

The Global Water Crisis and What You Can Do about It

by Salif Mahamane

Adapted from Hunger News and Hope, Volume 10, Number 3, Summer 2009

Climate Change and Water Sources

Water is the universally essential component of life on earth. No secret. No doubt. Always, in one form or another, it is constantly moving around the globe, in and out of large bodies of itself, in and out of the air, in and out of all us little critters.

More than 71 percent of the earth's surface is covered by water. You could fit nearly 21 times the area of the 48 contiguous states of the U.S. in the Pacific Ocean alone. So then why, with so much water existing in a self-refreshing cycle, are there crippling water shortages occurring all over the world like never before?

First, most of the Earth's water is naturally unavailable for human use. Ninety-seven percent is located in the oceans. The next 2.4 percent is in glaciers and the ice caps. Finally, only 0.6 percent makes up rivers, lakes and ponds—the primary source of fresh water available for animal use. However, glacial melt and snow do feed many rivers which, in turn, serve as a crucial source of fresh water for animals.

But this is not causing the problem. The distribution of water in its different natural forms and bodies has been such, of course, for the history of the Earth. But these percentages definitely show how small a portion of our planet's water is available for all life at any given time, and that it must be managed wisely.

So, what's causing the decrease in available water? Global climate change is easily the most debilitating factor, if not single-handedly the root culprit.

Climate change is different from global warming in that it refers to not only the average temperature of the earth rising, but also the phenomenon of all regions around the globe experiencing dramatic change in their prevailing weather conditions—i.e. precipitation, temperature, humidity, sunlight, air pressure and wind—across the year, averaged over a series of several years. Quite literally, the very climate of the earth is changing.

Climatic changes must be considered permanent. A report released on January 26 of this year by the National Oceanic and Atmospheric Administration (NOAA) explained that, based on new research, scientists now know that anthropogenic greenhouse gas emissions remain in the atmosphere for at least 1,000 years. That means that we already cannot return from the level of greenhouse gases we have emitted into the air up to this point.

Changing the global climate is an enormous occurrence. No one in the world is without a sense of what's normal climatically in his or her region. Every aspect of life from commerce to farming to education—even culture and religion—is rooted somehow in the natural identity of an area.

For example, a recent paper by Meghna Bhattacharjee of the Columbia Water Center at Columbia University describes the role in Indian life of the Ganga (Ganges) River that runs down through India from the Himalayas.

More than 400 million people depend on this river. In Hindu doctrine it is even considered one of the four mothers of all Hindus. Followers spread the ashes of their deceased loved ones on it and sing at its shore. Each day, at least 6,000 people dip their bodies in it to wash away their sins. And even more people port the river's water back to their communities.

Bhattacharjee quotes the first Prime Minister of India, Jawaharlal Nehru, as having declared: "The story of the Ganges, from her source to the sea, from old times to new, is the story of India's civilization." This river is now in great danger due to the shrinking of the Himalayan glaciers that feed it.

Water Shortage Around the World

This shrinking of such water sources is critically affecting life around the globe.

Africa

Across Africa, farms are primarily rain-fed. This practice requires very thorough and intimate knowledge of, and attention to, yearly patterns of rainfall. Because global warming is causing changes in climate, the rains have begun to occur at different times of the year and in different patterns. Farmers who are familiar with pre-climate-change patterns and levels of precipitation, cannot grow the crops they could before.

Experts of the Intergovernmental Panel on Climate Change (IPCC; organized by NATO) predict that, by 2020, Africa as a continent will be able to produce only half the food that it could before. Africa's rapid population growth and widespread disease can by no means afford to be met with such an increase in already devastating famine.

Asia

In Asia, 1.3 billion people throughout the countries of China, India, Nepal, Pakistan, Myanmar, Bhutan and Afghanistan rely on water from the Himalayan glaciers, Bhattacharjee says. The Himalayas are the world's largest glacial and permafrost area after the polar ice caps.

And these glaciers are shrinking. Average temperature in the Himalayas is increasing by 0.3° C every decade, which is twice the rate of increase as that of the rest of the world. Independent scientists claim that the whole Himalayan range consists of 18,065 large and small glaciers, according to Man Mohan, editor and writer for northern India's *Tribune*, in his special feature, "Himalayan Glaciers May Disappear by 2035."

Also, the enormous Gangotri glacier, which is responsible for 70 percent of the water in the Ganges River, is shrinking at an alarming rate of 17 meters a year due to global warming. Jere Locke, activist with Texas Climate Change Emergency (TCCE), explained that, because of the shrinking of the glaciers, the people in the countries dependent on their water will have only half the water that they've had in years past available to them.

And that's if something *does* get done.

Europe

Europe will also experience the adverse effects of climate change. Similar to what's happening in Asia, glacial shrinking will result in summer flow being reduced by up to 50 percent in central Europe and 80 percent in southern Europe. Also, changes in the water cycle are likely to increase the chance of floods in northern, central and eastern Europe—and droughts in southern Europe.

The latest IPCC assessment report, released in 2007, estimates that, by 2020, annual runoff will increase in the north by up to 15 percent and decrease in the south by up to 23 percent, resulting in the aforementioned reduced summer flow.

By the 2050s the decrease in annual runoff will be 20 to 30 percent in southeastern Europe. And by the 2070s, today's 100-year droughts will be returning every 50 years, instead of 100, in southern and southeastern Europe. With these changes will come severely increased and intense competition for water resources across Europe's population.

Latin America

In Latin America, almost 13.9 percent of the population (71.5 million people) has no access to a safe water supply, according to the 2007 IPCC report. It is estimated that, in 2020, 12 to 81 million people will be experiencing heightened water stress. This means that they live in water-stressed watersheds (less than 1000 meters per capita, per year). By 2050 the number is estimated to be in the range from 79 to 178 million.

Glacier retreat is on the scene once again, affecting this area of the world in countries such as Colombia and Peru. Highly stressed conditions are predicted for the decade between 2015 and 2025. Sixty percent of Peru's population will be noticeably impacted by this decrease in glacial melt water.

These two countries also depend on this water as it feeds the Mantaro River where a large hydroelectric plant generates energy for 40 percent of Peru's population and 70 percent of its industries. Thus, climate change, caused by dirty energy generation, actually affects the ability to generate cleaner energy.

North America

In North America, warming has shifted magnitude and timing of hydrological events in areas with winter snow, according to the IPCC. Snowfall has decreased in the west and Prairies in Canada over roughly the past century. Spring and summer snow

cover has decreased and spring snow water has declined in the range of 15 to 30 percent in the western mountains of North America. These changes occur primarily at lower elevations and are due to warming, as opposed to mere changes in precipitation.

Peaks in streamflow in the snowmelt of the western U.S. mountains were occurring 1 to 4 weeks earlier in 2002 than they did in 1948. And, in the last 100 years, breakup of river and lake ice has advanced by 0.2 to 12.9 days. Due to population growth in North America, drought risks have severely increased, as now there are higher demands from agricultural, municipal and industrial uses and more frequent allocation of water resources.

The arid climate of the southwestern states of the U.S. is already seen to be spreading. Even the eastern part of the nation is becoming at-risk for droughts that they have not seen in the past.

Polar Ice Caps

The Polar Ice Caps are, of course, already undergoing drastic change. There is projected an average temperature change of about 2°C to 9°C by 2100. The IPCC projects, based on test simulations, have determined that, by 2080-2100, an approximately 33-percent mean reduction will be seen in annually averaged sea-ice area in the Arctic. Increased precipitation and Arctic river runoff will lead to a freshening of the ocean's surface in northern high latitudes.

This, in turn, affects the geographical distribution and migratory patterns of many animal species, pushing them further north. The change in these species' travel behavior will likely affect water quality as they carry diseases to new areas. In the Arctic, many people traditionally depend on untreated fresh surface and groundwater.

While the animals will raise the contaminant content of the water, so will the changed hydrology of the region as rising sea levels will deposit more water contaminants in groundwater reserves. This means that people throughout the Arctic who have always been able to depend on untreated local freshwater will be directly exposed.

What's This Got to Do with Me?

Developed nations are by no means out of the reach of an impending global water crisis. If anything, they are in the worst position, because their populations can be so generally oblivious. For example, in Central Texas, I currently live in the country's most severe drought region.

However, no experiences in my personal life would immediately suggest such a thing to me. I turn the knob on my faucet, and it's there. Yes, I have to pay for it, as it's treated by the city—but it's there. As far as I can feel, it's not going anywhere. And therein lies the problem: most of us don't see very far ahead. I don't know whether it is because we can't, or we don't want to, but we don't see it.

Industrialized nations habitually focus on incessantly "comforting" their citizens. Any new convenience that can be added to life to reduce immediate stress of any sort is

often added without hesitation. But who pays for these comforts? Everyone. The U.S., for example, accounts for about 3 percent of the earth's human population, while being responsible for the consumption of 40 percent of her natural resources.

But the shortage of water due to climate change is not a far-off dilemma, in time or in space. Scientists with the IPCC define an increase in average global temperature of 2°C as being the threshold for reaching levels of dangerous climate change. Locke says that we need to avoid getting to that point. He adds that, once we get to the 2°C mark, it's a runaway train from there. After that, we will soon hit 3° and then 4°.

How to Avoid Disaster

To have a mere 50-50 percent chance of avoiding that dangerous 2° mark, the IPCC says that we need to stabilize at 450 parts per million CO₂ (carbon dioxide) emissions. We are currently at levels of carbon emissions where even this basic goal will be quite an accomplishment. But, according to these experts, it must be done.

To reach this goal, developed nations must reduce their emissions levels to 40 percent below 1990 levels by 2020 and 90 percent below 1990 levels by 2050. President Obama's energy proposal meets with the goal for 2050, but only meets a 14 percent below 1990 levels goal for 2020. This makes the 2050 goal useless.

If we don't curb our carbon emissions by 2015, bringing them to a peak and then into decline, we will be in deep trouble, Locke says.

Two energy bills, meant to bring down carbon emissions in the U.S., are currently being authored in Congress. However, having reviewed them and met with experts and other activists in Washington, D.C., Locke describes both of these bills as weak and insufficient to help meet the global goal to stabilize at 450 parts per million CO₂ emissions.

The first of these bills is the Waxman-Markey bill that will restrict polluters, but Locke says, not forcefully or quickly enough. The bill does not include any auctions in which polluters must bid and pay large amounts—essentially taxes—to be able to pollute. These auctions often work as a great deterrent from polluting, driving large polluters to find alternative energy sources, Locke says.

The bill also contains too many offsets. Simply put, offsets give polluters leeway in the restrictions that the same bill sets forth. Locke explained that the offsets in the Waxman-Markey bill will allow polluters to continue polluting in some cases until 2026 before having to stop. This is years after the first checkpoint at 2020, by which scientists say we must have emissions down to 40 percent below 1990 levels.

These and other related bills can be followed at www.govtrack.us. Often, the hard results of environmental science get watered down too much on their way to the public. Then politicians deliberate on what is willing to be paid for and what is practical while designing new energy bills. Environmental activists say that this is not a problem of the future to nobly address for the sake of our grandchildren's children, or an economic or

social problem in which a person's status determines how they will be affected. This is an imminent issue that affects everyone.

Central Texas activist and mobilizer Mary Darden, president of Keep Waco Green (KWG), agrees. KWG successfully thwarted the plans of TXU Energy to build several coal plants within a 10-mile radius of Waco, TX. Darden says there is a cognitive dissonance between the evidence and its acceptance by the population, when such reports are released by NOAA and the IPCC.

This means that when these reports come out with urgent information about climate change, there is a crippling hesitation before people accept the reality. Activists are saying that we cannot afford this type of delay. "Anyone who says global warming is not real or is not the culprit behind the water crisis has not done their homework," Darden said.

Darden and Locke both agree that, in only six years (by 2015), it will be most likely too late for our efforts to matter if we have not sufficiently acted by then. Darden says we need to completely shut down every coal plant in the nation as soon as possible. She admits that, to many, such a claim will sound very dramatic, but that the situation we are facing is really that extreme.

Coal plants use an enormous amount of water in simply cooling their operation, and then they emit enormous amounts of CO₂ into the atmosphere. There is an intimate relationship between energy production and water, in which the more energy generated, the more water is used. Seventy percent of the mercury, a very toxic metal now found in water, is from coal plants. There is also research showing a correlation between autism and coal plant emissions.

"We don't take care of our water," Darden said. She said that the two main ways we abuse water is through direct runoff and, indirectly, through air pollution. She also offered several tips as to what people can do in their personal lives to protect our water:

1. ***Use less energy.*** In every aspect of life, be conscious of energy that is being consumed that is not needed. Leave nothing on that is not being used and do not use things that require electricity unless you really need to.

2. ***Use native landscaping.*** Do not water daily, and employ plants that are native to your area and are used to thriving naturally with the amount of rainfall in your region. For example, if you live in the southwest U.S., use a drought-resistant grass species in your lawn as opposed to one that must be constantly watered.

3. ***Eat less meat.*** It takes 30 pounds of grain to produce one pound of meat. It takes a lot more water to grow 30 pounds of grain than to hydrate one pound of livestock!

4. ***Drive energy-efficient cars.*** Unless you regularly require the physical capabilities of a large truck or SUV, drive a smaller, more efficient vehicle.

5. ***Cut down on water use in every corner of your life.*** Take shorter showers. Hand-wash dishes even if you have a dishwasher. Get any leaky faucets in and around your house fixed.

6. *Communicate with others about these issues.* Do not only hold these standards at home. Strongly urge your friends and the folks at your church, school and workplace to be conscious of their energy and water usage. Since each of us is part of the problem, it is our responsibility to act conscientiously for the sake of everything on our planet.

7. *Find out who is working for environmental responsibility in your community, and join them.* To learn more about these issues, you can search IPCC online [see below] and click on “assessment reports.” Also, search “NOAA 1000 year report.” Organizations such as Sky1 [see below under “Sources”] work directly with the IPCC and NOAA to lobby for action against climate change and to communicate with the population.

This issue is global. This issue is at hand. No matter where you live or what your socio-economic reality is, you will be affected. The economy, education, and moral issues will all cease to matter when you don't have water.

—Salif Mahamane is a recent graduate of Baylor University in anthropology. Sources: US National Oceanic and Atmospheric Administration (www.noaa.gov), Intergovernmental Panel on Climate Change (www.ipcc.ch), 1Sky Education Fund (www.1sky.org), Tribune India, Columbia Water Center, Texas Climate Change Emergency, Keep Waco Green, Environmental News Network (www.enn.com)