

A photograph of a waterfall cascading over mossy rocks, with the text "WATER RESOURCES" overlaid in large white letters. The waterfall is the central focus, with water falling from the top left towards the bottom center. The surrounding rocks are covered in vibrant green moss, and the overall scene is lush and natural. The text is centered and reads "WATER RESOURCES" in a bold, sans-serif font.

WATER RESOURCES

Water Resources

- It is an indispensable natural resource on this earth on which all life depends.
- Water covers 70% of earth's surface but only 3% of this is fresh water.

Unique Characteristics of water:

- It exist in liquid form over a wide range of temperature ($0^{\circ}\text{C} - 100^{\circ}\text{C}$).
- High Specific Heat.
- High Latent heat of vaporization
- Excellent and Universal Solvent
- High Surface Tension

WORLD WATER DISTRIBUTION

Storage component	Volume (10^{12} m ³)	Total water (%)
Oceans	1350400	97.6
Fresh-water lakes	125	0.009
Saline lakes	105	0.008
Rivers	17	0.0001
Ground water & soil moisture	7150	0.5
Ice caps and Glaciers	26000	1.9
Atmosphere	13	0.001
Total	1383810	100

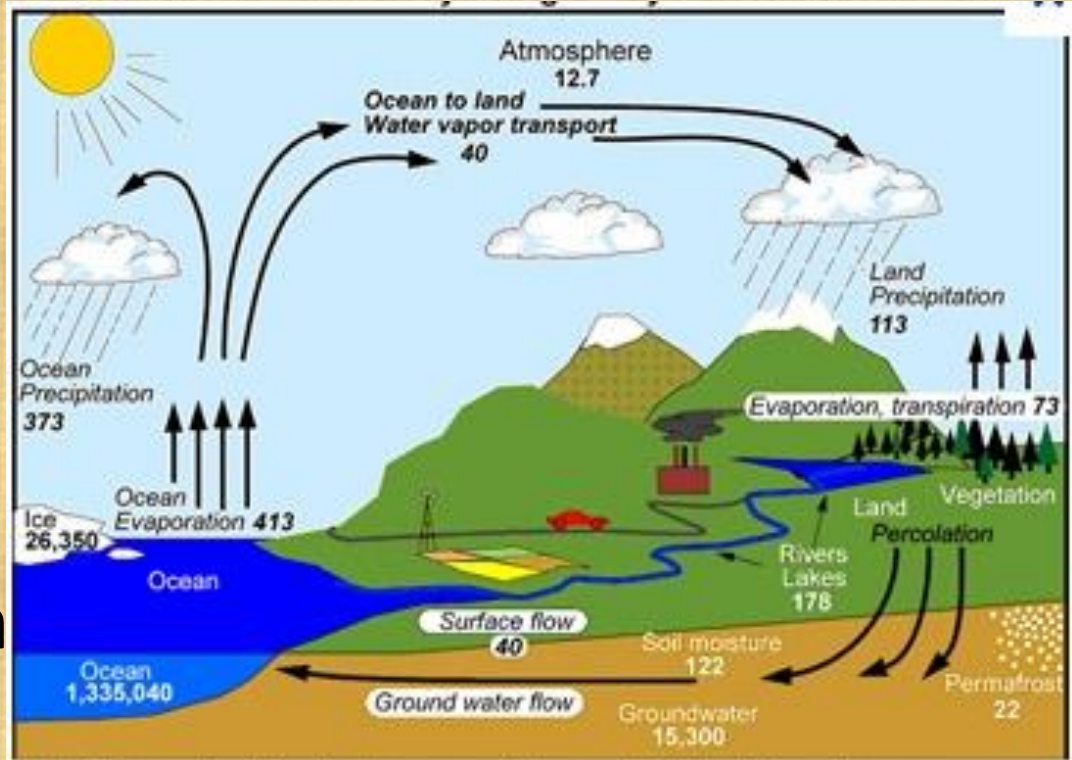
- Water – 70% of the earth’s surface
- Fresh water – 3% (2% - polar ice caps, 1% usable water in rivers, lakes and subsoil aquifers)

	Agriculture	Industry	Domestic use
Global level	70%	25%	5%
India	90%	7%	3%

- Average consumption of water: 20-40 Lit/person/day
- More than 1 billion people have no access to clean water
- 2050 – 4 billion people will be seriously affected by water shortage

Hydrological Cycle/Water Cycle

- Precipitation
- Evaporation
- Transpiration
- Evapo-transpiration



Uses of water

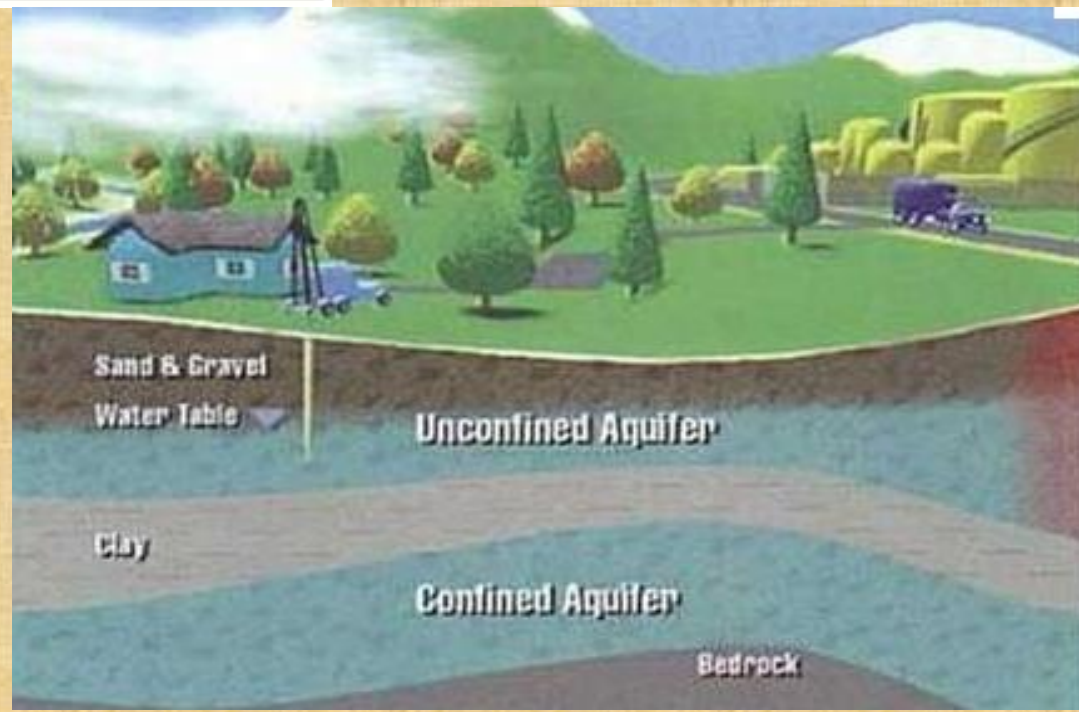
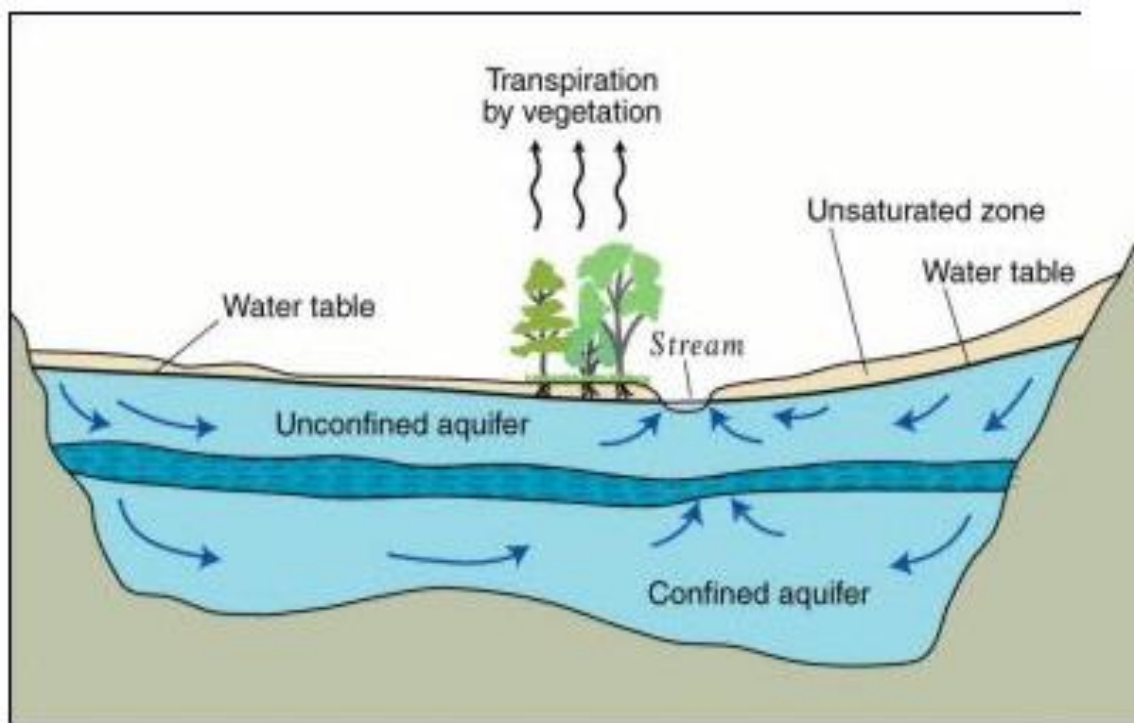
- **Drinking**
- **Irrigation**
- **Transportation**
- **Washing**
- **Waste Disposal**
- **Coolant for thermal power plants**

Life processes takes place by Water:

- Uptake of nutrients
- Nutrition distribution in body
- Maintaining Temperature regulation
- Removal of wastes

Ground water

- Harder than surface water.
- Only source of water where there is no surface water sources.
- Overuse of ground water: once pumped out it needs many years to be replaced or refilled.
- Over use of fresh water near coastlines often allows salt water to intrude into aquifers used for domestic and agricultural purposes.



The Ground Water System

Over exploitation of ground water & surface water-causes

- 1. high population growth
- 2. high water consumption for agriculture & more use of agrochemicals
- 3. changes in climatic conditions(global warming)
- 4. hydro electricity demands

Over exploitation of ground water & surface water-consequences

- Lowering of ground water table and surface water level
- Long term irrigation requirement
- In coastal areas salt water intrude into aquifers.



**INTO A DEEP
DRY SPELL**

Villagers gathered to draw water from a massive well in Natwarplod in the Indian state of Gujarat in June. During the region's worst drought in more than a decade, the temperature rose as high as 111°

Photograph by Amit Dave—Reuters

WWW.TeluguColours.com

**Projection of consequences in future due to over-exploitation
of ground water & surface water**

Dams: Benefits and Problems:

Country	No. of dams constructed
India (9% of world's total)	4,291
China	22,000
USA	6,390
Japan	1,200

Dam - Benefits

- Hydro-electricity Generation
- Ensuring a year-round water supply
- Transfer of water from areas of excess to areas of deficit using canals.
- Irrigation during dry periods
- Flood control and soil protection
- Development of Fish hatcheries and nurseries.

Dam - Problems

- Loss of more water through evaporation and seepage into porous rock beds
- Increasing in salinity of river water – controlled irrigation leads to build up of salts
- Submergence of fertile fields and human settlements
- Spreading of water diseases like malaria
- Growth of aquatic weeds
- Displacement of tribal people
- Reservoir increase the risk of earthquakes
- Reduced water flow and reduced silt deposition in downstream of river.
- Destroy the habitat for wild plants and animal species

Sustainable Water Management

- ✓ Building several small reservoirs instead of a few mega projects
- ✓ Soil management and afforestation permits recharging of underground aquifers, thus reducing the need for big dams.
- ✓ Treating and recycling municipal wastewater for agricultural and industrial use.
- ✓ Preventing leakages from dams and canals
- ✓ Preventing loss in municipal pipes.
- ✓ Effective rain water harvesting in urban environment.
- ✓ Water conservation measures in agriculture, such as using drip irrigation.
- ✓ Pricing the water at its real value
- ✓ Development of water shed management.

- IMD defines a drought year as one in which the overall rainfall deficiency is more than 10 per cent of the long period average and if more than 20 per cent of the agricultural area is affected. "In my estimate, monsoon in 2014 will be somewhere between 2012 (7 per cent below normal) and 2009 (27 per cent deficit)," said Singh.

Read more at:

http://economictimes.indiatimes.com/articleshow/32568141.cms?curpg=2&utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst