

Finding A Better Way for Water Management

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In recent years, governments, water planners and international agencies have warned that conflicts in the 21st century will be fought over water. Increasingly, this concern is being used to justify new water-supply dams and river diversion projects. But dams and pipelines do not create new water, they merely move it from one set of users to another—usually, from the poorest to the richest or, put another way, from the most frugal users to the most profligate. In fact, dams can reduce potable water supplies through evaporation from reservoirs and by harming water quality. In addition, in case after case, large water projects have exacerbated political tensions rather than eased them.

Water use has grown exponentially in modern times. The first 80 years of the 20th century saw a 200 percent increase in the world's average per capita water use, which accounted for a remarkable 566 percent increase in withdrawals from the world's freshwater resources. This massive increase in water extraction coincides with another "debt" on the water-ledger: a significant portion of these resources have now become unusable due to industrial and agricultural pollution. Since all life depends on water, present trends of water waste and pollution threaten the earth's basic life support systems.

While the world's growing thirst is a serious problem, the story is more complicated than just too many people putting their straws in the glass. The growing conflicts over water use are about the broader questions about ownership of common resources, and equity of access to those resources. In many cases, large-scale damming of the world's rivers has led to greater water inequity. In the past 50 years, the number of large dams (those greater than 15 meters in height) has increased more than sevenfold; a high proportion of these were built to expand industrial scale irrigated agriculture, which can use 75-80 percent of the regional water supply in dry parts of the world. In fact, large dams often promote greater, more wasteful water use by fewer people, and usually at the expense of the rural poor who lose access to water, land, fisheries and forests to such projects. Shockingly, despite a century of unprecedented dam building, by the early 1990s more than 1.3 billion people continue to be without access to fresh water, and more than 1.7 billion lack adequate sanitation.

The world's largest dams—most of which are hydropower projects—do not even supply water, and in fact can seriously harm water quality. For example, the reservoir of Brazil's Itaipara Dam became a poisonous stew of decomposing vegetation soon after the dam closed, causing 130 deaths from acute gastroenteritis after people drank its waters. The retrofitting of Mali's Manantali Dam for hydropower will further aggravate the loss of flood-recession farming and fisheries, which is already causing malnutrition and a severe deterioration in public health affecting hundreds of thousands of people downstream in Senegal and Mauritania. Water-borne diseases in the Senegal River Valley have increased dramatically as a result of reduced water flow in the river and, after power production becomes a priority there will even be less water for downstream needs. In Southern Africa, the proposed Epupa hydroelectric dam in northern Namibia would evaporate more water each year than the country's entire urban population uses annually—a loss that has not been included in the project's cost-benefit analysis.

Taking Water from the Poor to the Rich

One example of a large-scale water project that is exacerbating the problems it is intended to solve is the Lesotho Highlands Water Project (LHWP) in Southern Africa. Our organizations have worked with non-governmental organizations in Lesotho and South Africa for several years to monitor the project's impacts on the environment and local communities in Lesotho, as well as its effect on water management in the region. The project is an example of the environmental and social costs, including armed conflict, of an unsustainable approach to water management

In September 1998, the World Bank-funded water-transfer scheme, which diverts water from Lesotho's southwesterly flowing Orange River in a northerly direction to South Africa's central urban heartland around Johannesburg, helped set off what one South African ecologist calls "the first water war" in the arid region.

Ironically, the World Bank's stated policies on water resources indicate that its investment in water projects is intended to solve such water conflicts. Yet many water experts believe its emphasis on large-scale infrastructure development is more likely to make things worse in a region where the majority of citizens are without access to fresh water and cannot afford the water from such costly schemes. Unfortunately, the

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troubled Lesotho project is not unique in the World Bank's water portfolio, which is dominated by large-scale water projects despite its stated policies to promote sustainable water-resources management.

In September, South African troops invaded the tiny mountain kingdom of Lesotho. Although the military intervention was ostensibly about restoring order in the face of public protests, a major factor behind the conflict was protecting the Lesotho Highlands Water Project—South Africa's largest investment in the region. When the shooting was over, scores of people had been killed near the project's Katse Dam and many more died in the capital, which was left in ruins by the fighting. According to South African press reports, protection of the dam and the water transfer to South Africa was a top priority of the military mission.

The project eventually will include five large dams, and the World Bank has provided critical funding for two of them thus far—the 182-meter-high Katse Dam, the highest ever built in Africa, and the 145-meter Mohale Dam, which will flood some of the most fertile land in Lesotho, where agricultural land is extremely scarce and food security a serious issue.

The Lesotho Highlands Water Project has been fraught with social problems from the beginning. Local people have lost their fields, access to water and often their homes. Their problems are likely to be exacerbated by the project's environmental impacts, as well as Lesotho's own growing water scarcity. Ironically, in the not-too-distant future, water experts expect Lesotho itself to suffer severe water shortages. Having the project's huge reservoirs in its midst will be a cruel taunt, as these waters will no longer belong to Lesotho.

As with most large-scale projects involving forced resettlement, the people affected by the project are not getting the help they need in re-establishing their livelihoods. Widespread corruption on the project is thought to be one reason that a social fund intended to help affected communities undertake development projects has accomplished virtually nothing. An ongoing corruption scandal involving the project has revealed that a "who's who" of the dam-building industry slipped some \$2 million in bribes to the project's Chief Executive Officer for ten years, ending in 1998. In Lesotho, as elsewhere, corruption, environmental degradation and increasing poverty go hand-in-hand.

Lesotho NGOs representing dam-affected people believe the corruption on the project extends beyond this one top official. In a Sept. 15, 1999 letter to the Washington Post, they wrote about problems plaguing the project's development fund, intended to help those who lost lands and livelihoods to the project. "The fund has been and continues to be a tool of opportunistic politicians," write Motseoa Senyane of Transformation Resource Centre and Thabang Kholumo of the Highlands Church Solidarity and Action Centre. "Although the committee designated to select projects to be supported by the social fund has not met even once yet, money from the fund has been used to support ill-conceived projects built by workers hired according to political party affiliation. In Lesotho, we see the same stretch of road repaired; torn up the next week; repaired again the following week; and then torn up once more at the end of the month."

The fragile mountain environment of Lesotho has also suffered from the project, which was initiated without critical environmental studies on erosion and downstream impacts, despite the project's massive-scale water diversions. Fragile ecosystems, unique species and the livelihoods of downstream farmers are now at risk.

Will the project at least meet the needs of South Africa's poor black population, which continues to suffer from a highly inequitable water distribution system dating from the days of apartheid? The biggest obstacle to providing South Africa's poor with water is not so much a question of supply, but of water equity. Low-income black people in the townships near Johannesburg are subjected to often-indiscriminate water cutoffs, inadequate taps (usually just one for every 50 people in a yard), inadequate pressure, and leaky apartheid-era pipes. Large, expensive water projects nearly always have a "trickle-up" rather than trickle-down effect: only the rich can afford the water, but the water bill rate hikes affect the poor disproportionately. While all Johannesburg residents saw water bills rise 35 percent from 1995-98, lowest-tier consumption costs rose 55 percent.

Who then are the beneficiaries of this project? At a recent awards ceremony recognizing the project's "exemplary and excellent use of concrete," the new head of the project called Katse Dam a "standing symbol of partnership between the project sponsors and the construction fraternity."

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Beyond the Lesotho project, the World Bank has helped finance more than 600 large dams. The institution has been subject to worldwide criticism over its financing of these projects, which cause large environmental and social costs while contributing to an inequitable distribution of water and power. From Brazil's Itaipara Dam to India's Sardar Sarovar Project, World Bank loans have been key in securing the financial backing which have made these projects possible.

The Bank's recent lending for water projects reveals a disturbing slowness to adapt to the world's growing emphasis on sustainable water management. In the past few years, nearly half of its water sector loans have been for large-scale infrastructure projects, while alternatives such as small-scale irrigation, watershed management and water conservation remain a tiny slice of the pie (less than 6 percent since 1996, up from 2.4 percent in the decade ending 1990). This prejudice toward big infrastructure projects promotes unsustainable and inequitable water management, which carry the potential for future water conflicts, if not wars. The World Bank urgently needs to reverse its approach to water management to one that will help avert rather than worsen the world's growing water crisis.

Better Alternatives

What would a more sustainable approach to water management look like? First of all, it will emphasize the need for smaller scale projects. As water expert Peter Gleick writes in *The World's Water 1998-99*, "Large-scale water projects can no longer be expected to provide the answer to most water problems. Major new projects are going to compete with new opportunities for innovative smaller scale, locally managed solutions to water quality and water problems. These include micro-dams, shallow wells, low-cost pumps, water-conserving land management methods and 'rainwater harvesting' approaches. Such methods are more cost effective and less disruptive to local communities, in part because of traditional experiences of these communities." Many of these techniques are gaining ground around the world, but the international financial institutions have been slow to catch on.

Second, a more sustainable approach will emphasize equity. Water is currently distributed inequitably, with the inequities between the water-haves and have-nots growing by the day. And because there is no new water in the world today than there was when the world's population was just a fraction of today's 6 billion people, the new approach to water management will not tolerate waste. According to water expert Sandra Postel, technologies and methods are now available which could cut water demand between 40-90 percent in industry, 30 percent or more in cities, and between 10-50 percent in agriculture without reducing economic output or quality of life.

Demand management includes several approaches to conserve water, including economic policies, notably water pricing; laws and regulations, such as restrictions on certain types of water use; public and community participation, to ensure that solutions are workable and have public support, and technical solutions, such as installing water flow restrictors. Demand management cannot be thought of only from a technical angle. Water-saving technical measures always have economic, legal, institutional and political aspects that must be considered as well.

Agriculture is where the most water wastage currently occurs in most places in the world. By reducing worldwide irrigation just 10 percent, we could double the amount available for domestic water. This can be done by converting to water-conserving irrigation systems; taking the poorest and steepest lands out of production; switching to less-thirsty crops (which may require changes to government subsidies for certain crops); implementing proper agricultural land drainage and soil management practices, and reducing fertilizer and pesticide use.

Obviously, as the world's population has grown, producing enough food is critical. But today, the practices common to agribusiness are threatening food security, not ensuring it. According to Sandra Postel, author of recent book "Pillar of Sand: Can the Irrigation Miracle Last?" which reveals the perils of pursuing our current agribusiness course, the future lies in lifting the water productivity of the millions of very poor farmers who cannot afford advanced water-saving technologies, and reducing subsidies to large-scale agribusiness which encourage unsustainable water practices.

Postel emphasizes that government subsidies, which are mostly for large-scale enterprises, totaling at least US \$33 billion a year make it cheaper to waste water than conserve it. On the other hand, support for small-

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scale farming activities to help families raise their incomes and improve their food security can be a powerful engine of economic growth in the world's poorest regions. Such technologies include human-powered treadle pumps, which have helped 1.2 million Bangladeshi farmers to access groundwater, and rooftop rain catchment systems. A group in South Africa which helps the poor install such systems estimates that, for every 30mm of rain falling, a house with a 50-cubic-meter roof designed to funnel it into a water tank could collect 1200 liters, which could save a person 16 trips to the local water-collection source.

Finally, the new water world must be based on democratic models, with full participation by people in the watershed. In fact, watershed level approaches represent the most promising ways to sustainable water management. When local communities have a decisive voice in how their watershed is used, they will not likely approve of projects that could do the kind of lasting harm to its natural resources that a large dam or polluting industry will.

Certainly, a more sustainable approach will recognize that all creatures depend on water, and it will work to protect the intricate webs of life sustained by natural rivers. For the past 50 years, the accepted approach has been to take as much water as possible for human needs, ignoring drastic impacts on fisheries, downstream wetlands, forests, and aquatic life. The impacts on the environment have inevitably affected people as well. Some places are now trying to repair years of damage by allotting the environment a baseline of water from dammed and diverted rivers. This is a positive development which needs to be replicated elsewhere. In developing countries, however, international financial institutions continue to promote unsustainable large-scale water projects despite the growing knowledge of better alternatives.