

# WATER CONSERVATION

DEFINITE TOOL  
TO WIN OVER  
WATER SCARCITY

# PRESENTED BY,

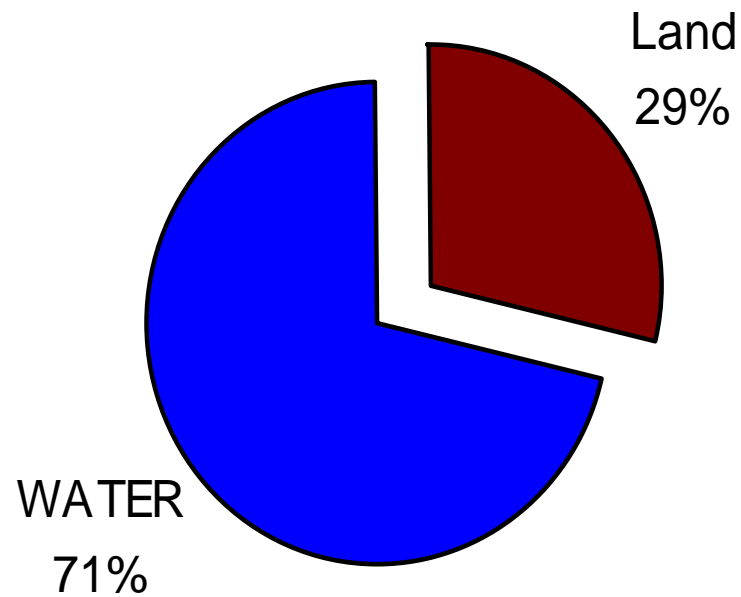
- Science and Technology Park, Pune
- ECO-HOUSING CELL OF P.M.C  
AND
- HYDRO-BIO TECH SYSTEMS,PUNE

# Our activities

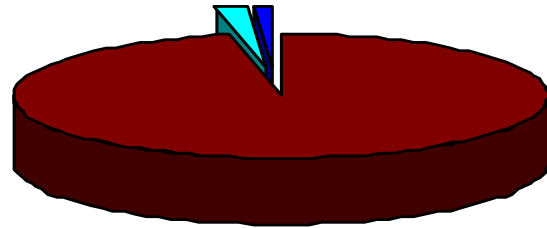
- Rain water harvesting implementation
- Sewage and Waste water treatment
- Recycle and reuse of the treated waste water
- Sludge dewatering systems
- Kitchen/Canteen waste bio gas systems



# How Much Water Do We have?



# WATER AVAILABILITY ON THE EARTH



**97 % Sea Water**



**2 % Ice and glaciers**

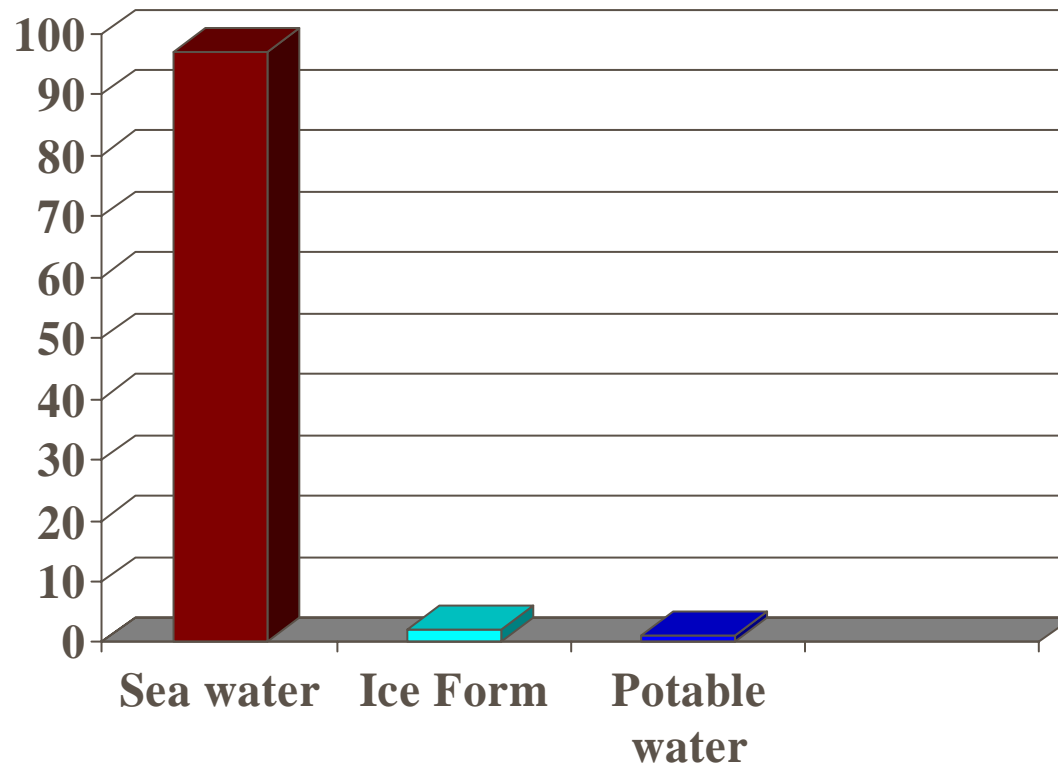


**1 % Available potable water**

# WATER AVAILABILITY

- **97 % Sea Water** : Not possible to use unless treated by expensive treatments
- **2 % Ice and glaciers** : This water is in the form of ice, hence not possible for immediate use
- **1 % Available potable water**: This water source is in the form of river, lakes and ground water and thus available for our use.

# WATER AVAILABILITY





## **WATER AVAILABILITY**

- IN INDIA, OUT OF TOTAL 1% OF WORLD WATER ONLY 4 % IS AVIALBLE
- OUT OF WORLD'S POPULATION ,17 % POPULATION IS INDIA

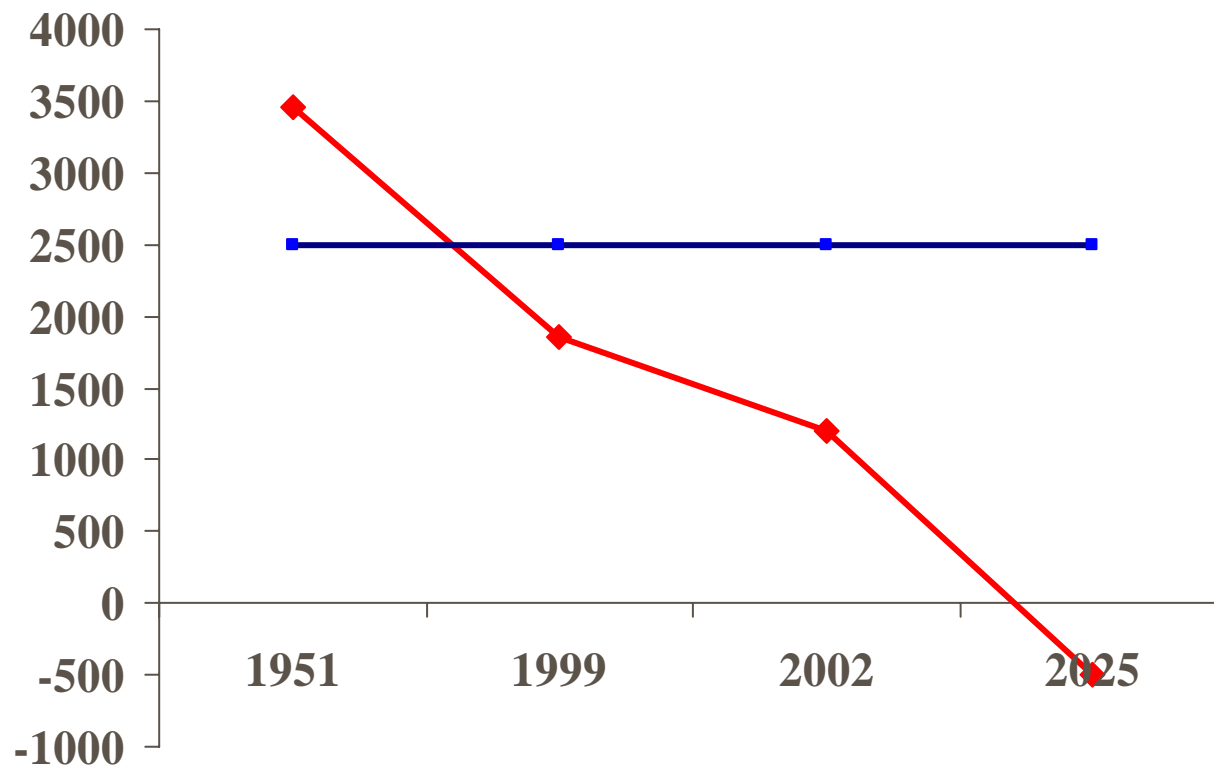


## **MAGNITUDE OF WATER SCARCITY**

### **IN INDIA per capita**

- **In 1951 water availability was about 3450 m<sup>3</sup>**
- **In 1999, water availability declined to 1850 m<sup>3</sup>**
- **In 2002, water availability declined to 1200 m<sup>3</sup>**

# Water availability



# **By the reports of UNEP**

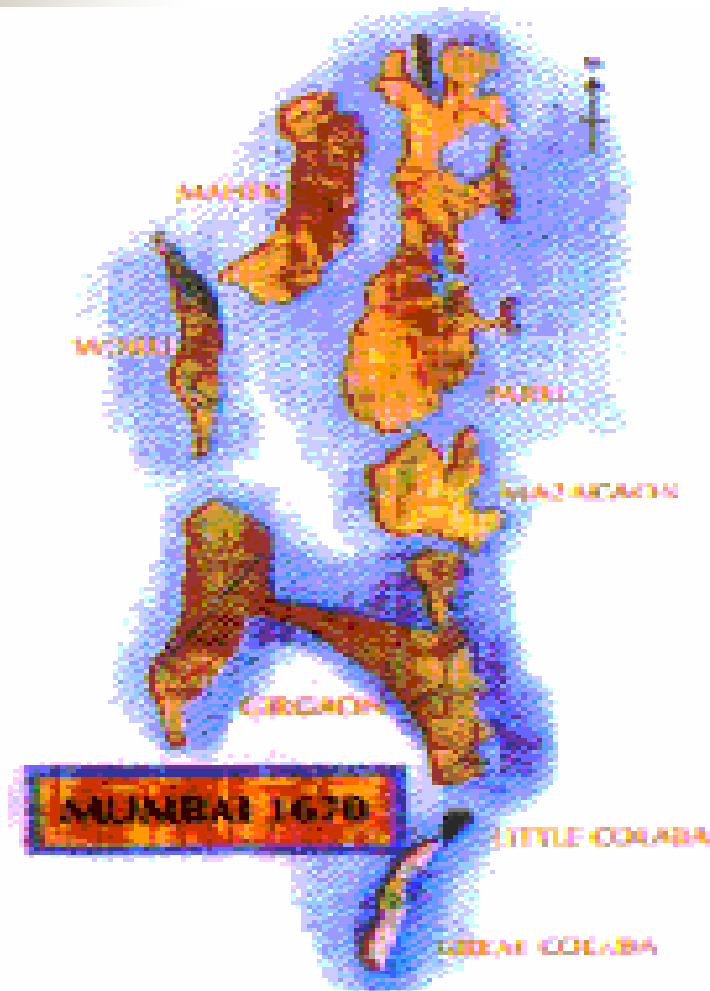


**India will be water stressed before  
2025**



## **Cause of this problem**

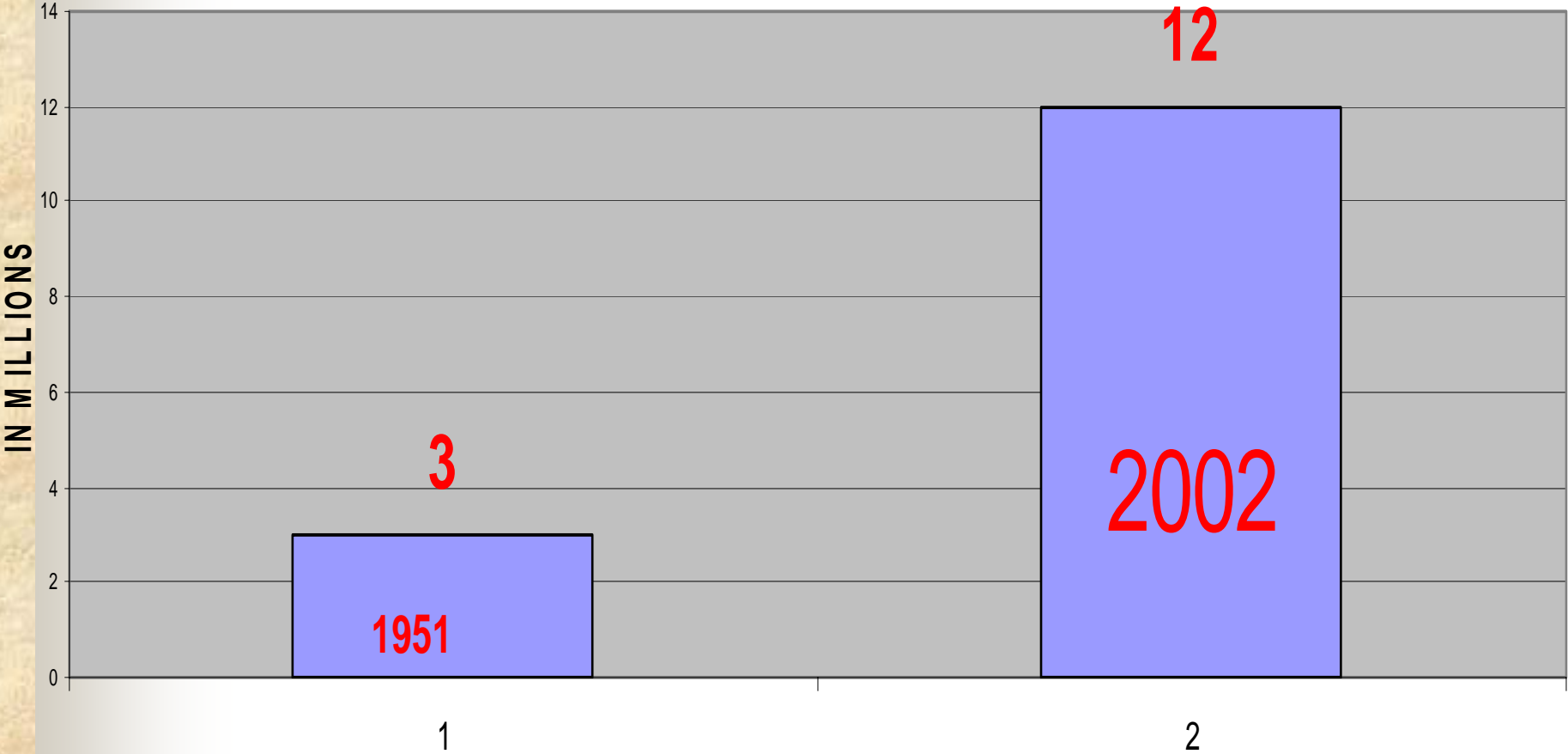
- Vast developments and urbanization of cities.
- Population outburst
- Elevated living styles
- Inadequate water supply arrangements
- Decrease in the rain fall
- Excessive withdrawals of the ground water



## Our Mumbai

Once consisted of group of seven islands called Colaba, Mazagaon, Old woman's Island, Wadala, Mahim, Parel and Matunga – Sion.

# INCREASE IN POPULATION

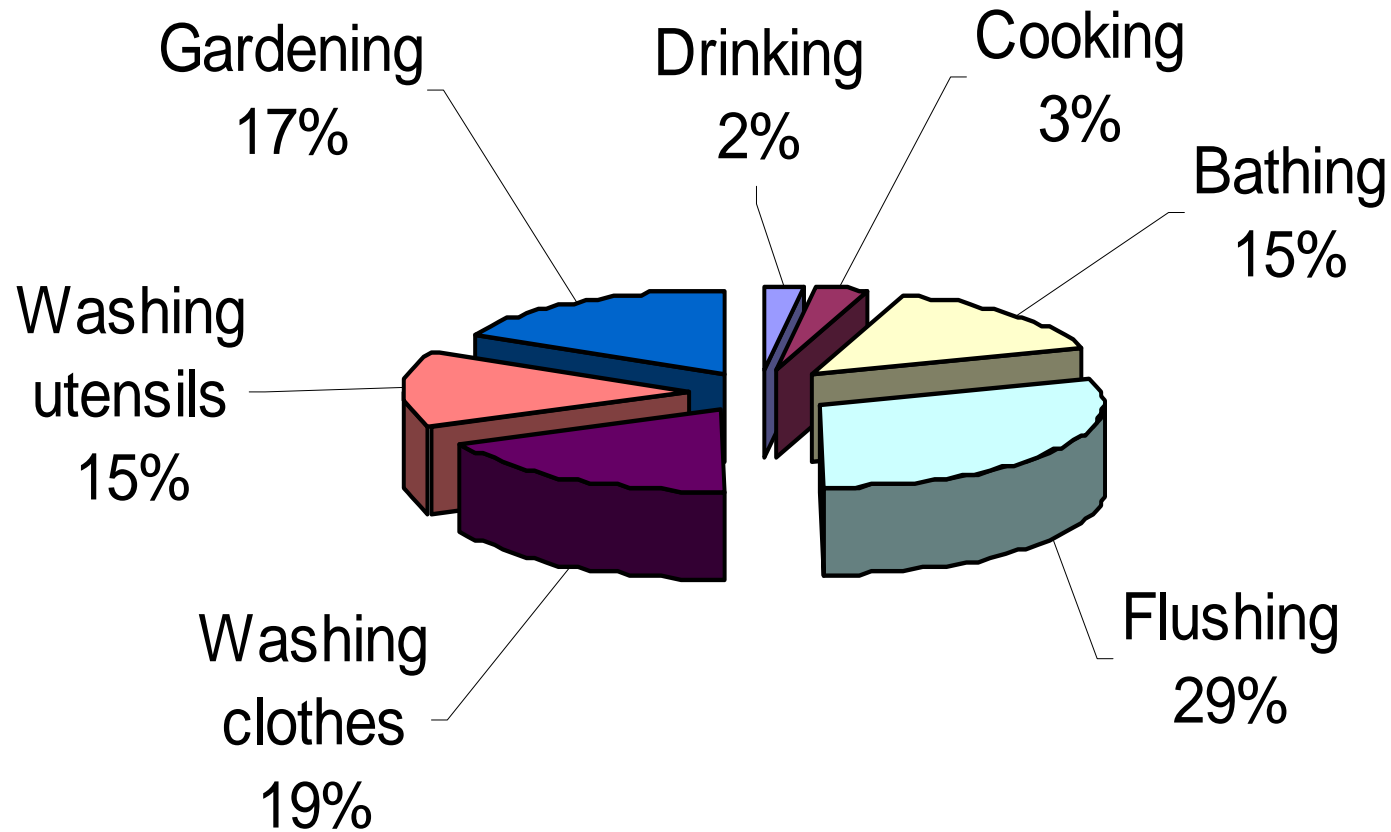




# Present water supply

- About 3000 MLD ( against the demand of 3900 MLD)

# Per Capita Water Requirement



Split up of 135 Liters



# Flush down to drain

- Only 20 per cent of the water is used for drinking, cooking;
- Over 60 per cent is used for bathing, washing and flushing down the toilet. Important that our water toilets are still 10-12 litres per each pull of the chain.
- Literally, **water down the drain...**
- **...80% potable water ends up as waste-water**



# **Solution to this Problem**

- **Effective utilization of the available water resources**
- **Rain water harvesting**
- **Waste water and sewage treatment and recycle.**

The header features a collage of nature-related images: a green plant on the left, a bird in flight in the center, and a blue rocky landscape on the right. Below these is a horizontal band of golden, shimmering particles.

This water conservation solution  
is one of the important factor of  
**ECO-HOUSING STRATAGY**



# ECO-HOUSING STRATAGY

Its **not** a

**STATUS SYMBOL**

**But a**

**NECESSITY**



# ECO-HOUSING CRITERIA

## **1. Maintain uniform water pressure**

### **■ Measures to achieve**

- **Install hydro pneumatic system**
- **Install separate down take lines for each floor**
- **Install pressure reducing/flow control devices**

A decorative header strip at the top of the slide. It is divided into three sections: the left section shows a close-up of green leaves and a yellow flower; the middle section shows a brown bird in flight over a green field; the right section shows a blue, rocky landscape with a yellow path leading into the distance.

## Water conservation criteria

- 2. Use low flow faucets and fixtures**



## Water conservation

### **3. WC should have dual plumbing network**

#### **Status: Mandatory**

#### **■ Measures to achieve**

- **Use 3 lit and 6 lit. flush system**
- **Use separate flushing water line network using recycled water**
- **Use separate down take for sewage water**



## Water conservation

### **4. Install water meter for every down take line**

**Status: Mandatory**

#### **■ Measures to achieve**

- **To reduce and monitor the water consumption ,install water meters on down take line**



## Water conservation

- 5. Restrict areas of Lawns which needs higher water consumption to max.25% of total landscape area**



## Water conservation

### **6. Use of recycled water for non potable water applications**

**Status: Mandatory**

**Measures to achieve**

- **Provide grey water or sewage water treatment and use recycled water for gardening / toilet flushing/ car washing**



## Water conservation

### **6. Use of recycled water for non potable water applications**

**Status: Mandatory**

**Measures to achieve**

- **Provide grey water or sewage water treatment and use recycled water for gardening / toilet flushing/ car washing**



## Water conservation

### **7. Use of sprinklers and drip irrigation system**



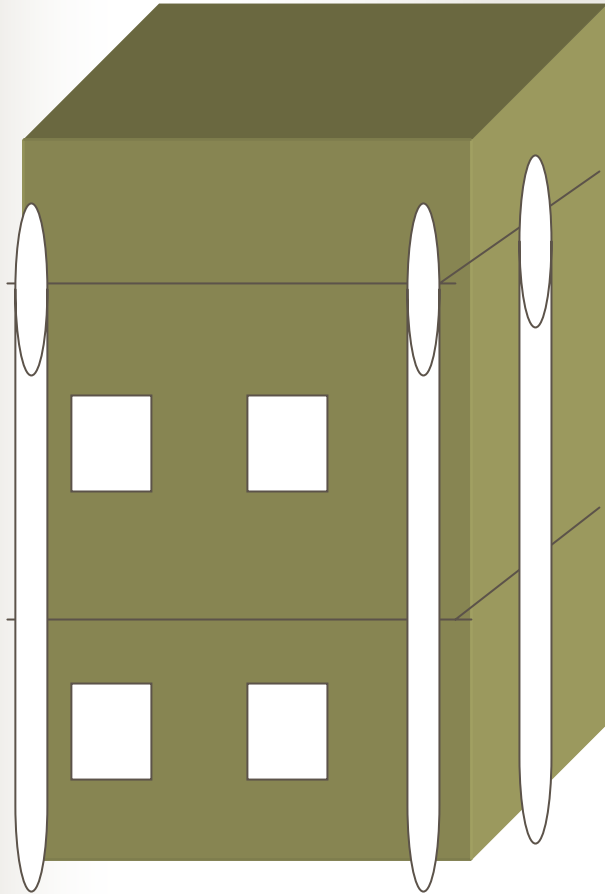
## Water conservation

### **7. Implement rain water harvesting system**

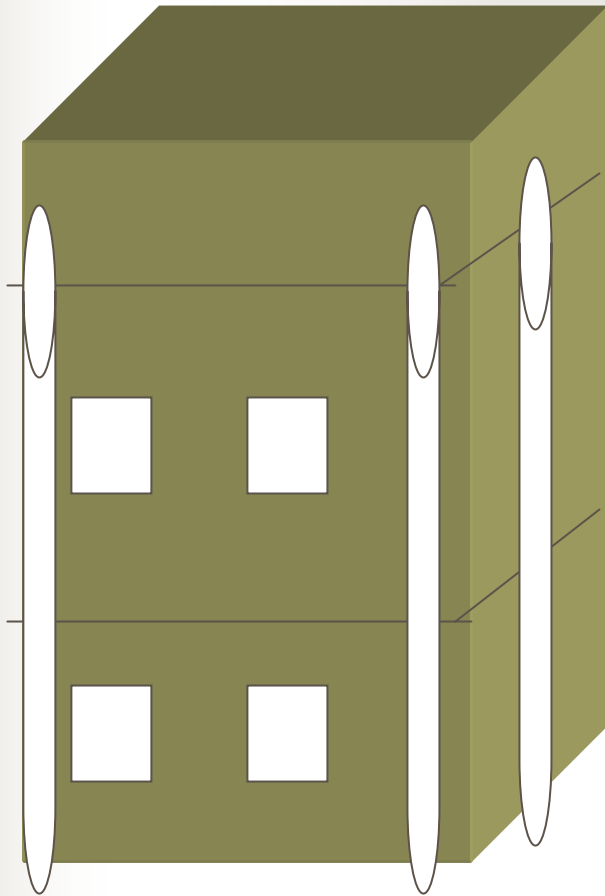
**Status: Mandatory**

**Measures to be taken:**

- **Harvest roof top rain water and use it for domestic non potable water requirements**
- **Excess rain water can be recharged in to nearby underground water bodies such as bore well or open wells**

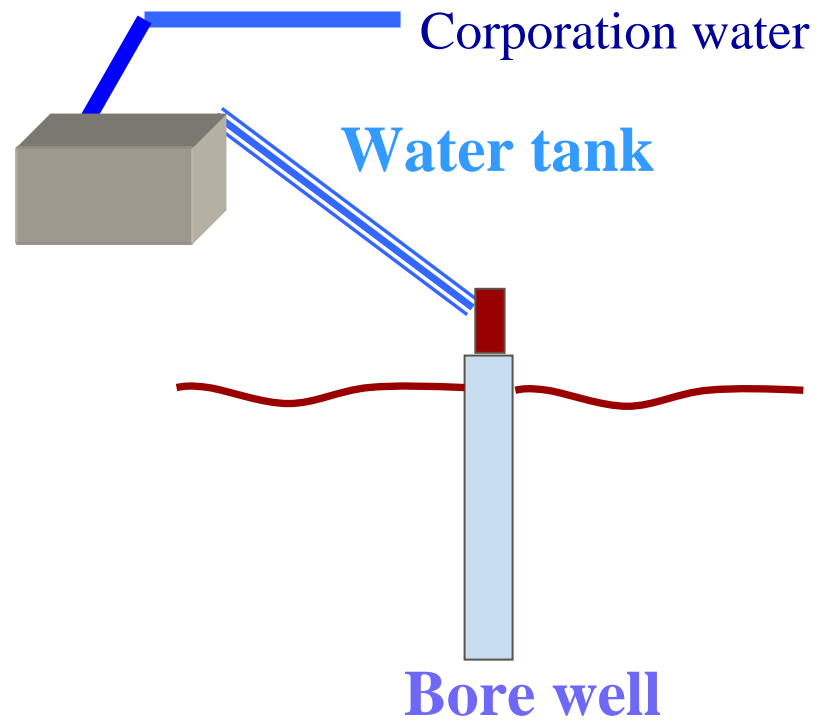
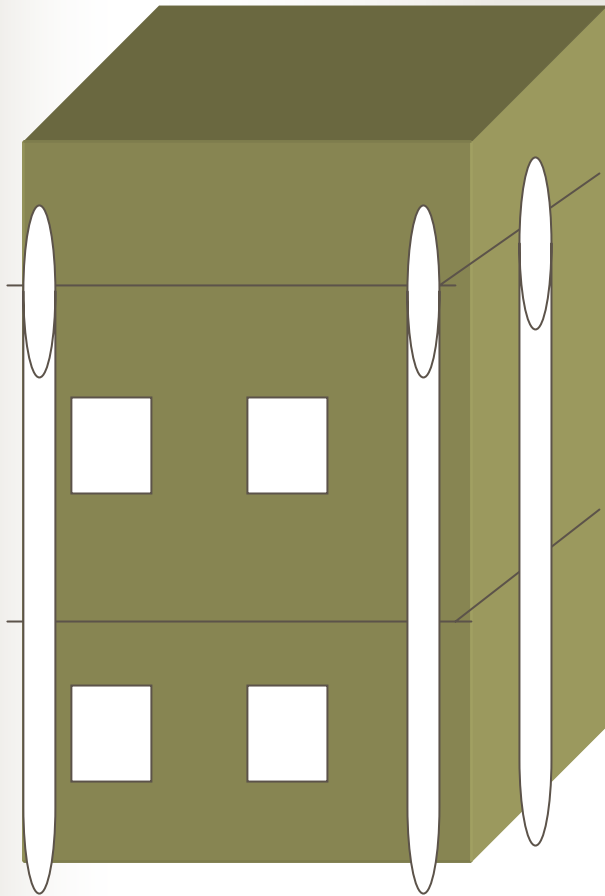


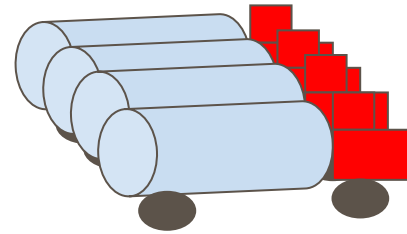
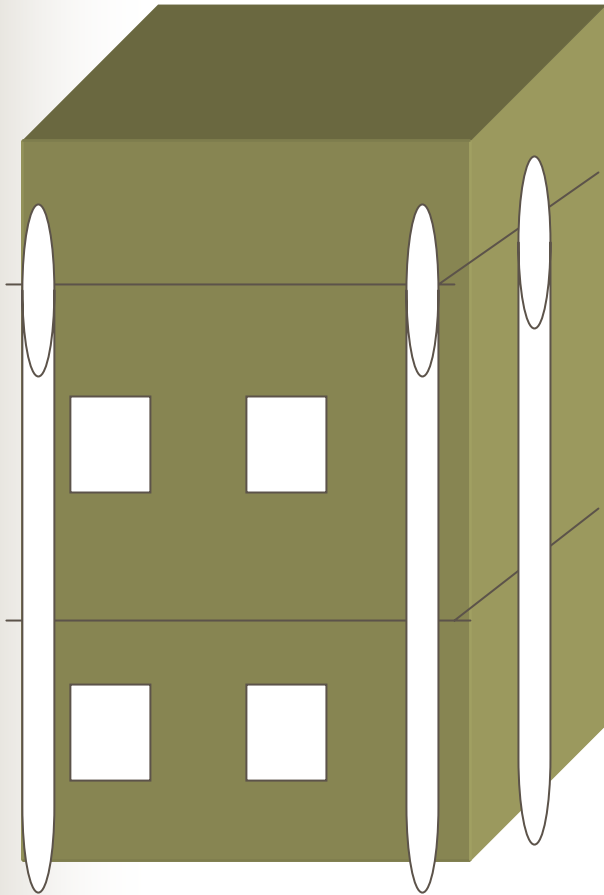
**TYPICAL BUILDING  
HAVING  
1000 SQ.FT OF  
TERRACE AREA**



**Water tank**

**Corporation water**

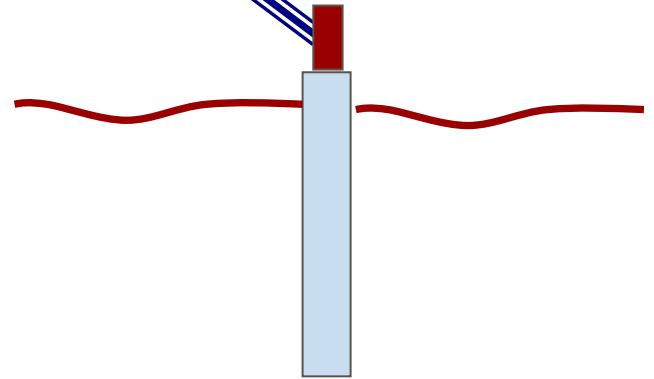




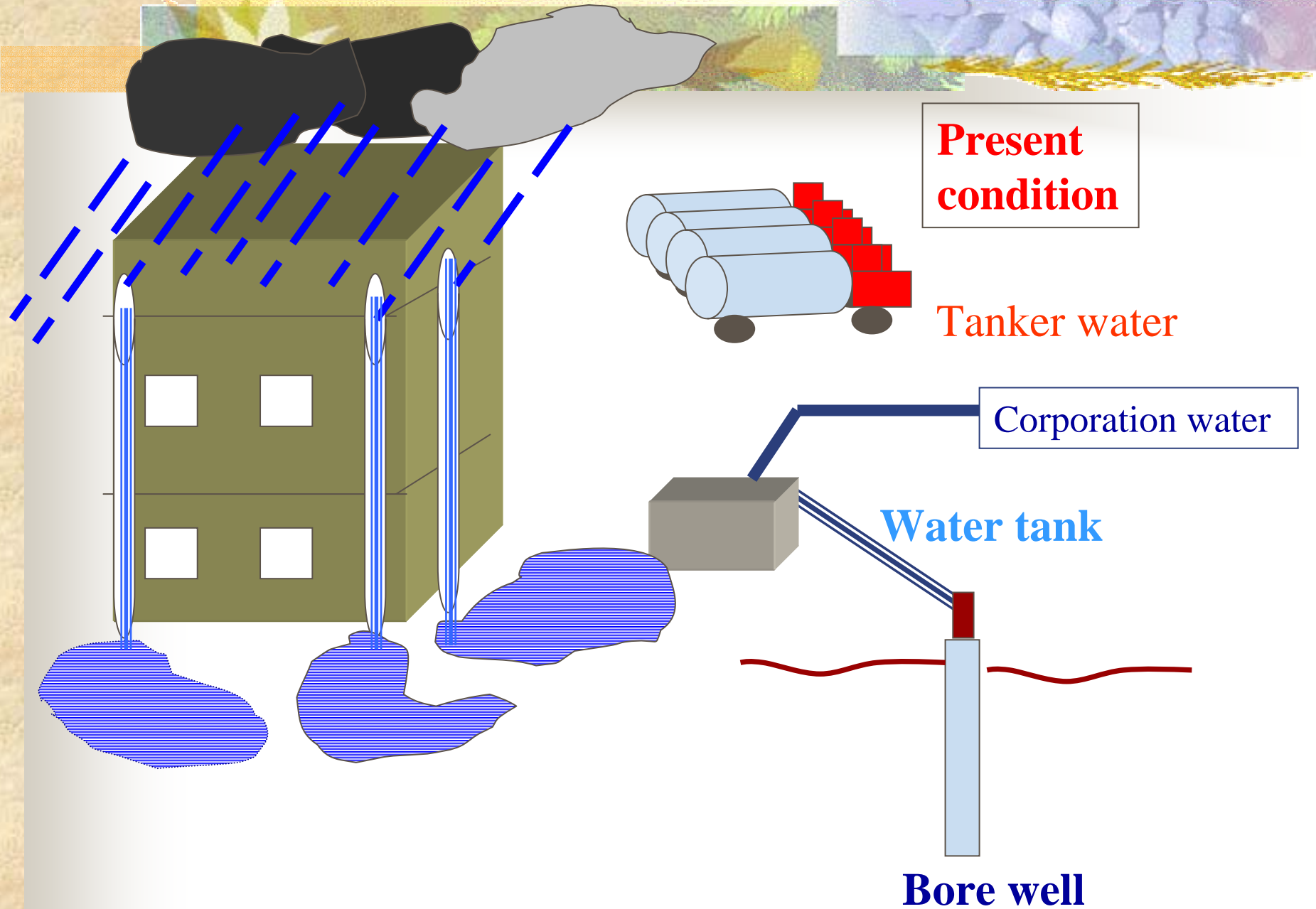
Tanker water




Water tank



Bore well



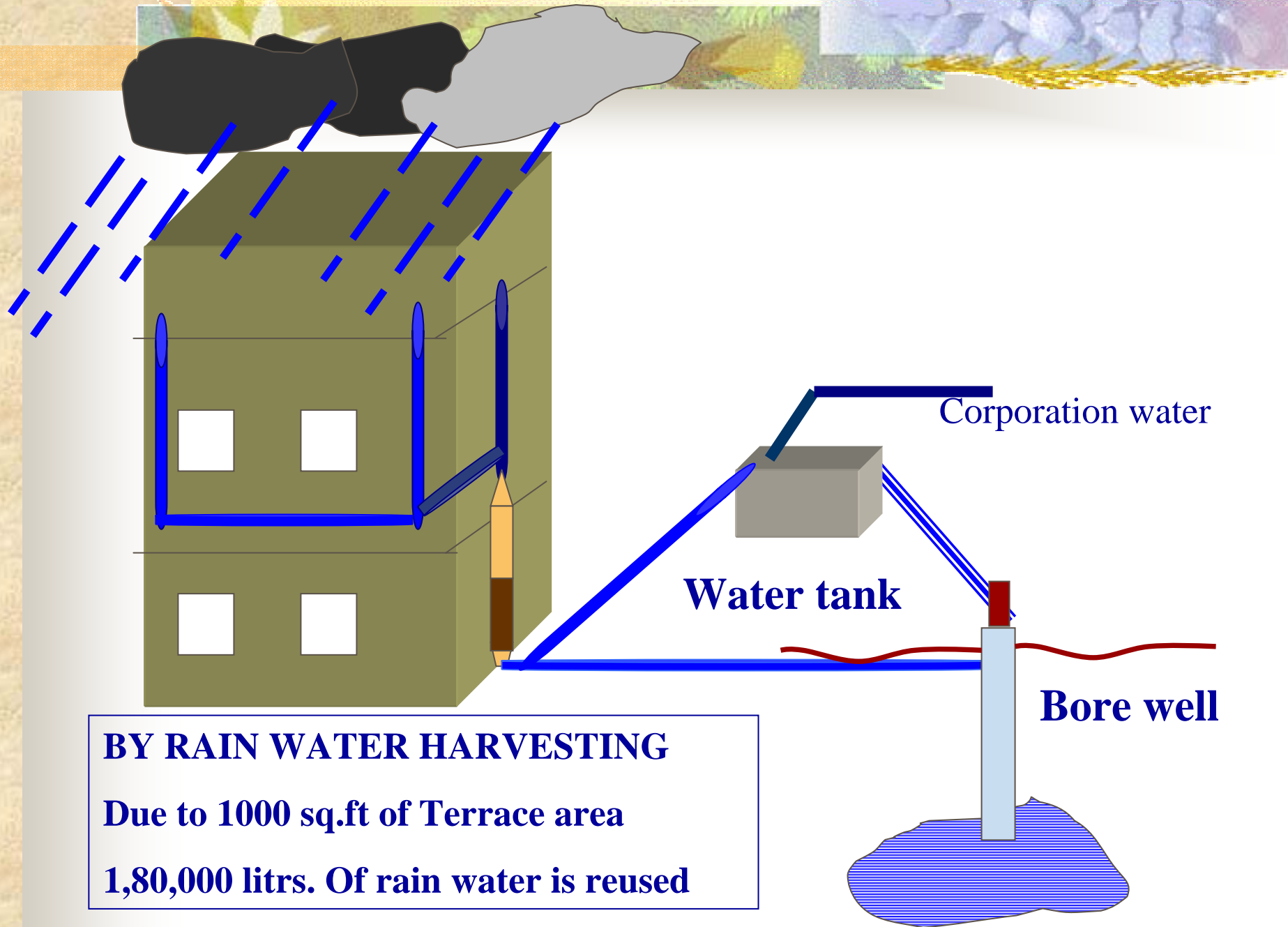


BY THIS 1000 SQ.FT OF  
TERRACE  
IN EVERY MONSOON  
ABOUT  
1,80,000 LITERS OF RAIN  
WATER DRAINS DOWN TO  
GUTTERS



# PRESENT CONDITION

- EXPENSE ON TANKER WATER
- BOREWELLS ARE GETTING DRIED
- HIGH ELECTRICAL BILLS
- HUGE QUANTITY OF RAIN WATER IS GETTING WASTED



**BY RAIN WATER HARVESTING**

**Due to 1000 sq.ft of Terrace area**

**1,80,000 litres. Of rain water is reused**



# Potential of rain water harvesting in Mumbai

- **Land Area** - 437 sq kmts
- **Approx annual rainfall** - 2000 mm avg.
- **Approx daily rainfall** - 20 mm avg.
- **Considering 70 % area is developed and only 50 % roof area brought under harvesting then**
- **Amount of rain water collection in one season =275310 Million litres**
- **Amount of rain water collection on one rainy day=2753 Million litres**

**Present water supply to Mumbai = 3000 MLD**



## Water conservation

### **9. Re use the harvested rain water**

#### **Measures to be taken:**

- **Harvest roof top rain water and use it for domestic non potable water requirements**
- **Excess rain water can be recharged in to nearby underground water bodies such as bore well or open wells to replenish the ground water**



## Water conservation

**10. Provide treatment facility for potable water supply if quality is not as per standards**

**Status: Mandatory**

**Measures to be taken:**

- **If water supply by bore well /tanker or any other water body then analyze the water and provide required treated facility.**



## Water conservation

### **11. Provide dual plumbing facility for grey and black waste water**

#### **Measures to be taken:**

- **Provide separate plumbing down take lines from the source so that designated treatment can be planned separately.**



## Water conservation

### **12. Install treatment facility for grey water**

**Status mandatory**

**Measures to be taken:**

- **Grey water to be collected and treated separately and thus to recycled back for toilet flushing or gardening.**



## Water conservation

**13. Install combine treatment facility for grey water as well as black water**

**Measures to be taken:**

- **Eco friendly Sewage treatment plant using eco-friendly systems to treat the water which will be suitable for recycle and reuse or for discharge**



## Water conservation

**14. Install separate plumbing line to reuse the recycled water for toilet flushing**

**Measures to be taken:**

- **Separate flushing line for toilet flushing**



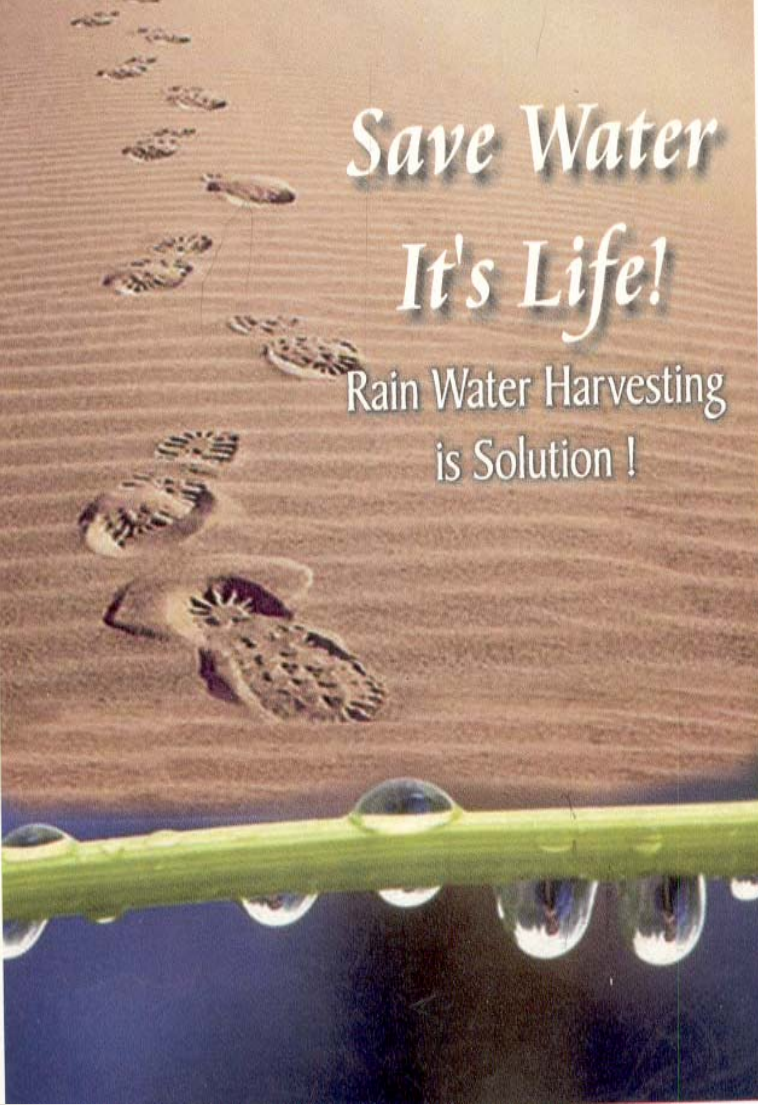

## Water conservation

### **15. Reuse of recycled water for various building applications**



## Water conservation

**16. Minimize the use of potable water demand during constructions activities.**



*Save Water  
It's Life!*

Rain Water Harvesting  
is Solution !

**Thank You!**

# Probable point allocations

Sr. no	Broad category	Measures	Points
1	<b>Water usage accountability</b>	By installing water measuring devices	<b>5</b>
2	<b>Dual Plumbing systems</b>	-Separate intake and down take for piping for grey water ,sewage water ,flushing water, recycled water, etc.	<b>10</b>
3	<b>Use of low flow consumption water faucets/devices</b>	By implementing constant pressure supply system, low flow flush systems	<b>5</b>
4	<b>Implementation of water conservation systems</b>	Rain water harvesting , recycle & ground water recharge	<b>25</b>
		Grey water treatment and recycle	<b>20</b>
		Sewage treatment and recycle	<b>15</b>
5	<b>Landscaping and gardening</b>	Use of less water consumption prone gardening	<b>5</b>
		Use of sprinkler or drip irrigation systems	<b>5</b>
		Use of recycled water for gardening	<b>10</b>
		<b>Total</b>	<b>100</b>