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Water and Civil Engineering


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Earth or Water?

75% of the surface of Earth is water

Don't you think the name EARTH should be replaced by WATER???



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Water on Earth

A 3D pie chart illustrating the distribution of water on Earth. The chart is divided into three segments: a large light blue segment for Saltwater (97%), a very thin dark blue segment for Ice (2%), and a tiny dark blue segment for Freshwater (1%). The segments are labeled with their respective categories and percentages. The chart is viewed from an angle, giving it a three-dimensional appearance.

Category	Percentage
Saltwater	97%
Ice	2%
Freshwater	1%

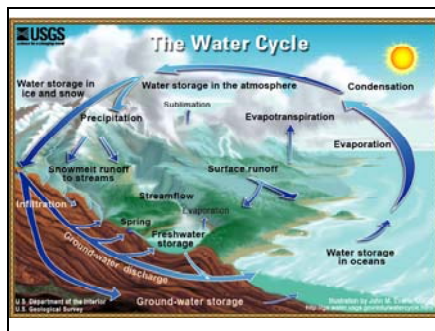
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Fresh water

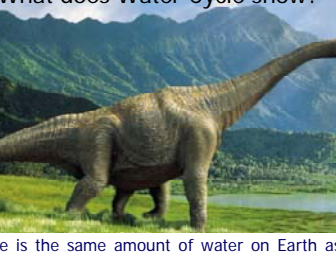
If all the world's water were fit into a 2 liter jug, the fresh water available for us to use would equal only about one teaspoon.

Water, water, every where,
And all the boards did shrink;
Water, water, every where,
Nor any drop to drink
(*Samuel Coleridge, 1772-1834. The Rime of the Ancient Mariner, II*)
(<http://www.online-literature.com/coleridge/646/>)

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What does Water Cycle show?

There is the same amount of water on Earth as there was when the Earth was formed. The water from your faucet could contain molecules that dinosaurs drank.

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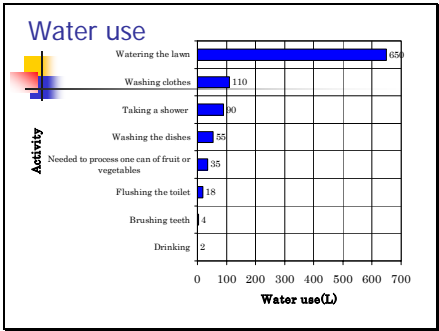
Water and life

Water regulates the Earth's temperature.

It also regulates the temperature of the human body, carries nutrients and oxygen to cells, cushions joints, protects organs and tissues, and removes wastes.

- 75% of a living tree is water.
- Human brains are 75% water.
- Human bones are 25% water.
- Human blood is 83% water.
- A person can live about a month without food, but only about a week without water.

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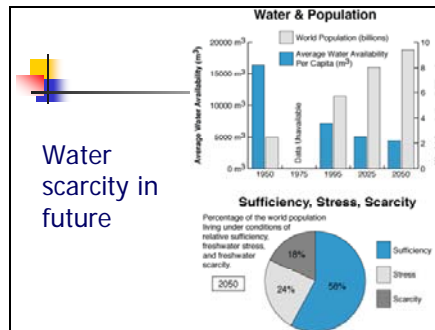
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Major problems related to water

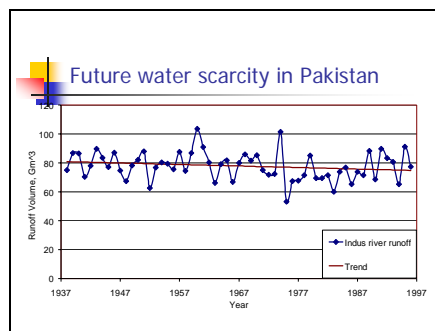
- Water scarcity
- Water excess



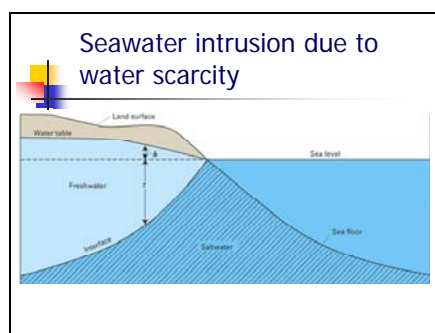
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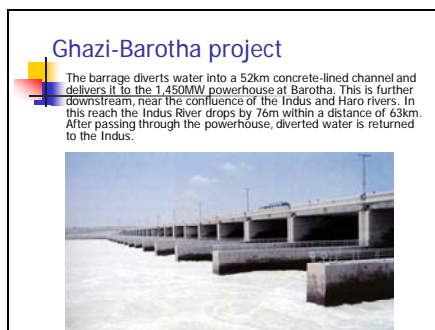
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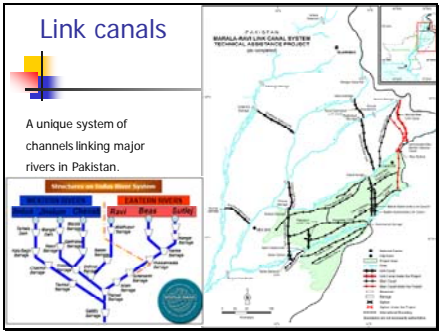
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 **Job prospects**

- Public sector (Academia, Irrigation department, WAPDA)
- Private sector (Academia, Consultancy, Construction)

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 **Some pioneers in the fields of Fluid Mechanics, and Hydraulic and Coastal Engineering**

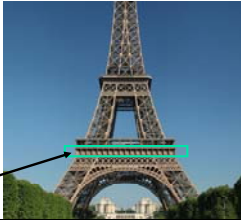
■ Archimedes (285-212 BC)	■ Darcy (1803-1858)
■ Torricelli (1608-1647)	■ Poiseuille (1799-1869)
■ Pascal (1623-1662)	■ Hagen (1797-1884)
■ Newton (1643-1727)	■ Reynolds (1842-1912)
■ Bernoulli (1700-1782)	■ Stokes (1819-1903)
■ Euler (1707-1783)	■ Prandtl (1875-1953)
■ Chezy (1718-1798)	■ Von Karman (1881-1963)
■ Navier (1785-1836)	■ Blasius (1883-1970)
■ Coriolis (1792-1843)	■ Nikuradse (1894-1979)

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Recognition of hydraulic/water resources engineering

Out of 72 names of scientists written on Eiffel tower, 14 belong to hydraulic engineers

Location where names are written



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Forthcoming lectures

- Analysis and design of water supply networks using EPANET2
- Urban drainage design using Visual Urban
- Introduction to Coastal and Harbor Engineering (including ACES)

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Software to be used

- EPANET2 : <http://www.epa.gov/nrmrl/wswrd/dw/epanet.html>
- VURBAN: http://www.thwa.dot.gov/engineering/hydraulics/software/softwareinstall.cfm#hy22_visual_urban
- ACES: <http://ahmadsana.tripod.com>

Download and install these software on your computers for forthcoming lectures.

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