Water availability

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One of the key determinants of human health is the availability of freshwater. Population growth, industrialization, and the expansion of irrigated agriculture in recent decades have dramatically increased the human demand for water. The principal immediate sources of renewable freshwater for human use are wetlands - lakes, rivers, etc. - as well as shallow groundwater aquifers. But of course the key sources for the water that drains into our wetlands and aquifers comes from other ecosystems, mainly mountains and forests. In contrast, very little runoff is supplied by cultivated ecosystems and urban areas.

Globally, there is plenty of freshwater available, but it is unequally distributed in time and space, and it is being used at unsustainable levels in many countries. Add to this the complexities of managing water that crosses national boundaries, and the increasing impacts of climate change-driven droughts and floods, and the challenge of becoming globally sustainable in our use of water is immense. Some relevant statistics:

- an estimated 1.4 billion people live in river basins where water use exceeds sustainable levels;
- 2 in every 5 people live in international water basins shared by more than one country;
- in 2003 it was estimated that 3 billion people depend on groundwater supplies for drinking, some of this from non-renewable sources;
- about 60% of European cities with more than 100,000 inhabitants (140 million people) are now supplied with water from overexploited groundwater resources;
- irrigated cropland supplies nearly 40% of today's crop production, and 20% of groundwater extraction is used for irrigation supplies, but between 15-35% of irrigation withdrawals are thought to be nonsustainable.

Although there are many water management issues that have human health impacts, two examples below highlight one particular area: the impact of poor transboundary water governance on human health.

If water is extracted more rapidly than it is naturally replenished, wetland ecosystems will, in extreme cases, collapse, with a complete loss of ecosystem services, and the effects are costly in terms of human health. A well-documented example is the transboundary Aral Sea in central Asia where water abstraction for irrigating crops reduced a vibrant wetland to dust – causing loss of livelihoods in the short term and seriously impairing the health of communities that lived around the sea through the effects of dust storms, erosion, and poor water quality for drinking and other purposes.

In Lake Chad, shared by Cameroon, Chad, Nigeria and Niger, climate change, the demand for irrigation water upstream, and poor management decisions have reduced the size of the lake by 90% over the past 40 years. The net effect on the 20 million people, mainly fishers and farmers who rely directly on the lake, is rising levels of malnutrition, in turn leading to increased vulnerability to diseases. A major project, using an integrated river basin approach, is underway to reverse this situation.

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