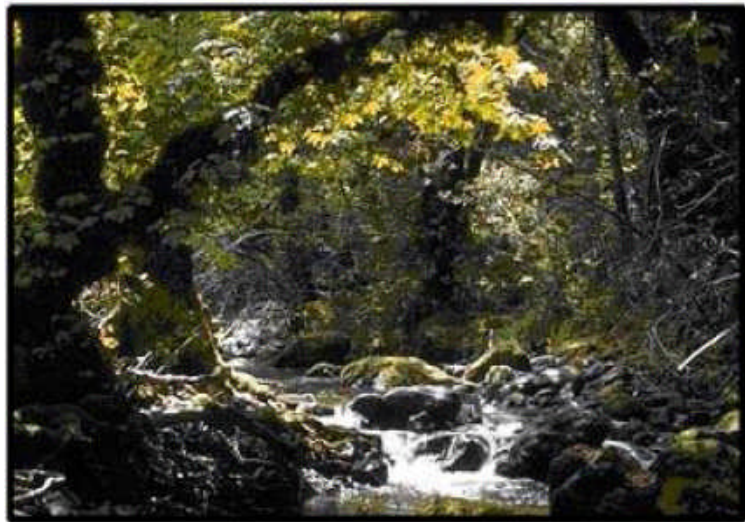


# The Impact of Mountains on Hydrology

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If future generations are to have adequate water supplies, mountains must be carefully protected, for according to the Food and Agricultural Organization (FAO), all of the world's major rivers and many of the smaller ones start off as streams in the mountains.

Mountains get more rainfall than lower elevations.



Charles Thoreau Townsend © California Academy of Sciences

There are various ways mountains produce water. In some places, water penetrates into a mountain and travels along the coal seam or along other rocks, then trickles out of the side of the mountain forming springs and streams.

In other places, water penetrates into mountains and is stored in huge natural storage tanks. For instance, in the Himalayan Mountains, these natural storage tanks are formed by cracks, fissures and dissolved areas within limestone rocks. Enormous quantities of water from the Monsoon Rains get stored, which means there is water for the dry season. Water trickling out of these aquifers

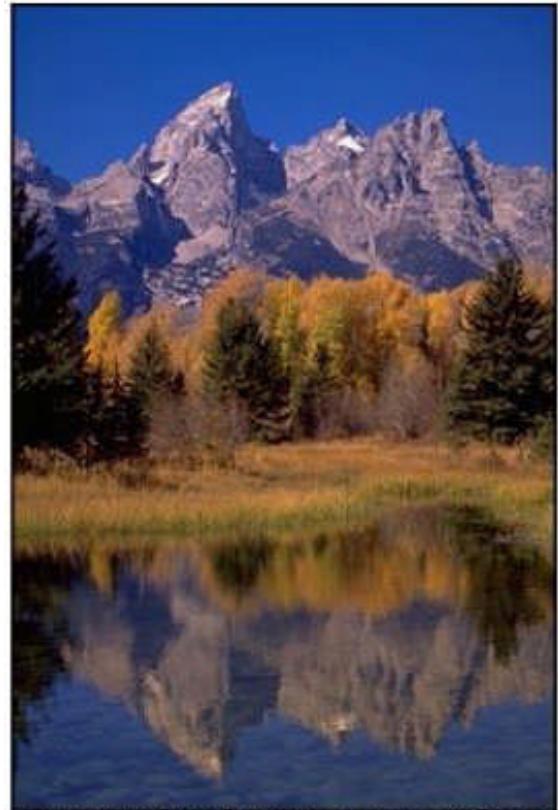
feeds thousands of springs and hundreds of streams, which pour enormous quantities of water into the great Ganges River and many other major rivers, according to Dr. Vandana Shiva

Though limestone in the Himalayas plays a critical role in hydrology, it is being mined for use in the production of cement, steel, chemicals, sugar, textiles and other industries. And in spite of the hydrological importance of mountains, in the

Appalachian Mountains, giant aquifers formed by coal and other rocks are being exploded by a coal mining technique called "mountaintop removal" that has blasted away the peaks of hundreds and hundreds of mountains in just over a decade in the mountains of Tennessee,

Eastern Kentucky and Western Virginia.

A professor at the University of Georgia who studied Appalachian streams for 30 years testified in a hearing before the U.S. Congress in June 6, 2002 that the impacts of coal mining are "significant and detrimental."



Gerald and Buff Corsi © California Academy of Sciences

"We will create an economy that prospers, not by exhausting the natural wealth and beauty of this or any other place, but by harnessing human potential and natural resources and energy that can be continually renewed."

- A statement in a plan for Vancouver, BC, Canada, written by the local people.

Americans consume about four tons of coal per person per year and nearly 700 pounds of metal, according to David Simpson, a professor of international policy at Johns Hopkins University.

To protect our mountains, we should follow the lead of California, which has phased out all coal burning power plants and made significant

### Coal and Mercury

"In the United States, fish in some 50,000 freshwater lakes, streams, and ponds contain levels of mercury that make them unsafe for human consumption. Mercury from the smokestacks of coal-fired power plants is largely responsible."

- Lester Brown  
"Eco Economy:  
Building an Economy for the Earth"

strides to phase in energy supplied by the sun, wind and tides.

Auto dependency has a great impact on mountains. For example, molybdenum, which is used in making high strength steel, occurs in "very very very low concentrations - one percent, maybe. In order to get it, you pretty much have to grind up the entire mountain," said Dr. Anne Ehrlich, a biologist at Stanford University in Palo Alto, California. Yet molybdenan is just one of many metals used in making steel.

Removing the coal seams removes the aquifers and replaces them with mine spoil, according to the National Research Council's Committee on Ground Water Recharge in Surface Mined Areas. The committee concluded that "the impacts of

mining on the hydrology of a region with mining operations may be substantial but are currently not well known."

To reduce our consumption of metal, we need to rely on public transportation rather than personal vehicles and we need to treat metal as precious commodity to be recycled with care.

Furthermore, States need to follow the lead of New York which began in the 1970s purchasing mountaintops, as well as complete watersheds -- the region or area that drains into a water body.