

GE 2211 Environmental Science and Engineering

Unit – I

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# Water Resources

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# Contents

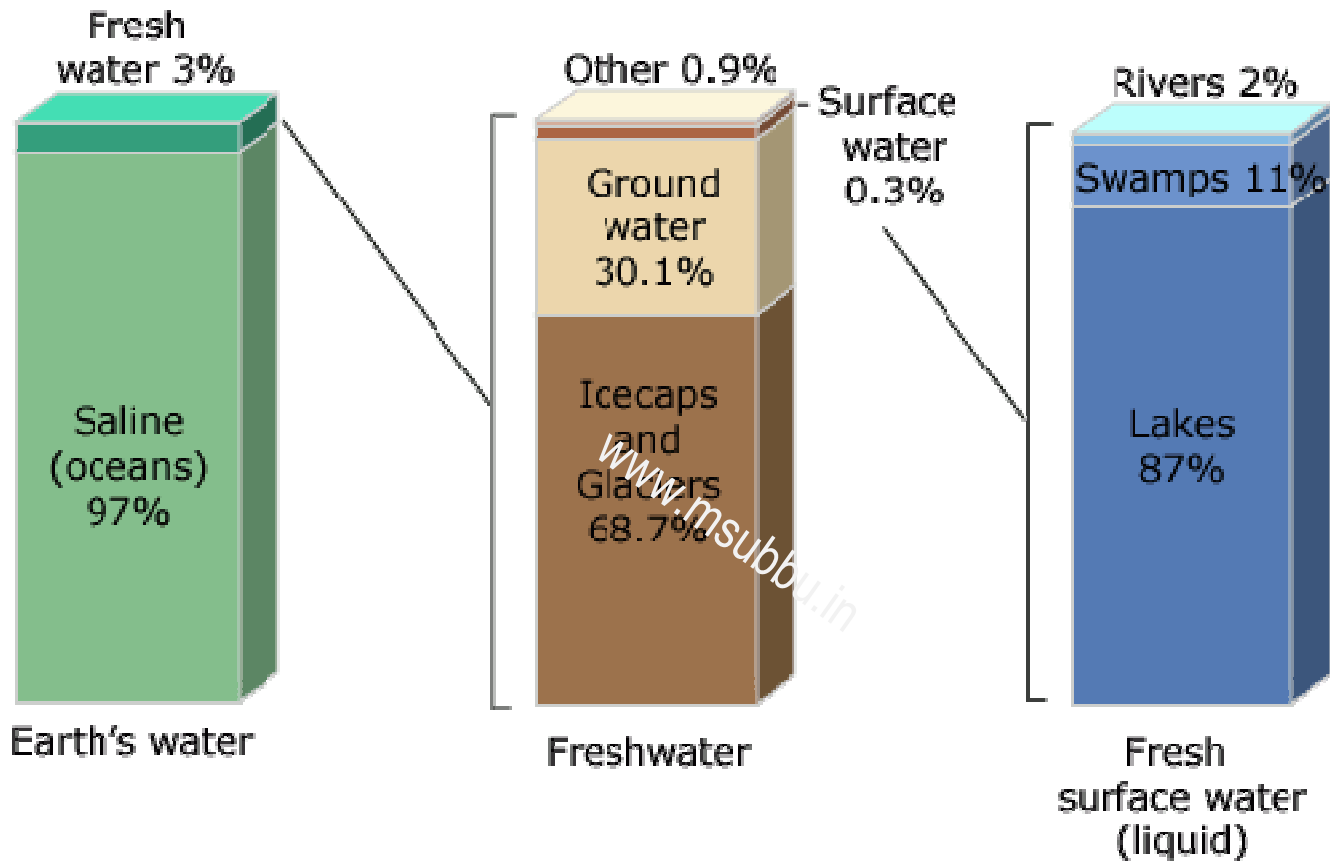
- water resources: use and over-utilization of surface water and exploitation

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# Introduction

- World oceans cover about three fourth of Earth's surface.
- The fresh water constitutes a very small proportion of this enormous quantity. About 3 per cent of the total water available on the earth is fresh water of which a maximum share lies frozen in polar regions and present as ground water. The rest is available in lakes, rivers, atmosphere, moisture, soil and vegetation.
- What is effectively available for consumption and other uses is a small proportion of the quantity available in rivers, lakes and ground water.

## Distribution of Earth's Water



[http://upload.wikimedia.org/wikipedia/commons/7/74/Earth%27s\\_water\\_distribution.gif](http://upload.wikimedia.org/wikipedia/commons/7/74/Earth%27s_water_distribution.gif)  
(14-July-2009)

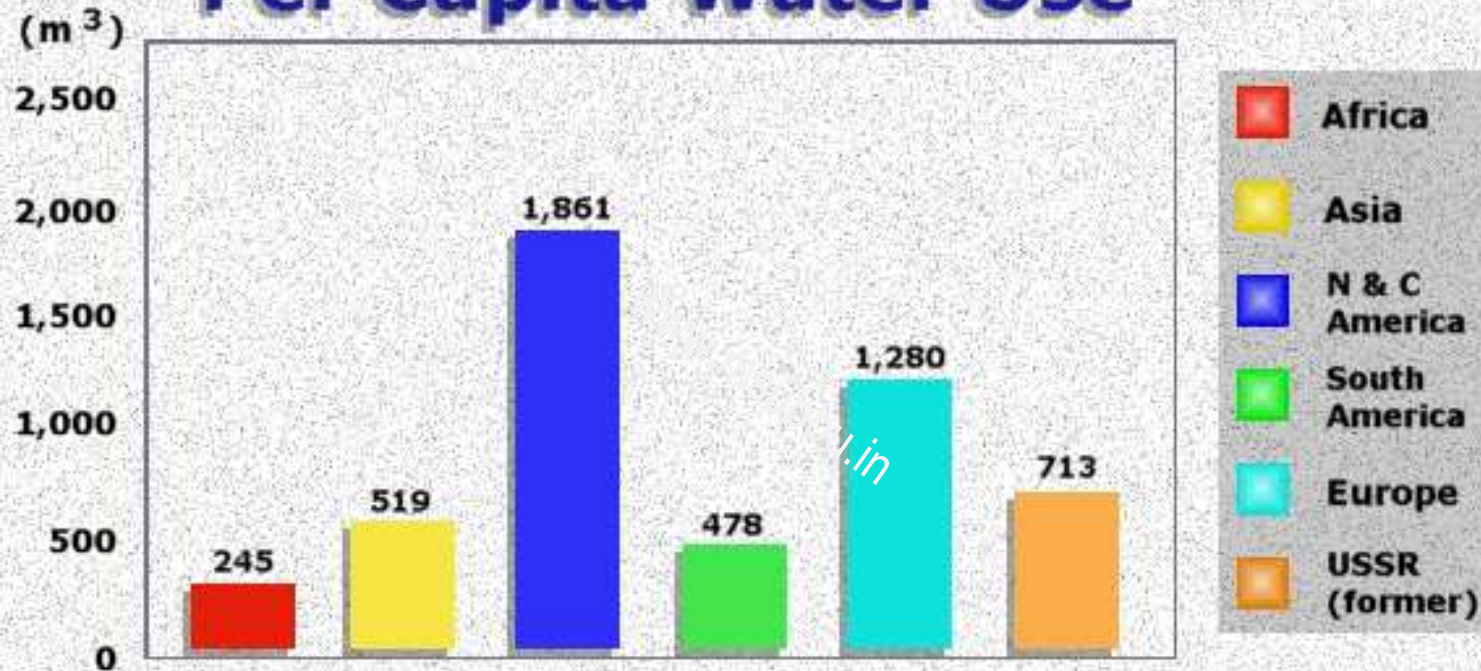
- The crisis about water resources development and management arises because most of the water is not available for use and secondly it is characterized by its highly uneven spatial distribution.

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# Uses of Fresh Water

- Consumptive and non-consumptive uses
- Agricultural usage: 69% of freshwater. To grow crops, aquaculture
- Industrial usage: 15% of freshwater. Cooling water, power generation
- Household usage: 15% of freshwater. Drinking, bathing, cooking
- Basic Household requirement of water: 50 ltr/day per person

## Per Capita Water Use



Taken from: Belyaev, V., Institute of Geography, U.S.S.R. National Academy of Sciences, Moscow. (1987)

# Three Gorges Dam

- The Three Gorges Dam is the world's largest hydro-electric power station by total capacity, which will be 22,500 MW

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# Three Gorges Dam



# Stress on Water

Due to:

- Population growth
- Increased affluence
- Expansion of business activity
- Rapid urbanization
- Climate change
- Depletion of aquifers
- Pollution
- Conflicts on water usage

## Major River Basins Of The Country

Sl. No.	Name of the River	Origin	Length (Km.)	Catchment Area (Sq. Km.)
1.	Indus	Mansarovar (Tibet)	1114 +	321289 +
2.	a) Ganga	Gangotri (Uttar Kashi)	2525 +	861452 +
	b) Brahmaputra	Kailash Range (Tibet)	916 +	194413 +
	c) Barak & other rivers flowing into Meghna, like Gomti, Muhari, Fenny etc.			41723 +
3.	Sabarmati	Aravalli Hills (Rajasthan)	371	21674
4.	Mahi	Dhar (Madhya Pradesh)	583	34842
5.	Narmada	Amarkantak (Madhya Pradesh)	1312	98796
6.	Tapi	Betul (Madhya Pradesh)	724	65145
7.	Brahmani	Ranchi (Bihar)	799	39033
8.	Mahanadi	Nazri Town (Madhya Pradesh)	851	141589
9.	Godavari	Nasik (Maharashtra)	1465	312812
10.	Krishna	Mahabaleshwar (Maharashtra)	1401	258948
11.	Pennar	Kolar (Karnataka)	597	55213
12.	Cauvery	Coorg (Karnataka)	800	81155
Total				2528084

