From Rio to Johannesburg

Securing Water for People, Crops, and Ecosystem *by Sandra Postel, Worldwatch Institute*

During the decade since the Earth Summit in Rio de Janeiro, Brazil, the world's water problems have worsened markedly even as concern about them has risen steadily. Overshadowed at Rio by other pressing issues—notably climate change, biodiversity, and forests—fresh water came under a brighter spotlight during the 1990s. A steady stream of global commissions, conferences, and networks drew attention to water's fundamental importance to food production, human health, poverty alleviation,ecosystem protection, and regional peace and stability.

Actual improvements on the ground, however, have lagged badly behind this growing awareness. At the upcoming World Summit on Sustainable Development (WSSD) in Johannesburg, South Africa, governments and society-at-large have a new and critical opportunity to make efficient, equitable, and sustainable use of fresh water a top priority. Indeed, U.N. Secretary-General Kofi Annan has identified water as one of five areas (along with energy, health, agriculture, and biodiversity) where concrete results from the WSSD "are both essential and achievable."

All non-marine life depends on fresh water for survival. Even many coastal marine organisms rely on rivers that empty into the sea for nutrients and the

maintenance of particular levels of salinity. Water is therefore not just a commodity, like oil or copper, but rather a fundamental life support. Rivers, lakes, wetlands and other freshwater ecosystems are not just sources of supply; they are habitat for a wide variety of plant and animal species. These ecosystems also perform valuable services for human societies—such as moderating floods and droughts, purifying water, and sustaining fisheries. As a resource for human activities, fresh water is also unique in that it has no substitutes in most of its uses. It is essential for growing crops, for manufacturing material goods, and for drinking, cooking, and other household functions.

Throughout the 20th century, the principal challenge of water managers was to satisfy humanity's rising demand for irrigation, urban-industrial water supplies, flood reduction, and hydropower generation. They did this by building more and larger dams, dikes, river diversions, and groundwater wells. Just since 1950, the number of large dams (those at least 15 meters high) has climbed from 5,000 to 45,000—an average of two new large dams a day for the last half century.

This combination of rising demand and ecosystem alteration has depleted supplies, damaged ecosystems, and placed a large share of freshwater life at risk of extinction. Water tables are falling from the overpumping of groundwater in large portions of China, India, Iran, Mexico, the Middle East, North Africa, Saudi Arabia, and the United States. Many major rivers—including the Colorado, Ganges, Indus, Rio Grande, and Yellow—now run dry for portions of the year. Freshwater wetlands have shrunk by about half worldwide. And, increasingly, competition for water threatens social and political stability both within and between countries. In recent years, violent protests have erupted in the lower reaches of China's Yellow River and Pakistan's Indus River as farmers faced the prospect of a cropping season without sufficient irrigation water.

A fundamentally new approach to water and human development will be needed during this new century—an approach that aims to satisfy the water needs of 8-10 billion people while protecting the ecosystems that sustain our economies and all terrestrial life. The key tasks are described below.

Protect ecosystem services—the valuable work Nature does for free.

The important work that rivers, floodplains, wetlands, and other ecosystems do is easy to neglect because it is not valued in the marketplace. Nonetheless, freshwater ecosystem services are worth hundreds of billions of dollars a year, and are particularly valuable to the poor, who often depend on nature's services directly for their livelihoods. Some jurisdictions are now taking steps to preserve these services. South Africa is removing thirsty alien vegetation from the watersheds of its western Cape region, not only to conserve the area's rich native plant diversity, but also to increase available water sup-

plies at a lower unit cost than other alternatives. In order to avoid spending $6-8 billion on a new filtration plant, New York City is investing some $1.5 billion in the protection of the Catskills watershed, which supplies the city with drinking water. As these examples suggest, there are many ways in which preserving natural capital can make good economic sense.

Policy Priorities

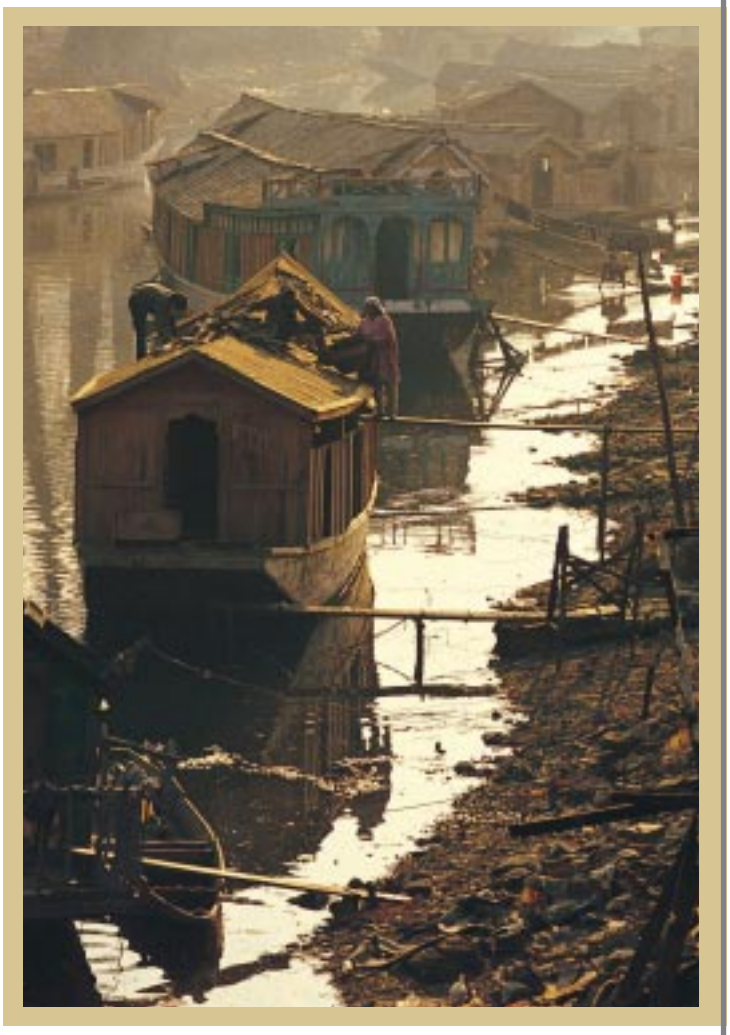
- Protect watersheds, floodplains, wetlands,and other natural capital assets.
- Establish environmental flow requirements for rivers, as many Australian states and South Africa are now doing.
- Adopt or amend water management laws to require the operation of dams in ways that preserve natural river flows and flood regimes.
- Make ecosystem service protection a core mandate of river basin commissions.

Provide universal access to safe drinking water and adequate sanitation.

Lack of access to safe drinking water remains one of the leading causes of disease and death in the developing world. More than 3 million people—most of them children—die each year from diarrhea and other illnesses caused by contaminated water. Between 1990 and 2000, an additional 816 million people acquired access to safe drinking water. But the number of people unserved remains roughly the same—1.1 billion—because the population grew by nearly as many people as gained access. The number of people lacking adequate sanitation rose slightly between 1990 and 2000, to 2.4 billion.

Policy Priorities

- Increase public-sector support for the provision of services—especially in rural areas, which are home to more than 80 percent of people who lack safe drinking water. Provide funding, training, and technical assistance to community-based initiatives.
- In general, governments and communities should assert their primary responsibility for providing water services, rather than transferring this responsibility to the private sector. Privatization can only serve the public good within a strong regulatory framework that ensures that the basic needs of the poor are met and that the water resource itself is conserved—conditions that to date have rarely been satisfied.
- Build efficiency and conservation into new supply and sanitation infrastructure. Reduce leakage from urban water systems, which often exceeds 30 percent.



Enable access to water for small-plot irrigation.

Some 2.8 billion people live on less than $2 a day; 800 million of these people are chronically hungry. The vast

majority of the world's poorest and hungriest people live in rural areas of South Asia and Sub-Saharan Africa. They have neither the means to produce adequate food nor sufficient income to purchase it. Enabling poor farm families to access irrigation water can be one of the most effective ways of liberating them from poverty. Small-plot irrigation can increase land productivity, incomes, and household food security.

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Policy Priorities

- Increase the use of affordable, small-plot irrigation devices in poor rural areas. One model of success is in Bangladesh, where poor farmers have purchased more than 1.2 million human-powered devices called treadle pumps, boosting incomes an average of $100 per $35 pump in the first year.
- Invest in community-based watershed restoration and rainwater harvesting projects. Such projects can help recharge local groundwater, store runoff for dry-season irrigation, and make irrigation more widely available.
- Support initiatives to spread low-cost drip irrigation and microsprinkler packages for smallholders.

Double water productivity—get twice as much benefit from each liter of water extracted from the natural environment.

Doing more with less will require greater efficiency in irrigation (which accounts for 70 percent of world water use), recycling of wastewater, industrial redesign, and a shift toward less water-intensive diets, landscapes, and lifestyles.

Policy Priorities

- Reduce irrigation subsidies.
- Develop more productive rainfed crop systems.
- Regulate or tax groundwater overpumping to slow aquifer depletion.
- Establish conservation incentives and goals for urban, industrial, and agricultural users.
- Adopt pricing structures that penalize excessive water use, especially during dry periods.
- Redesign tax codes—tax labor and investment less, resource consumption and pollution more.

Achieve Good Governance over Water.

As the basis of life, water is a public trust. Water governance must be grounded in principles of stewardship, sharing, sustainability, and accountability.

Policy Priorities

- Elevate the public trust as the dominant legal and ethical precept guiding the management of water. South Africa, host of the WSSD, passed a new water act in 1998 that does this. It calls for meeting the basic water needs of all people and all ecosystems first—before non-essential water demands are met. This ethic should be adopted widely.
- Initiate preventive diplomacy in river basins at risk of tensions over water. There are more than 20 international river basins in which stronger institutions are needed to avert water disputes.
- Governments, the World Bank, and other financiers of large water projects should abide by the recommendations issued by the World Commission on Dams in 2000.
- Form and support citizen watershed groups.

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