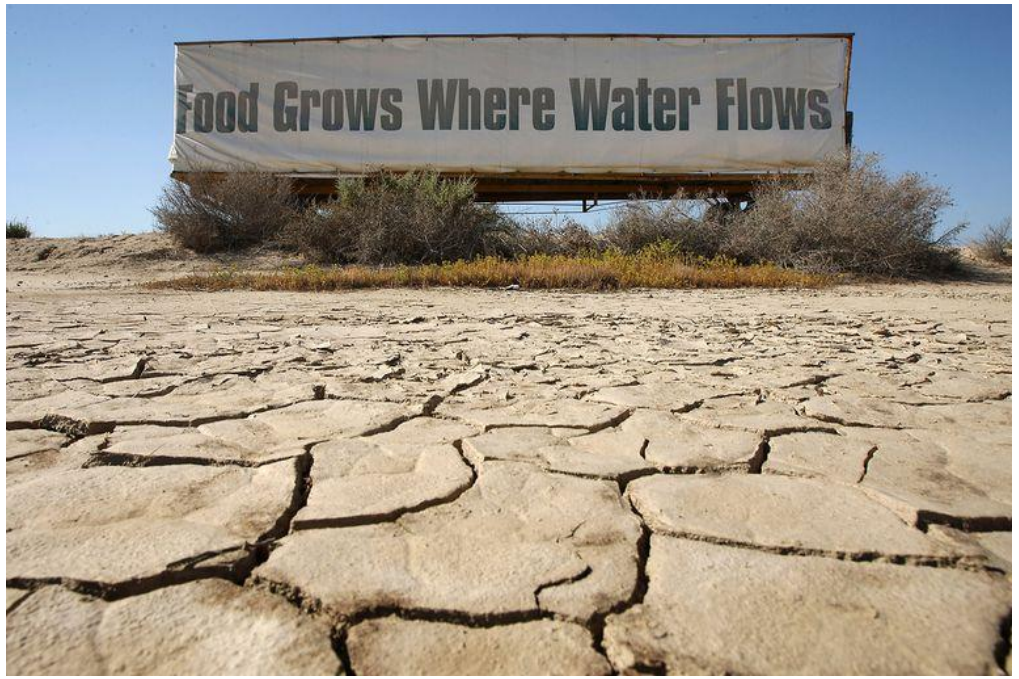
A Dalit Man Dug His Own Well When He Was Denied Water During a Drought

India's "untouchables" still face daily discrimination

By **Danny Lewis**
SMITHSONIAN.COM
MAY 11, 2016

A hunger crisis

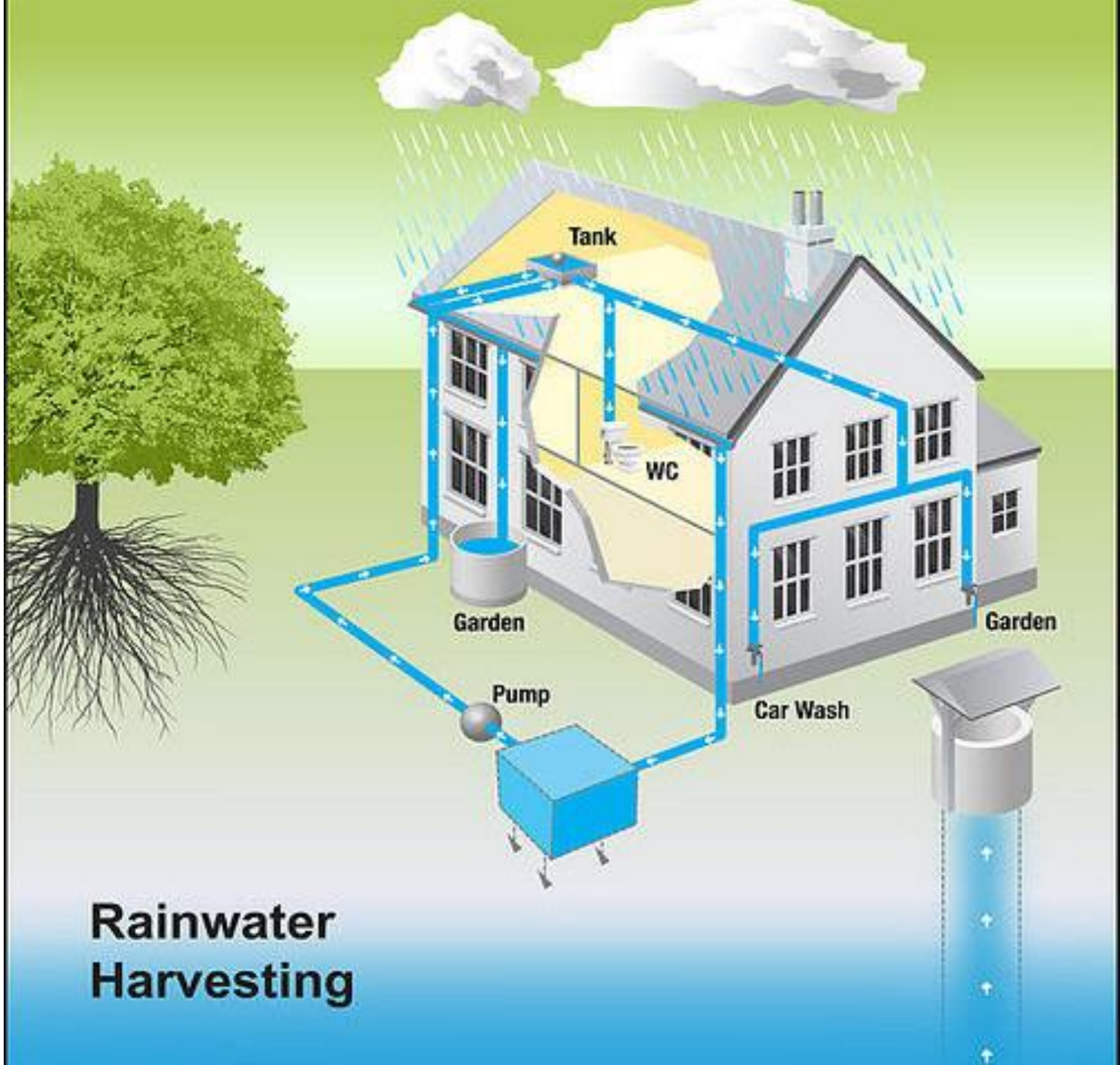
The Global hunger index 2020 report has placed India at 94th position among 107 countries



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

The way forward



Major Water Repositories

- Man-made Reservoirs
- Lakes and Rivers
- Groundwater Aquifers
- Ice and Snowpacks
- Forests

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

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/

What is rainwater harvesting?

Collecting rainwater from roof tops, in gardens, in ponds

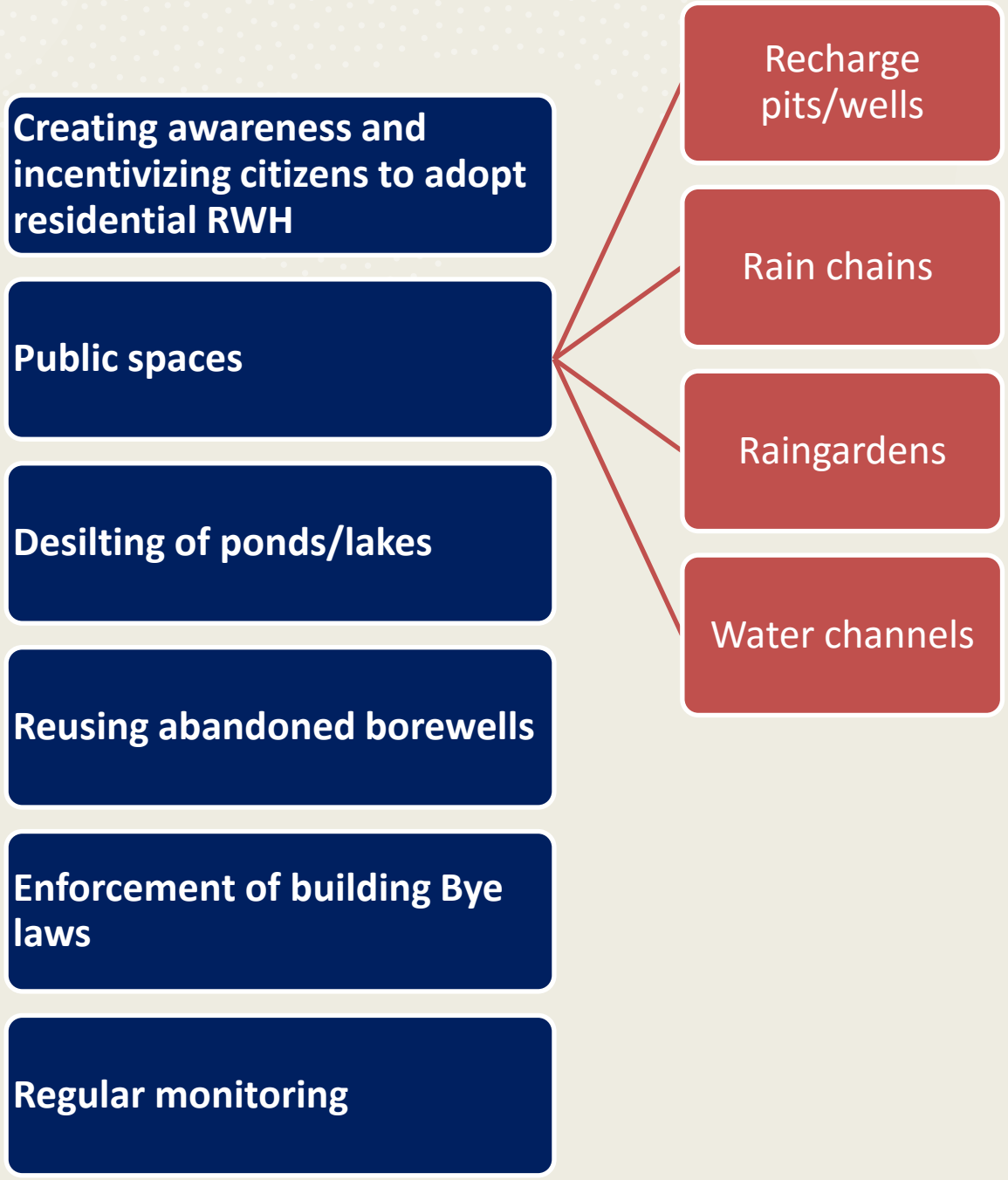
Issues associated with rainwater harvesting

BENEFITS OF RAINWATER HARVESTING

LACK OF AWARENESS ABOUT HOW TO HARVEST RAINWATER

IMPROPER MANAGEMENT OF EXISTING STRUCTURES

Possible Solutions – *No one size fits all*



Water channels

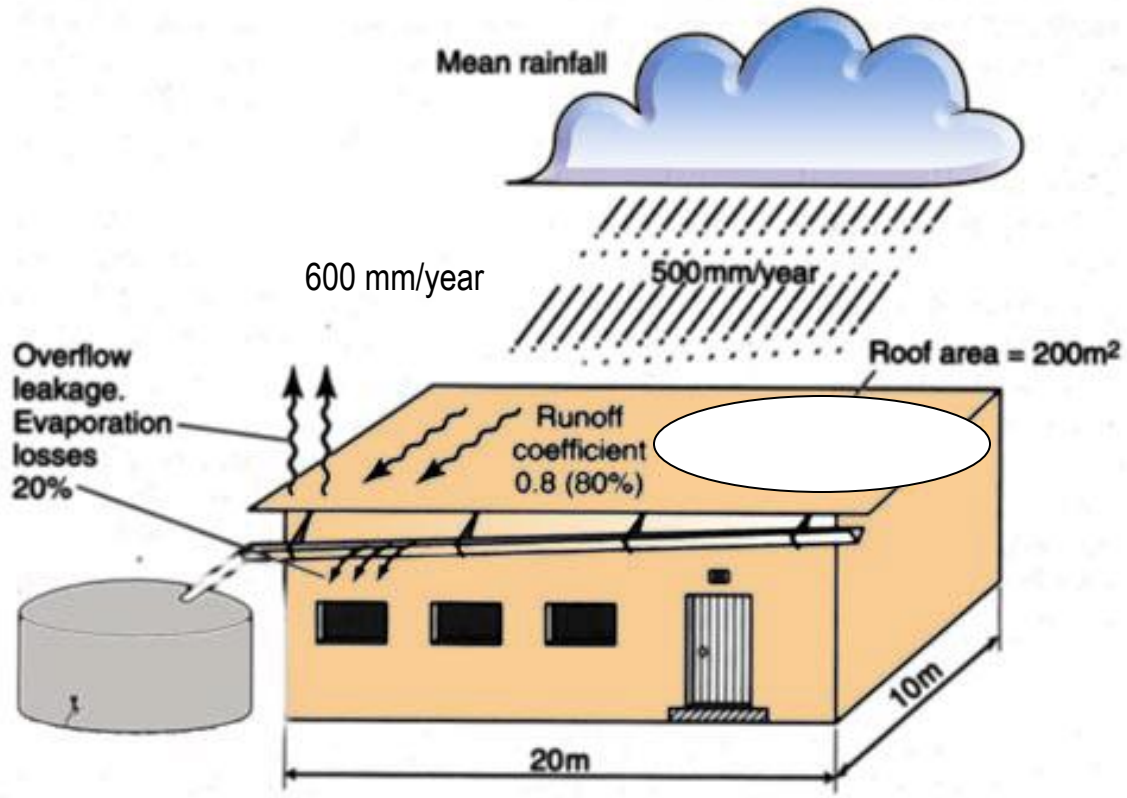
Rain Chains

Residential and Commercial Spaces

Rain Garden

Drawing provided by
Emmons & Olivier Resources, Inc.

Estimating rooftop Rainwater Run off



Runoff (liters)

=A x R x C

A=Area in Sq M

R=Rainfall in mm

C=Runoff coefficient

An example

- ✓ A=200 m^2
- ✓ R = 600 mm
- ✓ C=0.80

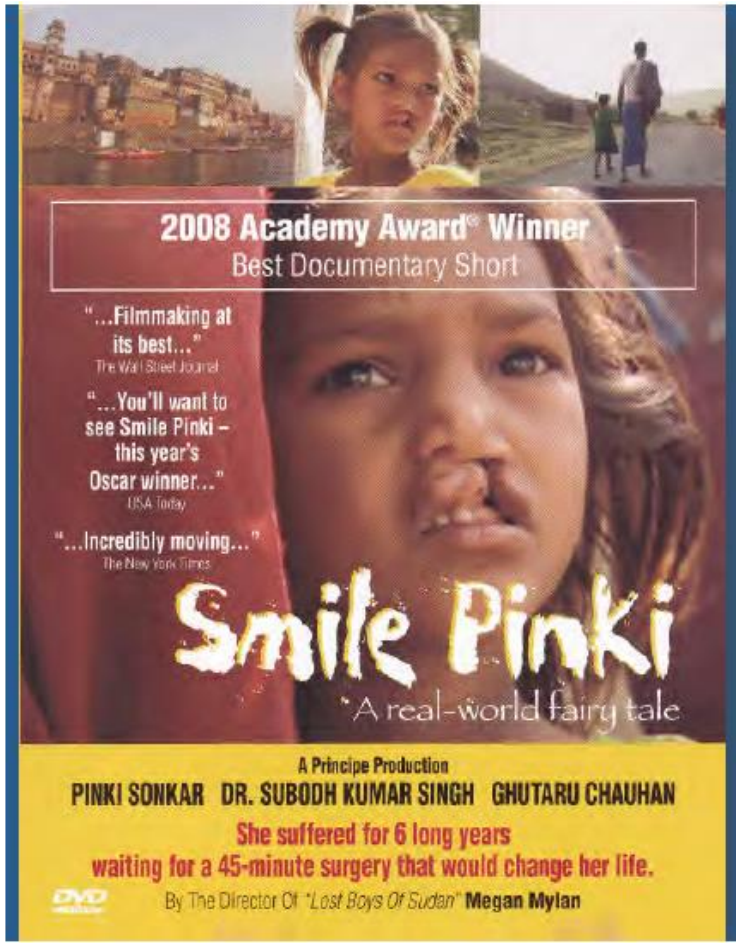
Runoff = 96000 ltrs

Family of 5: 5*135 litres/day = 675 litres

No. of days= 96000/675

= 142.22 days (140 days or Four and half months)

Adaptive Leadership- Its about storytelling

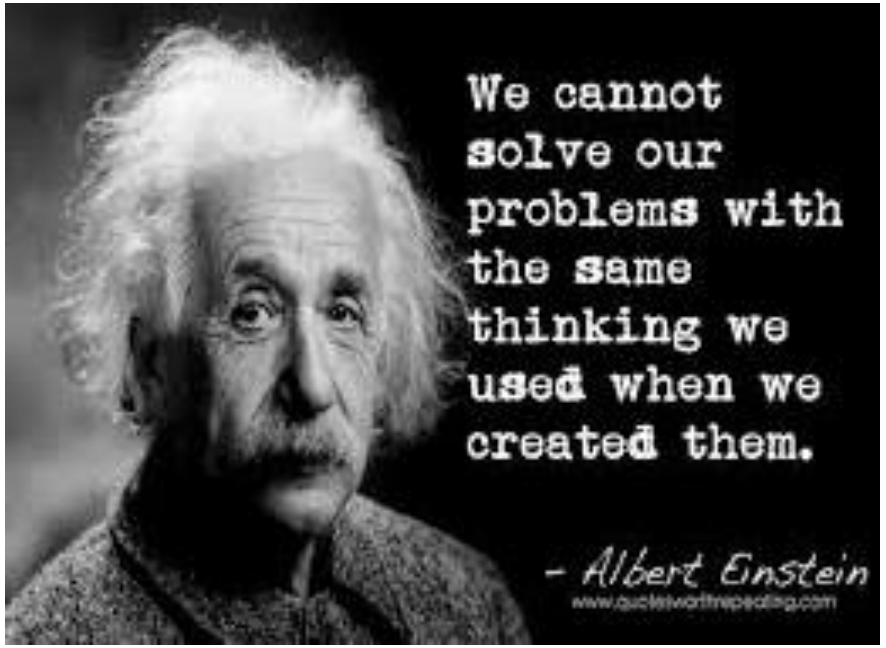


- Process of getting attention
- Framing the issue
- Timing and pacing
- Holding steady

Belief in positive outcome/ better days ahead

Leaders are brokers of hope

Blue revolution for Green Revolution



THANK YOU

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