Conservation 1404 Chapter 14
"WATER" Pages 304 - 334

The Least You Should Know

VOCABULARY

Hydrologic cycle
- Infiltration, percolation

Zone of Saturation
- Water table

Aquifers, renewable and nonrenewable
- Natural recharge
- Lateral recharge
- Ogallala Aquifer

Surface water
Surface runoff
Watershed = drainage basin
Reliable runoff
Consumptive use of water
Nonconsumptive use of water
Hydrological poverty
Tubewells
Land subsidence
Sinkholes
Saltwater Intrusion
California Water Project
Desalination
- Distillation, reverse osmosis

Flood irrigation
Center-point, low-pressure sprinkler, Drip irrigation
Soil moisture detectors
Interplanting
Rainwater harvesting
Xeriscaping
Gray water
Tiered water pricing system
Channelization

CONCEPTS

The 3 most serious environmental problems today are emerging water shortages, biodiversity loss and climate change.

Water is one of our most poorly manages resources.

Water in aquifers moves about 1 to 3 feet per year.

Withdrawing water from a nonrenewable aquifer is basically mining.
Reliable runoff is about 1/3 of annual runoff – the rest is lost to floods.

It takes about 1,000 tons of water per ton of grain prodded.

Consumptive use of water worldwide – 70% for irrigation (most of which is lost), 20% for industry and 10% for individual usages.

In the US, about half of the water we use come from groundwater and about half from surface water.

1 in 6 humans does not have access to enough clean water; 2 to 7 billion will face water shortages by 2050.

In the US groundwater is being withdrawn 4x faster than being replenished.
Know about how water is managed by private companies in Europe, (Suez, Vivendi and RWE) and their plans for the US. Advantages and disadvantages.

Arid countries can (and do) free up their water for industrial development by importing grains.

Main purposes of dams a) flood control b) hydroelectric generation c) water supply

45,000 dams in the world, about half in China.

Problems of dams a) reduced or zero flow in rivers b) displacement of 80 million people c) loss of most productive farmland d) silt in, usually within 50 years.

Know the stories of Lake Chad and the Aral Sea

Know a little about the Colorado River project, including:

a) tries to irrigate the driest of lands b) has little streamflow in normal years c) legal pacts allocate more water than the river produces d) there is very little water flowing in the river with associated damage.

Know a little about the Three Gorges Dam project

Dam Removal – 500 have been approved by FERC. Problems include legal issues, costs, and exposure of downstream users to toxic sediments.

Desalinization is a possibility but it uses a tremendous amount of power, and it produces brine as a waste product.

GE is a 4th company to be heavily invested in water, it's a US company looking at desalinization.

Cloud seeding has a number of problems: a) you can't seed clouds unless the clouds are already there 2) it's success is still controversial. Does it really work? 3) large amounts of seeding chemicals end up in the soil 4) legal disputes over ownership of seeded rainfall.

The best way to increase water is to decrease waste of water:
65% - 60% of water used is lost to evaporation, leaks and losses.
Water is too cheap.
60% of irrigation water does not reach the crops.
Most of the water (90%) used be industry can be recycled, and will be if costs are set high enough.
The biggest user of household water is the flush toilet.
US regs. Require since 1992 no more than 1.6 gallons per flush
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