



Understanding Climate Change, Ltd.
A nonprofit corporation established by Mission Valley Rotary Club
www.understandingclimatechange.org

Rotary, Clean Water and Global Warming

It may be easy to think of global warming as something abstract, something to worry about over the next few decades, something that mainly affects polar bears. However, new results from the Scripps Institution of Oceanography are a reminder that climate change is affecting us right now, right here in the Southern California. These results and those of other scientists indicate that some of the most serious effects of climate change involve our water supplies. That fact magnifies the urgency, and the challenge, of one of our most important commitments as Rotarians.

Scripps scientists Tim Barnett and David Pierce studied temperature, river flow and mountain snowpack records from the last fifty years, for three major western river systems, the Columbia, Colorado and Sacramento/San Joaquin. They found that, though total precipitation has remained fairly constant, higher temperatures are bringing more rain and less snow to the mountains that supply most of our water. Less snowpack and earlier melting mean more spring flooding but less water available in summer when it is most needed.

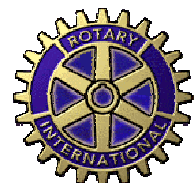
With decreasing supply and increasing demand, the Southwest is running out of water. Barnett and Pierce estimate a fifty-percent chance that Lake Mead, our major reservoir on the Colorado River, could run dry as early as 2021.

Our own problems are a tiny part of a world water shortage, in which two to seven billion people could have too little water by 2050. That crisis of supply is linked to an equally serious crisis of water quality. Today, 1.1 billion people—nearly one fifth of the world's population—lack access to safe drinking water, and 2.6 billion people lack access to basic sanitation. As a result, preventable waterborne diseases kill nearly 6,000 people each day, most of them children less than five years old.

Responding to this water crisis, Rotary clubs worldwide are working to provide clean water and sanitation for poor communities. This clean water initiative is one of the most important commitments we as Rotarians have made. Climate change is making this task both more urgent and more difficult.

Global warming affects water supplies and water quality in complex ways. Overall, there is more rain, because a warm atmosphere carries more water vapor. Yet, higher temperatures make the soil dry out faster. The warming also strengthens the great circulation patterns that bring rain to high and low latitudes, and take it away from latitudes in between. Some areas, such as Northern Europe, the American Northeast and parts of East and Southeast Asia, will likely have more rain in a warmer world. However, some of the world's poorest regions, including subtropical parts of Northern Africa, Southern Africa and South Asia, may suffer even more drought than they do today .

Parts of Africa, Europe, Asia and Latin America can also expect more seasonal flooding due to increased rainfall or a higher proportion of rain





Understanding Climate Change, Ltd.
A nonprofit corporation established by Mission Valley Rotary Club
www.understandingclimatechange.org

concentrated in big storms. Ironically, in countries such as India, more intense monsoon rains may mean more runoff, less water soaking slowly into the ground, and less groundwater available to survive the dry season.

And, as in our own Southwest, higher temperatures are reducing mountain snowpacks and melting glaciers that supply water for one sixth of the world's population.

Both the water scarcity and the flooding caused by climate change can compromise water quality. Flooding causes contamination of water supplies. Where water is scarce, the reduced flow concentrates pollutants and increased temperatures help breed waterborne pathogens.

These varied climate effects add up to a major threat to water supplies in many parts of the world. The Intergovernmental Panel on Climate Change estimates that, by 2050, global warming may put one to two billion people at risk of increased water stress due to inadequate water supply or water quality.

Climate change is not the only cause of the world's water crisis. Much of the problem comes from population growth, economic growth, poverty and bad governance. However, global warming magnifies these problems by reducing water supplies and creating conditions that threaten water quality.

This link between climate and water is one of the ways in which global warming affects our lives and our commitments as Rotarians. Here in the Southland, that water-climate connection may mean massive investments in water infrastructure, changes in the way we use water, or even less growth than we have assumed. That connection also means that, as we invest in projects to bring clean water to poor communities, we are in part working to overcome the effects of global warming. We need to make sure that these projects are sustainable in a changing climate. We also need to remember that every step we take to save energy and reduce greenhouse emissions is a contribution to the well being of people in our own community and communities worldwide.

What you can do:

- Join in Rotary's work on water and sanitation: www.wasrag.org.
- Join us: Visit our web address above and click "Download Membership Form."

To learn more:

- Climate change: www.realclimate.org. (Click "Start Here" at upper right of page.)
- Climate change and water: www.epa.gov/climatechange/effects/water/index.html.
- Climate change, water and California:
<http://www.water.ca.gov/climatechange/docs/062807factsheet.pdf>.
- Why climate change is important for Rotarians: See "Rotary and Climate Change" at our web address above.
- Sources for this article: Contact UCC's Bill Avrin (bavrin@ucsd.edu).

