DROUGHT

Drought is a long period with no rain or with less rainfall than normal for a given area. Drought usually originates from a deficiency of precipitation (rainfall) over an extended period of time, resulting in water shortage for some activity or group.

It may last for a few months or in some cases many years.

Drought is a normal, recurrent feature of climate, and not a rare or sudden event. It can lead to an acute shortage of water, which is caused by deficiency of surface and sub-surface water.

Types of Drought

Meteorological Drought

Meteorological drought is the amount of dryness and the duration of the dry period. Atmospheric conditions that result in deficiencies of precipitation change from area to area.

Agricultural Drought

Agricultural drought mainly effects food production and farming. Agricultural drought and precipitation shortages bring soil water deficits, reduced ground water or reservoir levels, and so on. Deficient topsoil moisture at planting may stop germination, leading to low plant populations.

Hydrological Drought

Hydrological drought is associated with the effects of periods of precipitation shortages on water supply. Water in hydrologic storage systems such as reservoirs and rivers are often used for multiple purposes such as flood control, irrigation, recreation, navigation, hydropower, and wildlife habitat. Competition for water in these storage systems escalates during drought and conflicts between water users increase significantly.

Socioeconomic Drought

Socioeconomic drought occurs when the demand for an economic good exceeds supply as a result of a weather-related shortfall in water supply. The supply of many economic goods, such as water, forage, food grains, fish, and hydroelectric power, depends on weather. Due to variability of climate, water supply is sufficient in some years but not satisfactory to meet human and environmental needs in other years. The demand for economic goods is increasing as a result of increasing population. Supply may also increase because of improved production efficiency and technology.

Causes of Drought

- Natural Causes

Meteorological Drought s induced by natural causes. Several types of weather changes can alter the normal rainfall pattern in an area and cause drought.

Water that evaporates from the ocean is brought inland by the wind to the regions where it is needed. Droughts can also occur when air currents do not flow their normal pattern or cycle and do not bring clouds to the area that requires rainfall.

- Human Induced Causes

Environmental degradation, especially the loss of green cover fields cover affects rainfall received in the region, increasing the possibility of water scarcity.

What causes environmental degradation?

- Deforestation
- Soil Erosion
- Excessive use of ground or Surface water
- Global Warming
- Pollution

Drought history of Gujarat

Gujarat is chronically dry and prone to drought. Drought in the state is the result of a combination of natural factors, principally the scarcity of rain, and man-made factors such as deforestation and overgrazing, the absence of traditional rainwater harvesting systems etc. In 1999, as many as 98 out of a total of 225 blocks in the state received less than 50% of the season's expected rainfall. In 1999, Gujarat faced the worst drought of the past 100 years. Some 7,500 villages spread over 145 blocks in 15 districts were severely affected.

Gujarat - The state has been hit by the worst drought in 100 years. More than 25 million people living in 9,000 villages of 17 of the 25 districts have been hit. Though Saurashtra has always been drought prone, this year the districts of Jamnagar, Rajkot, Junagadh, Amroli, Bhavnagar, Surendranagar and Porbandar have also been badly affected. Almost all water sources have dried up; there is no food for the people and no fodder for over 7 million cattle. The water table in drought affected Saurashtra, Kutch and northern Gujarat is said to be falling by 10-15 feet each year and food grain production this year is lower by 30%.

Effects of Drought

- Economic
  - Loss of national economic growth, slowing down of economic development
  - Damage to crop quality, less food production
  - Increase in food prices
  - Increased importation of food (higher costs)
  - Insect infestation
  - Plant disease
  - Loss from dairy and livestock production
  - Unavailability of water and feed for livestock which leads to high livestock mortality rates
  - Range fires and Wild land fires
  - Damage to fish habitat, loss from fishery production
  - Income loss for farmers and others affected
  - Unemployment from production declines
  - Loss to recreational and tourism industry
  - Loss of hydroelectric power
  - Loss of navigability of rivers and canals.

- Environmental

  - Increased desertification
  - Damage to animal species
  - Reduction and degradation of fish and wildlife habitat
  - Lack of feed and drinking water
  - Disease
  - Increased predation.
  - loss of wildlife in some areas and too many in others
  - Increased stress to endangered species
  - Damage to plant species Increased number and severity of fires
  - Wind and water erosion of soils

- Social

  - Food shortages
  - Loss of human life from food shortages, heat, suicides, violence
  - Mental and physical stress
  - Water user conflicts
  - Political conflicts
  - Social unrest
  - Public dissatisfaction with government regarding drought response
  - Inequity in the distribution of drought relief
  - Loss of cultural sites
  - Reduced quality of life which leads to changes in lifestyle
  - increased poverty
  - Population migrations

Drought Mitigation

Drought is a natural hazard, it has a slow onset, and it evolves over months or even years. It may affect a large region and causes little structural damage. The impacts of drought can be reduced through preparedness and mitigation. Some of the preparedness and mitigation measures are

1. Water Conservation:

Water conservation is the simplest and most useful measure. By preventing misuse of water and encourage recycling of water the problem can be tackled to a little extent.

Some Water conservation tips:

- Ensure that the overhead tank never overflows.
- Repair leaking taps immediately
- Try to make reuse of water for activities like watering fields and bathing animals.

2. Vegetation Cover:

Environmental improvements help to restore ecology in the region. Vegetation Cover helps the rain water to seep underground. This would increase the water table and over the time precipitation is also increased due to the vegetation cover.

3. Water Storage:

A long term defense against drought is construction of dams and reservoirs for artificial storage of water. This water is then supplied to the water supply source through these storage reservoirs. Water is stored n the reservoirs during the high rainfall time and then used during the lean rainfall period. Village Ponds and Tanks are also good strategies to combat effects of droughts.

The capacity of these ponds and resirvoirers will decrease due to the deposition of silt which is carried with the water that comes to the reservoirs. This gets settled at the bottom. Thus Periodic cleaning of these reservoirs is necessary as the capacity of these ponds, resirvoirers etc will decrease by the deposition of silt which is carried it water at the bottom.

4. Watershed Management

The land area that sheds water into a particular river is called its watershed. The surface runoff from this area ultimately finds its way to the river. When watershed of the river is

heavily forested, the surface runoff is less. Roots of the trees and littered leaves on the ground help in absorbing water.

However in deforested areas, the run off from the watershed is considerable. Water here is not retained in the watershed and thus flows into its river and then to the sea. This leads to less groundwater replenishment and the wells aldso get dry during lean season.

It s therefore important to grow more and more trees where ever possible or build embankments which will also help p to reduce soil erosion.

Rainwater Harvesting: What is rainwater harvesting?

Rainwater harvesting is the collection of rainwater. Rainwater thus collected can be stored for either direct use or can be recharged in to ground. In other words it implies catching rainwater for use at the place where it falls.

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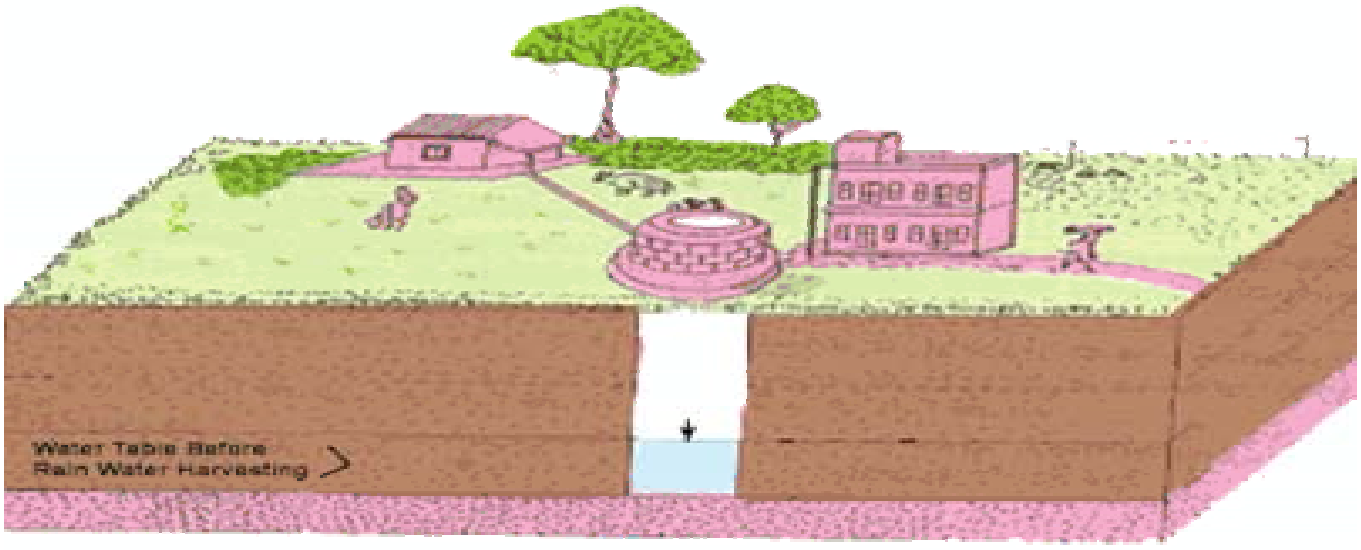


There are two methods to store rainwater

- Roof top water harvesting
- .Recharging ground water.

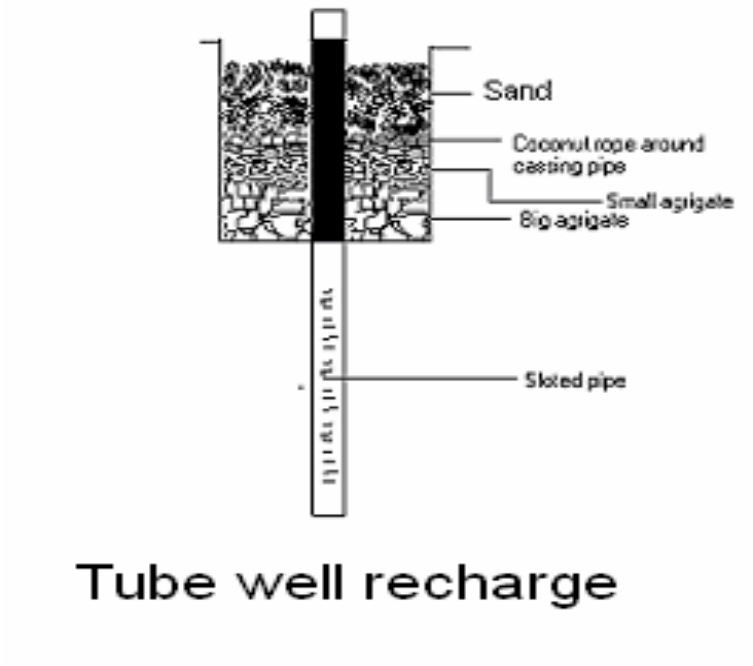
- **Rooftop water harvesting**

Collect the rainwater using house roof and stored it to in storage tank is called roof top water harvesting. Water from roof top rainwater harvesting can be directly used as drinking purpose.

Recharging ground water

Tube well recharging

Using this simple technique you can recharge your tube well through rainwater. By diverting the farm water towards the tube well through filter system. In rainy season all rainwater will go under the tube well



Tube well recharge