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*International Rivers Network*

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Volume 13, Number 3 / June 1998

## **Lesotho Dam's Sea of Debt Could Drown Regional Water Conservation Efforts**

*by Lori Pottinger*

On June 4 the World Bank approved a loan for Mohale Dam, the second of five large dams in the Lesotho Highlands Water Project (LHWP). While the project's first dam, the 182-meter-high Katse Dam, has been controversial for the unresolved social and environmental problems it has left in its wake, the 145-meter Mohale Dam has raised an uproar over whether or not it is even needed.

The \$8 billion LHWP - the largest infrastructure project under construction in Africa - will transport Lesotho's water to South Africa's industrial Gauteng province. Bank documents reveal that Mohale's water is not required until the year 2010 (and perhaps not until 2018), time enough to pursue better solutions to South Africa's growing water-management crisis. Water conservation experts contend that building the dam now will send the wrong message to South Africans just beginning to grapple with the need for increased conservation and better water planning. But Bank staff contend that it is less costly to build the \$1.1 billion Mohale now, even if its water is not needed for years.

George Constantinides, the demand manager for Rand Water, South Africa's largest water supplier, stated in March that conservation measures could reduce demand by 40 percent and thereby delay the Mohale "by years." Spending 1 billion Rand on retrofitting less efficient appliances and fixing leaky pipes, Constantinides says, would save R3 billion Rand in consumption (1 Rand = US\$.20).

Guy Preston, head of the water conservation program for South Africa's Department of Water Affairs and Forestry, said, "We can get significant savings from delaying schemes. We can put that money into other, more important social things." Preston said delaying Mohale Dam would mean a "conservative" R800m savings per year, including operating costs. Topping the list of urgent social spending needs is increasing the number of South Africans with access to water. Currently, millions of South Africans are without a reliable, safe water supply, and those that are connected to the water supply have inferior, wasteful systems built in the days of apartheid. The following statistics help illustrate the scope of the problem:

- In 1995, an estimated 18 percent of the nation's urban population had no adequate water supply.

- Up to 50 percent of the township of Soweto's water is lost through poor-quality infrastructure.
- To supply Gauteng's waterless poor would require just 5 percent of the water used by middle income South Africans on gardens.

The biggest obstacle to solving this problem, then, is not finding more water, but finding the money to pay for the infrastructure.

Without a touch of irony, a World Bank project appraisal report states that "the LHWP is one of the very few successfully implemented projects in the world aimed at regional water management." But water planners in the region see it as the wrong approach at the wrong time. Steve Rothert, a water resources specialist working in Botswana for International Rivers Network, says, "By supporting a project that is not needed for many years, the Bank is sending a message that it supports supply-driven water-resources management, even in one of the most arid regions in the world."

Building the project prematurely could also have negative impact water conservation efforts by altering the financial picture for Rand Water. To pay its portion of the project's capital costs, Rand Water could be forced to sell more water, not less, thus undermining its efforts to put into place ever-stricter demand-management measures. Such measures include a range of practices, including installing water-conserving toilets and shower heads, incrementally increasing costs to penalize higher levels of consumption and implementing policies to reduce waste by the biggest consumers like large-scale agriculture (which accounts for 50% of South Africa's water use).

The LHWP's costly dams means higher-priced water for South African consumers, a burden which hits poor township dwellers the hardest. In the past year, the price of water for Rand Water consumers almost doubled because of capital investments, primarily to pay for the LHWP.

### **Inspection Panel Claim**

The World Bank has policies that mandate the examination of alternatives to projects such as this. For example, its policy on dams states, "Design of investment programs for supplying water or energy should consider demand management as well as supply options." But internal project documents imply such policies have been set aside in planning the LHWP. The April 30, 1998 Project Appraisal Document states: "As important as demand side management in the water sector is ... there is no specific reference in the project to such measures, nor is there a legal requirement in the loan for RSA to implement such policies, since this is a loan to [Lesotho-based project authorities] LHDA."

In light of these policies and the possibility that the project is being built prematurely, in April some residents of Alexandra township filed a claim with the World Bank Inspection Panel, the independent body charged with investigating claims of Bank policy violations brought forth by project-affected people.

The Inspection Panel's official notice of the claim states, "The Requesters allege that the Bank failed to consider demand management alternatives to phase 1B. Therefore they maintain that the project should be delayed at least until detailed demand management studies due in late 1999 have been completed. If

the project is not delayed the Requesters claim they and other poor communities are likely to have to pay higher prices for water than otherwise; that those poor communities without water will still not get access to water; and, that financing for badly needed infrastructure repairs will be squeezed out resulting in shortages and lack of conservation in existing water delivery to the poor." At press time, the Inspection Panel had just begun its preliminary investigation of the claim.

Meanwhile, Lesotho NGOs monitoring the project's social problems have recently backed down from efforts to delay the next dam, in part due to political pressure, which has intensified over the past year. In addition, project authorities have made sweeping claims that they have learned how to avoid the many social problems caused by the first dam, although many of these problems remain unresolved.

### **Dam or Poverty Project?**

The Bank publicly justifies the project as the best way to help Lesotho develop its way out of poverty. Perennially ranked by the United Nations among the world's poorest countries, Lesotho has a 50 percent unemployment rate and almost no natural resources that can be turned into cash--except water. The Bank's view of the project as a poverty-buster has been prophetic, and Lesotho is becoming increasingly dependent on royalties from the LHWP, which brings in some US\$40 million a year. "If you delay the project even by one year... it'll knock six percent off Lesotho's GDP (gross domestic product) this year," said John Roome, the LHWP project manager for the Bank.

Korinna Horta, an environmental economist with the US-based Environmental Defense Fund, says, "The LHWP is likely to overwhelm Lesotho and determine its political economy for generations to come. The sheer size of the project diverts attention from any other possible development programs for Lesotho."

Income-restoration for the thousands of people affected by the first dam has been ponderously slow. In the beginning, the project emphasized training in vocational skills that were virtually unneeded in Lesotho. The program has since shifted to small-enterprise development skills. But with Lesotho's high unemployment and low per-capita income, the goal of creating a new entrepreneurial class from the farmers displaced by the project seems highly unlikely. The Bank-sponsored panel of environmental experts itself remains pessimistic about the restoration of incomes, as do some project employees (at least one employee privately stated that the likelihood that the project would result in the successful creation of alternative livelihoods for affected people was "virtually nil"). It may be possible to create more effective training programs and devote more time and funding to job creation, but it is not clear that such measures will be enough - even within the generous 15-year time span set by the Bank.

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- Visit the [Lesotho Highlands Water Project Campaign Page](#) for more information.
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1847 Berkeley Way  
Berkeley, CA 94703 USA  
phone (510) 848-1155  
fax (510) 848-1008  
email: [irn@irn.org](mailto:irn@irn.org)

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Volume 13, Number 3 / June 1998

## **Okavango Pipeline Remains a Pipe-Dream For Now**

### **Studies Show Project Not Needed Even During Drought**

*by Steve Rothert*

The plentiful rains that fell in Namibia in early 1997 ended one of the country's worst droughts and delayed the start of construction on a pipeline to supply the capital Windhoek with water from the Okavango River. River activists and downstream communities fear that the pipeline would seriously alter the annual flood that sustains Botswana's remarkable Okavango Delta.

The rains of 1997 also allowed Namibian water engineers to gather more information on the country's groundwater resources without the threat of an imminent water crisis to distract them. Recent tests suggest that sufficient untapped groundwater resources exist to supply not only Namibia's growing demand, but also meet emergency water supply needs in times of crisis. Despite these optimistic findings, the project is still being considered, and should the coming rainy season fail, the government might again move quickly to build the Okavango pipeline or some other emergency water supply measure.

Namibia is the driest country in southern Africa, with less than two-thirds the average rainfall of Botswana, the region's next-driest. Droughts are part of the landscape, but recently have been particularly severe. The most recent drought lasted almost five years. In an average year, water supplies for Namibia's Central Area (which includes Windhoek) would exceed demand by more than 10 percent. But as the years of drought that ended in 1997 showed, precipitation can often fall far short of average. Before the 1997 rains, the Central Area was in a critical state: reservoirs stood at or below 25 percent capacity; the City of Windhoek had dramatically increased water prices and instituted water rationing, and aquifers were being over-pumped. Without significant rainfall, Windhoek would have run out of water in less than two years.

Such was the climate in June 1996 when the Namibian government announced that it would accelerate development of a 25-year-old plan to divert water from the Okavango River to Windhoek. The project involves building a 250-km pipeline from the Okavango River, which would connect to the central water supply system. The pipeline project met the government's stated requirements for a water source that

could: 1) supply Windhoek with at least 18 million cubic meters of water per year, 2) be constructed in 18 months or less to avoid water shortages, and 3) was the cheapest option. At the time, Namibian water planners thought the Okavango River was the only potential water source that could meet these criteria.

However, recent tests conducted by the parastatal water supply company NamWater indicate that undeveloped groundwater resources in the Grootfontein area, when combined with existing supplies, could continue to meet Namibia's growing demand and enable Windhoek to weather serious future droughts. Particularly promising are three abandoned mines, the Berg Aukas, Abenab and Tsumeb Mines, that overlie sizable aquifers. NamWater studies show that pumping water from the shafts of these mines could yield as much water on a short-term emergency basis as the proposed Okavango pipeline. NamWater already has plans to connect all three abandoned mines to the Central Area's water system. In related studies, NamWater has concluded that it could save over 10 percent of its water supply each year by injecting water from evaporation-prone reservoirs into these aquifers for later use (Namibia has the region's highest rate of evaporation). Senior water planners in NamWater and the Department of Water Affairs (DWA) say that developing these mines and other groundwater resources could delay the need to tap the Okavango River until after 2012.

### **Cheaper Option**

Developing new groundwater sources to supply growing demand and to meet a future water emergency offers significant benefits to Namibia over the Okavango pipeline option. For example, new supplies would become available as early as 12 months from project start-up, as opposed to having to wait at least 18 months for the pipeline to be completed. Because the abandoned mines and other aquifers are 200 kilometers closer to Windhoek, the total capital cost of the groundwater option would be significantly less than the Okavango pipeline, and funding could be phased with the developments, eliminating the challenge of financing one enormous scheme (the pipeline is estimated to cost N\$603). In addition, delaying the construction of the Okavango pipeline would provide sufficient time to adequately study and address the downstream impacts of the pipeline.

Despite the obvious technical advantages of developing these groundwater sources and the obstacle of financing the Okavango pipeline, the pipeline may yet move forward. A top official in the Department of Water Affairs who requested to remain anonymous, said, "If it were up to me, I wouldn't build the pipeline because Namibia can't afford it. But it's not up to me, it's up to the politicians." Indeed, the political leaders of Namibia have recently indicated a willingness to overlook staggering financial, environmental and social problems in pursuit of other large infrastructure projects (see story opposite on Epupa Dam).

Further work on the Okavango pipeline could commence as early as April 1999, when the Namibian government conducts its annual water supply assessment and planning exercise. Namibia's most recent rainy season failed to produce significant runoff for water supply reservoirs, and as a result most reservoirs have fallen from 75 percent capacity at this time last year to less than 45 percent capacity today. If the coming rainy season fails, which many fear could happen as the effects of El Niño linger,



by this time next year reservoir levels will have fallen to 20-25 percent capacity, the same levels as in 1996 when the government put plans for the pipeline into high gear.

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- Visit the [Okavango Campaign Page](#) for more information.
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1847 Berkeley Way  
Berkeley, CA 94703 USA  
phone (510) 848-1155  
fax (510) 848-1008  
email: [irn@irn.org](mailto:irn@irn.org)

---

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## **Southern Africa Water Index**

Although Southern Africa includes 11 countries with a wide range of water availability, the region as a whole is water-poor, and increasingly facing water shortages. The problem is exacerbated by growing demand for water-rich lifestyles as well as high population growth (although the biggest increases in population come from poorer segments of society, who use relatively little water). Large parts of southern Africa receive less than 1000 mm of rain per year. Droughts are common, and much of the region experiences very high losses of water from evaporation. It has been estimated that the number of people living in water-stressed countries worldwide will increase tenfold by 2025, to some 3 billion, most of whom live in Africa and South Asia.

Number of southern Africa's 11 countries now considered to be "water scarce": **3**

Number expected to be water-scarce by 2030: **8**

Number of southern Africa's major rivers that are shared watercourses: **15**

Number of present and proposed major water-transfer schemes in southern Africa: **26**

Percent of African households with tap water inside their residences: **27**

Percent of water used by households in southern Africa in 1995: **10**

Percent used for industry: **15**

Percent used for agriculture: **69**

Percent of South Africa's irrigated agriculture that used efficient drip-irrigation systems in 1991: **9**

Percent of Israel's that did: **48.7**

Potential income from one cubic meter of water used for agriculture in Namibia: **N\$0.6-N\$3**

Potential income if that same cubic meter of water is used to support tourism: **N\$50**

Percent of water piped to South African township of Soweto that is lost to leaks and other "unaccounted uses": **50**

Percent of water piped to rural villages in Botswana that is lost: **20-40**

Increase in water use in Namibia in past 25 years: **352%**

Increase in population: TK

Cubic meters of water lost to evaporation from swimming pools in Windhoek, Namibia each year: **40 million**

Percent of that lost water that could be saved with plastic pool covers: **95**

(Sources: Sharing Water in Southern Africa, Last Oasis, The Status of Freshwater Resources in Namibia, SA Central Statistical Services Household Survey)

[Okavango Pipeline Remains a Pipe-Dream For Now](#)

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1847 Berkeley Way  
Berkeley, CA 94703 USA  
phone (510) 848-1155  
fax (510) 848-1008  
email: [irn@irn.org](mailto:irn@irn.org)

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## **Rumors Swirl that Epupa Dam is a Done Deal**

*by Steve Rothert and Lori Pottinger*

Senior Namibian government officials have reportedly decided to go ahead with the Epupa hydropower scheme on the Kunene River, according to *The Namibian* (May 28). The Namibian article cites "well placed" sources as saying that political leaders in Namibia and Angola have reached agreement to proceed with the project, and that funding has been secured. On the record, however, government sources maintain that no decision will be taken until after the feasibility study is finalized (expected to be July) and the official decision-making body has had time to review it. This body, the Angola-Namibia Permanent Joint Technical Committee, is to make a final recommendation on the project to the two governments.

Many familiar with the issue say that this latest report merely confirms their suspicion that senior government officials have been determined to build the project from the very beginning. In March 1997, the Deputy Minister of Mines and Energy, Jesaja Nyamu, announced at a public meeting in the Epupa area, "It is not a question of whether the dam will be built or not, but rather where it will be built."

The Minister of Mines and Energy told *The Namibian* that the government had been "inundated" with calls from financial institutions around the world interested in investing in Epupa, though no details were given. The World Bank, the European Union and the Swedish aid agency SIDA (which helped finance the feasibility study) have stated they are not interested in funding the project's construction. Aid agencies are wary of funding a project that will displace the Himba community from their homeland and wipe out the beautiful Epupa Falls, and private financiers would face the prospect of selling expensive power in a power market with excess capacity. The project's financial feasibility seems even more tenuous in light of recent developments elsewhere in the Namibian energy sector.

The April 1998 issue of *African Energy* reports that the Kudu Gas plant, widely seen as a likely alternative to Epupa Dam, is moving ahead. The 750-MW project would make Epupa a hard sell, as it would more than meet Namibia's energy needs and even allow for export - and at cheaper rates than Epupa. The article reports that "market soundings were being taken to assess the project's financing potential - which is seen as good given the offtake potential." The project is expected to cost \$600 million.

## Promises of Development

The government contends that the dam is more than just a power project. "We think hydropower will be a catalyst to open up a region to investment and to amenities - clinics, more schools, shops, trade ... to diversify the area's subsistence economy," Mines and Energy's Nyamu told *The Christian Science Monitor* last November. Project proponents have used the development argument to drive a wedge between the successful Himba pastoralists and pro-dam townspeople in the region, where unemployment remains high and government investment has been minimal.

But in early June, the Himba community took a surprising step that could dilute this justification for building the dam. *The Namibian* reported on June 7 that the Epupa community had formed its own development foundation, intended to shift the focus away from the dam and formulate a locally derived plan for regional development that will allow the Himbas to retain their way of life. The semi-nomadic Himba are already the most successful and economically independent subsistence farmers in Africa, according to experts. Chief Kapika said his people wanted to steer development in their area, and not simply leave it to others.

According to *The Namibian*, the non-profit Kaoko-Epupa Development Foundation would focus on ecotourism, solar and wind energy projects, health and educational facilities, and promoting more efficient farming methods.

Meanwhile, the Ministry of Mines and Energy bounces between using "carrots" and "sticks" in its approach to the Himba. Last year, Nyamu called the Himba "a culture of poverty and deprivation" from which they must be rescued. This May, in a move that many are calling an attempted bribe, the Deputy Minister delivered a pick-up truck to Chief Hikuminue Kapika, the leader of the Himba community in the proposed inundation zone. Andrew Corbett, the legal representative for the Himba community, said the vehicle was presented by Nyamu after being made available by the Minister of Agriculture, Water and Rural Development for drought relief. Corbett said the community remains "totally opposed to the construction of a hydropower scheme" on the Kunene and the community "will never agree to such a dam."

### [Epupa Dam: The Great Evaporator](#)

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1847 Berkeley Way  
Berkeley, CA 94703 USA  
phone (510) 848-1155  
fax (510) 848-1008  
email: [irn@irn.org](mailto:irn@irn.org)

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## **Water, Water From Everywhere**

A proposed interbasin transfer to bring water from the Zambezi River to Gauteng has captured the imagination of local water engineers for many decades. The size and complexity of this project is immense. By comparison, the Lesotho Highlands Water Project, involving only three basin states [Namibia is the third], will have taken 18 years to complete from the date of the first real plans to the time when its water first flows into Gauteng. In the case of the Zambezi aqueduct, South Africa is not even a basin state, and will have to compete with the eight other states who by right have first option on Zambezi water. The ecological situation is equally important due to the enormously varied and different community structure of the Zambezi system compared to the Vaal. Thus the political, technical and ecological complexities of the project pose major challenges. How long will it take, and what will it cost, to develop and finally complete such an ambitious scheme? Hopefully enough for the authorities to realize that improved water management and conservation in South Africa is the only long-term solution.

Managers should take a very hard and serious look at alternative methods of securing water. By their nature, many water transfers supply large, thirsty urban centers where there is high demand. Yet this is where large amounts of purified water are wasted, in industrial and manufacturing uses, garden watering and water-on-tap installations in houses. In light of the very high costs involved in water transfers and the long time they take to build, water managers should concentrate on curbing demand in cities by reducing waste [of both] water and electricity (which also uses water).

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*From the book Sharing Water in Southern Africa, edited by John Pallett. Publisher: The Desert Research Foundation of Namibia (1997). For more information, contact:*

*DRFN  
P.O. Box 20232  
Windhoek  
Namibia.*

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- Visit the [Lesotho Highlands Water Project Campaign Page](#) for more information.



1847 Berkeley Way  
Berkeley, CA 94703 USA  
phone (510) 848-1155  
fax (510) 848-1008  
email: [irn@irn.org](mailto:irn@irn.org)

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## **Epupa Dam: The Great Evaporator**

Although the proposed Epupa Dam is a hydroelectric project, it will have significant impacts on Namibia's limited water resources. The project's feasibility study calculated that more than 600 million cubic meters would evaporate each year from the reservoir at the Epupa site--a huge amount given that the entire country currently uses just 250 million cubic meters per year. The following describes some of the dam's water-management issues; it is excerpted from an IRN-coordinated review of the Epupa Draft Feasibility Study by outside experts. The entire 7-part review is available on IRN's web site: [www.irn.org](http://www.irn.org).

Evaporation losses from the Epupa reservoir would amount to many times the total urban consumption of Namibia, and many times the amount of water expected to be drawn from the Okavango (20 million cubic metres per year initially). This is because of the enormous lake surface of 380 square km at high water levels. The [Feasibility Study] concludes that the loss of water at the reservoir is insignificant, since "the external costs of evaporative losses must be set at nil due to a lack of alternative uses for this water." This statement must be disputed in the strongest possible terms. Setting the value of a natural resource at nil just because it has not been utilised yet amounts to a complete disregard for any future possibilities and needs. Considering that arid Namibia has an ever increasing water shortage problem, the Cunene represents priceless water reserves. In the long term the picture will change and the value of water will increase considerably. The possibility of using the water for the central region has apparently not been factored into the project's cost-benefit analysis.

### [Rumors Swirl that Epupa Dam is a Done Deal](#)

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1847 Berkeley Way  
Berkeley, CA 94703 USA  
phone (510) 848-1155  
fax (510) 848-1008  
email: [irn@irn.org](mailto:irn@irn.org)

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## **Water = Life**

*by Lori Pottinger*

In recent years, governments, water planners and international agencies have popularized the idea that the 21st century's conflicts will be fought over water. Increasingly, this concern is being used to justify new water-supply dams and river diversion projects. This is especially so in dry southern Africa, the topic of this special issue, where numerous projects are underway and many more are being planned. But dams and pipelines don't actually 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 and diversions can even reduce potable water supplies through evaporation from reservoirs and by harming water quality.

It's certainly true that water use is rising dramatically. The first 80 years of this 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 pollution. If water is life, as the saying goes, then we seem to be on a suicide mission.

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 were built to expand industrial-scale agriculture, which use up to 80 percent of the water supply in dry parts of the world. 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. Despite a century of unprecedented dam building, by the early 1990s more than 1.3 billion people were still without access to fresh water.

In Africa, where inequities are particularly great-often following the racial lines established during colonial or apartheid days - only 27 percent of the population has water tapped to their homes. In South

Africa, black township residents use less than 2 percent of the nation's water, and millions remain without an adequate supply. And in arid Namibia, the mostly white upper-income residents in the capital of Windhoek use more water per person than in wetter climates such as Sweden. Namibia's worst water hogs use up to 25 times the amount used by the nation's pastoral communities.

Southern Africa is in a water management crisis. Although water supply departments and agencies are working under complex and demanding circumstances and there are examples of successful water projects and policies, too often inefficiency, unfairness and unsustainability characterize the use and management of water resources in the region. As the stories in this issue demonstrate, change will be slow and painful.

The cover story on the recent World Bank approval of the second dam in the Lesotho Highlands Water Project epitomizes the crux of the problem: water supply is too often "managed" by politicians and engineers, both of whom have a propensity for big engineering projects. This dam is unneeded for many years, and water-conservation experts fear that building it now will throw off budding "demand management" efforts to reduce water use, by forcing the regional water company to sell more water, not less, to help cover its share of the project's capital costs.

On pages 8-9 are updates on two Namibian projects that would impact valued water resources: the Okavango Pipeline, which would pipe water from the Okavango Delta region to Namibia, and the Epupa hydroelectric project, whose reservoir would evaporate more water each year than the amount currently used by the capital of Windhoek. When examined together, it appears that Namibian water managers and power czars are working at cross-purposes.

Unlike energy, where ever-more benign renewables are making headway all the time and may one day help solve the problems of growing energy use, there will probably never be a huge technological "fix" for the world's growing water crisis. Our water supply is finite and, as with most other resources, inequitably distributed at present. A project like the Lesotho Highlands Water Project is particularly dismaying, using as it does immense technological wizardry to transport Lesotho's water hundreds of miles away, when people living near the dam still cart water in buckets and conserve every cupful.

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1847 Berkeley Way  
Berkeley, CA 94703 USA  
phone (510) 848-1155  
fax (510) 848-1008  
email: [irn@irn.org](mailto:irn@irn.org)

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## **Brazilian Dam's Massive Reservoir Begins Filling Without Mitigation Plans**

*by Glenn Switkes*

The Porto Primavera Dam, the last of Brazil's so-called "pharaonic" projects dating from the era of the military dictatorship, was at press time set to enter its final phase with the closing of the dam's bypass channels on June 12. Despite a court order prohibiting the dam's closing, the São Paulo Electric Company (CESP) says it has satisfied legal requirements and can close the floodgates when it wants. Before this can happen, however, the government of São Paulo state will have to overturn a recent federal court order prohibiting the filling of the reservoir.

The federal court decision, issued in May, was taken because of the lack of plans to mitigate the dam's serious environmental and social impacts. CESP is threatened with fines of \$27 million per day if they defy the order and start to fill the reservoir as scheduled.

Despite the fact that construction of the dam has taken nearly 20 years, basic mitigation and compensation measures have either never been undertaken, or have not been completed by CESP. According to Sadi Baron of Brazil's Movement of Dam-Affected People (MAB), "CESP'S attitude is totally irresponsible. Experience with other dams has taught us that if mitigation measures are not in place when the dam is constructed, the company has no incentive to negotiate with dam-affected populations later."

On June 2, a commission of dam-affected met with the heads of Brazil's environmental institute, IBAMA, and electrical energy agency, ANEEL, to demand that the implementation of mitigation measures be a prerequisite for the closing of the dam. They were told that mitigating environmental impacts would be "impossible" and that resettlement and social impact measures could be designed while the dam was operating at its initial level.

### **Disastrous Impacts**

Porto Primavera, begun in 1979, will flood 2,250 sq. km (869 square miles), creating the third largest reservoir in Brazil. More than 6,200 people, including the last of the Ofaiê Xavante Indian tribe, will be forced to leave their lands and homes. Yet, with the flooding of the reservoir imminent, CESP has resettled only 340 of the 1,700 affected families. Thousands of other fishermen, ceramic workers and

small farmers will lose their livelihood as a result of the dam.

The reservoir will drown the ecologically valuable "varjão"(wetlands) of the Paraná River, which provide habitat to a rich diversity of species including the endangered marsh deer, maned wolf, giant anteater, broad-snouted caiman, giant river otter, and black and spotted jaguars. Three protected areas will be inundated, without the legislative authorization required under the Brazilian constitution. At press time, the Legislature was considering a law that would eliminate existing protections for the habitat areas that would be inundated.

Because CESP has not cleared the vegetation in the area to be flooded, rotting trees and shrubs are likely to pollute the reservoir, killing fish and creating conditions for the proliferation of disease-bearing mosquitoes and other insects.

### Costs Soar

Porto Primavera is acknowledged to be an economic boondoggle. Originally budgeted at \$2.2 billion, it is now estimated that the final cost of the 1,800-megawatt dam will exceed \$9 billion. Around two-thirds of the dam's cost is likely to be borne by Brazilian taxpayers. The cost of energy generated by the dam, according to CESP, will be 15 US cents per kilowatt-hour, nearly four times what CESP charges its customers.

According to MAB'S Sandra Paulino, "It's one thing to blame this disaster on the military government. It's another thing for the government of São Paulo to blatantly violate the Brazilian constitution in trying to close the dam without agreeing to mitigation measures. They're playing havoc with the future of the families who will be affected."

CESP has made promises of compensation to some small farmers affected in Mato Grosso do Sul state, but has failed to follow through, and the farmers fear that with the closing of the dam, there will be little incentive for CESP to make good on its word. Many are living along the side of the road under black plastic tents protesting CESP's intransigence.

CESP defends the filling of the reservoir, saying that if the project is not permitted to proceed, São Paulo and other urban and industrial centers will soon face power shortages. The fact that São Paulo governor Mario Covas is running for re-election has increased political pressures for the dam's closing.

## What You Can Do

The Movement of Dam-Affected People of Brazil (MAB) asks that you send letters protesting the closing of the Porto Primavera floodgates without adequate mitigation measures in place. Remind the officials that, in other dams with serious social problems, such as Yacyretá downstream (Paraguay/Argentina), problems have gotten worse after the reservoir was partially filled. Tell them that, after 20 years, the fact that a comprehensive mitigation plan is still not in place for this project reflects the low priority Brazil places on solving the social and environmental problems large dams create. Insist that the project be halted until a plan satisfactory to the dam-affected populations is designed and implemented.

Please send a copy to:

MAB

Rua 7 de Abril, 264 - sala 722

01014-000 - São Paulo - SP

Brazil

Fax: +55.11.256.0839

Tel: +55.11.3159.4265

email: [mnab@zaz.com.br](mailto:mnab@zaz.com.br)

Please Write:

Governador Mário Covas (Governor of São Paulo state)

Palácio dos Bandeirantes

Av. Morumbi 4500

Cep 05698-900 - São Paulo- SP

Brasil

Fax: (+55.11) 845-3301/ 3700

Presidente Eduardo de Souza Martins

(President of Brasil's Environment Institute)

IBAMA

Brasilia

Fax: (+55.61) 322-1058

Dir. Geral José Mário Miranda Abdo

ANEEL

(Director-General of Brasil's Electrical Energy Agency)

Brasilia

Fax: (+55.61) 312-5711



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1847 Berkeley Way  
Berkeley, CA 94703 USA  
phone (510) 848-1155  
fax (510) 848-1008  
email: [irn@irn.org](mailto:irn@irn.org)

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## **International Rivers Network**

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Volume 13, Number 3 / June 1998

## **Ongoing Protests at Maheshwar Dam Turn Violent**

*by Susanne Wong*

The Indian government continues to use brutal suppression to stop peaceful resistance against the construction of the \$436 million Maheshwar Dam in the state of Madhya Pradesh. Following months of escalating tension, police brutally attacked and arrested 156 people on May 20 at Gandhinagar, Maheshwar, one of seven locations where people have acted as human barricades to block construction equipment and supplies from entering the dam site. Those arrested were later released after spending many days in jail.

Since October, protestors from more than 61 villages have on numerous occasions occupied the dam site in efforts to force the government to agree to their demands. In spite of these demonstrations, the government, however, has reneged on promises made to the protestors to stop dam construction until a review of the project's costs, benefits and justification could be completed. Among the concerns of the protestors is the project's lack of environmental impact studies, resettlement plans and public participation throughout the planning process. One of more than 3,000 dams planned for the Narmada River as part of the Narmada Valley Development Project, the Maheshwar Dam would submerge over 5,000 hectares of land, displacing 2,200 families and harming the livelihoods of thousands more.

Since early May, seven blockades of 30-50 people each at key entry points to the dam site have successfully slowed construction. Desperate to resume work and prove to nervous investors that the project would not be delayed, project developer S. Kumars has pushed the government to mobilize thousands of police in the area. After the arrests on May 20, about 18 trucks were able to penetrate the blockades and deliver supplies to the dam site.

Nevertheless, protestors have announced their determination to continue the blockade, and at press time hundreds of people were traveling towards the site to replace those arrested. The ongoing protests have been organized with the help of the Narmada Bachao Andolan/Save the Narmada Movement (NBA), India's premier dam-fighting organization. The NBA is best known for its struggle against the infamous Sardar Sarovar Dam, and has been leading the movement against the Maheshwar Dam.

Alok Agarwaal, a key activist of the Maheshwar struggle, stated, "We know ours is a long struggle, and

we are determined to fight till the end. Today's action has however once again confirmed that the government is not ready to stand by the genuine demands of the people and will not hesitate to use the state repressive apparatus to favor national-international capital."

Preliminary work on Maheshwar began in 1996. Scheduled to be completed in 2002, the concession to build and operate the 400-MW dam was given to S. Kumars, a textile firm with no experience in dam-building. The company is receiving public subsidies and guarantees to ensure that private investors will make a profit from the project. As a result, the sizable financial risks of the project are being borne by the public sector. The NBA and independent energy experts have challenged the economic and technical viability of the project and called into question the subsidies.

### **Promises broken**

Following a year-long struggle, the Madhya Pradesh government on January 30, 1998, conceded to the demands of the NBA and issued a written order announcing that it would suspend construction on the dam pending a comprehensive review of its costs, benefits and alternatives. Following this action, the NBA called off a 21-day dam-site occupation by thousands of local people. The task force assigned with completing this review had originally been established to review the entire Narmada Valley Development Project.

At a special meeting of the Task Force on March 4, 1998, S. Kumars urged the government to allow construction to resume at Maheshwar for "safety purposes." Skeptical about the motives of S. Kumars and certain that this move was to reassure investors of the project would not be significantly delayed, the NBA opposed this request. On March 11, 1998, the Madhya Pradesh government gave in to the demands of S. Kumars and issued a notification allowing the continuation of "any work for the purposes of safety and resettlement."

### **Months of protest**

The actions of the Indian government triggered further dam site occupations. On April 22, over four thousand people penetrated police barricades and ignored prohibitory orders banning protestors from the dam site, protesting S. Kumar's violation of a government agreement to stop all construction work until the project could be fully reviewed. Despite sweltering heat, police blocked the protestors' access to clean drinking water and shelter, forcing people to drink oil-contaminated river water. That evening, police arrested those remaining at the site, bringing the day's arrests to a total of 1200 protestors.

The following day, hundreds more protestors dodged police barricades and once again took over the dam site. The police, without warning or provocation, reacted with brutality, repeatedly beating the protestors with batons and rifle butts, charging them on horseback, and making sexual epithets against women protestors. By evening, over 2000 people were in jail and at least 23 hospitalized. Many of the badly beaten protestors were taken to jail.

The police brutality and government misdealings have been condemned in a declaration signed by more than 186 human rights, environment, women's and labor organizations from India and 35 other countries. This declaration calls for the government to cease the repression at Maheshwar and for companies involved in the project to withdraw until the demands of the people are met.

In an important statement, the Vice President of the US-based PacifiCorp Development Company, which had worked on the financing for the project, announced that the company did "not intend to participate further in the [Maheshwar] project." He added that if PacifiCorp were to reevaluate the project in the future, "it would only be under the condition that the needs of the mass of affected people be properly addressed and consensus regarding how the project proceeds [be] reached by all stakeholders, including Narmada Bachao Andolan."

PacifiCorp had been expected to hold or underwrite nearly half the shares in the project company through its subsidiary PacGen. Recently, PacifiCorp sold off PacGen, but it has retained all overseas interests of PacGen including Maheshwar. S. Kumars has continued to convey - indirectly and directly through their website - that PacGen is still involved.

## **WHAT YOU CAN DO:**

Write to the MP Chief Minister calling upon him to stop work at the project, withdraw the police, and immediately resume the review work through the task force: Digvijay Singh, Chief Minister, Vallabh Bhavan, Bhopal, India; Fax +91.755.540.501.

## **TIMELINE**

1978 Maheshwar Project originally conceived.

1992 Preliminary project approval granted.

1996 Preliminary work starts.

10/3/97 Over 10,000 people demonstrate at the dam site.

1/11/98 25,000 people begin 21-day occupation of the dam site.

1/21/98 10,000 mostly female villagers occupy site and suspend work.

1/30/98 Government of Madhya Pradesh orders construction work to stop.

3/4/98 Project developer urges government to allow construction to resume for "safety purposes."

3/11/98 Government of Madhya Pradesh issues statement allowing work to continue.

4/3/98 Massive demonstration at dam site to protest government betrayal of work stoppage agreement.

4/22/98 1,200 demonstrators arrested for occupying the dam site

4/23/98 Police brutally attack protestors -and arrest hundreds more. About 23 hospitalized. Construction continues.

5/8/98 Protestors set up human barricades to intercept construction supplies from entering the dam site.

5/18/98 Barricades prevent trucks from entering dam site; construction slows to a halt.

5/20/98 Police again attack protestors - 156 arrested and one hospitalized.

- Visit the [Narmada Campaign Page](#) for more information.
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1847 Berkeley Way  
Berkeley, CA 94703 USA  
phone (510) 848-1155  
fax (510) 848-1008  
email: [irn@irn.org](mailto:irn@irn.org)

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Volume 13, Number 3 / June 1998

## **Other Indian Dams in the News**

### **MEASURE TWICE, CUT ONCE**

One of the largest hydro-electric projects of the country has been stuck for the last four years because Government agencies made crucial errors while calculating the height of the dam, according to a story in the Indian Express (May 2, 1998). Mistakes made by government surveyors and hydroelectric engineers have brought the partly complete 1500-MW Nathpa Jhakri Power Project near Shimla to a halt.

When the Nathpa Jhakri Power Corporation (NJPC) began building the dam in 1994, it discovered a critical measurement error: the actual depth of the site where the wall was to be built was two metres below the actual figure given. The Himachal Pradesh State Electricity Board, which is a joint venture partner, added its own miscalculation of two meters in the height of the dam to be built.

As a result, the dam will be four meters shorter than the original figure of 60.5 meters, the newspaper reports, and its maximum power has been almost halved. The cost of the project has also risen 4.28 times over original estimates.

The solution to this problem was to raise the height of the dam. But an upstream dam could be adversely impacted, and local governments are now at odds over the issue.

Meanwhile, the World Bank, which has lent US\$437 million (in 1989 prices) to the project has been putting pressure on the power ministry to expedite the project. The Government of India sought and received an extension of the Bank loan till end of 1998. The only condition is that the public investment board approve the revised costs by October. Sources close to the projects say that any further delay could well kill the project.

### **TEHRI DAM CRACKS**

The controversial Tehri Dam hydroelectric project, under construction for 20 years, has also run into trouble with cracks developing in the control gate shaft area. While officials have dismissed the problem as mere peeling plaster, there is evidence to suggest that portions of earth between the main dam and the coffer dam have sunk. A recent story in The Earth Times reports that there is no danger to the safety of the main dam, though there are fears that repairs cannot be carried before the onset of the monsoon (which usually begins around October).

Meanwhile the government is sitting on the recently submitted report of another review committee formed to study the safety of the dam and its environmental and social impacts. The government has

made clear its intentions to go ahead with the construction come what may. Recently P.R. Kumaramangalam, Union Minister for Power, reacted furiously to a suggestion that environmentalist Sunderlal Bahuguna would go on an indefinite fast to force the government to reexamine the logic of continuing building in what is acknowledged to be a seismic zone.

When Tehri was first sanctioned in 1972, it was expected to cost \$1.9 billion. Today it is estimated it will cost \$5.5 billion, in part due to unplanned-for environmental, social and seismic safety impacts.

### [Ongoing Protests at Maheshwar Dam Turn Violent](#)

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1847 Berkeley Way  
Berkeley, CA 94703 USA  
phone (510) 848-1155  
fax (510) 848-1008  
email: [irn@irn.org](mailto:irn@irn.org)

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Volume 13, Number 3 / June 1998

## **Public Health Risks at Three Gorges Dam: "The Chernobyl of Hydropower"?**

*by Doris Shen*

The Three Gorges Dam is expected to alter the health and welfare of millions of people being resettled for the project, as well as those living around the reservoir. In a report published this May by the British medical journal *The Lancet*, scientists predict that the 20 million people who will live near the project's 640-km long reservoir will be at increased risk for a number of dangerous diseases, which are expected to increase in the densely populated reservoir environment. The journal also indicates that the government is woefully unprepared to deal with these risks.

Currently, the region already suffers from inadequate health services, water supply and sanitation, which has led to a high incidence of rheumatic fever, hepatitis B, pneumonia, measles and diarrhea. Future additional health risks include a resurgence of life-threatening diseases such as malaria, hemorrhagic fever, encephalitis and others. The physical stress along with the change in food and soil quality during to resettlement could also lead to an increase in Keshan disease which causes heart muscle failure, especially in young women and children.

The most serious threat, however, is that schistosomiasis (also known as bilharzia) could become established in the reservoir area. Snails, insects, and other animals serve as vectors for this parasitic disease (see figure). The magnitude of the global incidence of schistosomiasis is directly connected with the construction of dam and irrigation projects. The disease has persisted along the Yangzi despite a 40-year control program, and it is already established only 40 km below the dam as well as upstream of the project. Epidemics of schistosomiasis, malaria and other parasitic infections have occurred around many reservoirs created by dams elsewhere in the world.

*The Lancet* reports that no program has been established to combat Three Gorges' public health threats. Only one Ministry of Health division is assessing the schistosomiasis risk, but other health threats are not under study, states *The Lancet*. Last year, the 16 reservoir-affected counties in Sichuan were placed under Chongqing, which has become a new municipality with Province status, like Beijing, Tianjin and Shanghai. All provincial government functions assumed by Chongqing require staff training, but local expertise is needed immediately to monitor, prevent and mitigate the adverse dam effects.

The authors of the report fear that the looming Three Gorges Project public health crisis could become



"the Chernobyl of hydropower."

[Three Gorges Dam Construction Spurs Cultural Loss of Yangzi River Valley](#)

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- Visit the [Three Gorges Campaign Page](#) for more information.
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1847 Berkeley Way  
Berkeley, CA 94703 USA  
phone (510) 848-1155  
fax (510) 848-1008  
email: [irn@irn.org](mailto:irn@irn.org)

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Volume 13, Number 3 / June 1998

## **Three Gorges Dam Construction Spurs Cultural Loss of Yangzi River Valley**

*by Doris Shen*

A Han dynasty work of art recently sold in New York for \$2.5 million was stolen from the area to be flooded by the Three Gorges Dam. The connection between the sold piece, a bronze "spirit tree" (shen shu), and one missing from the Three Gorges area was made by Professor Elizabeth Childs-Johnson, an archaeologist and art historian based at New York University. The sale was the highest price ever paid for a Chinese antiquity.

Professor Childs-Johnson, who specializes in Yangzi River archaeology, believes that the piece, sold during the March 1998 International Asian Art Fair, is one of only three fully intact, bronze spirit trees (also known by the more popular variation, "money tree") documented by archaeologists. An October news report from a Chinese newspaper described the theft of such a spirit tree from the Three Gorges area.

An October 1997 article in the Chinese newspaper, Southern Weekend, quotes the director of the Fengjie Cultural Relics Work Unit, Yao Jiong, as saying: "Just recently a completely intact bronze yaoqian shu (money/spirit tree) was unearthed here." He went on to describe the tree as "the Number One best example in the country" and said it was sold on the black market for 200,000 yuan (about US \$25,000).

This and other reports by Chinese journalists and archaeologists provide further evidence that the theft and smuggling of relics is a direct result of the Three Gorges Project. Archaeologists are now in a race against time to protect the wealth of artifacts in the area not only from inundation by the dam's 400-mile long reservoir, but also from the increasingly bold and well-organized looters and smuggling rings operating in the area. "This shen shu is an exceptional work of art," and is "unique to the Yangzi river belt in Sichuan province," says Dr. Elizabeth Childs-Johnson. If it was indeed stolen, she says, "China's loss of this piece is a tragedy."

A March 26 New York Times story describes the tree as "truly eye-popping. It's dozens of branches filled with minute figures, touched with a sea-blue patina giving the impression of a Christmas tree seen under water." The piece was sold to a New York art collector by Belgian art dealer Gisèle Cro's. By

Chinese law, all relics intended to be taken out of China must be 'verified' or examined by a cultural relics bureau.

Last May IRN alerted Chinese officials to the US sale of the money tree. Yu Weichao, the director of conservation of cultural relics in the Three Gorges area and the director of Beijing's prestigious National Museum of Chinese History, has since then verified the provenance of the sold piece.

Professor Wang Yucheng at the Chinese Academy of Social Sciences (CASS), Institute of Archaeology, and a colleague of Yu Weichao, confirmed that the spirit tree candelabrum is from a Han Dynasty burial site called Jiangdongzui in Wushan County, an area to be flooded by the Three Gorges dam. The tomb was disturbed by a bulldozer and remains in the area without many of its relics.

The Jiangdongzui site was documented in 1995 by the Yangtze Valley Development Corporation, after bulldozers discovered it accidentally. Documentation shows that the site was later looted in 1997. At the time when the tomb (part of a cemetery) dating to Warring States, Qing and Han Dynasties was documented, it was indicated that the finds were very significant and included an "Eastern Han bronze tree...."

Excavated relics from these sites on the Yangzi are critical in reconstructing the little understood picture of South China's contribution to Chinese civilization. This hope is fading with the increase of archeological looting in the dam's inundation zone.

"This theft is the most outrageous example of the dire situation currently facing cultural antiquities in the proposed reservoir zone," says Dai Qing, China's most outspoken critic of the dam. "The problem is that there is a complete lack of funding and not enough time for proper antiquities excavation and protection in the area."

[Public Health Risks at Three Gorges Dam: "The Chernobyl of Hydropower"?](#)

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- Please visit the [Three Gorges Campaign Page](#) for more information on archaeology.



1847 Berkeley Way  
Berkeley, CA 94703 USA  
phone (510) 848-1155  
fax (510) 848-1008  
email: [irn@irn.org](mailto:irn@irn.org)

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Volume 13, Number 3 / June 1998

## **China's Water Shortages Could Have Global Impacts**

The National Intelligence Council (NIC) in Washington, D.C., the umbrella organization over all US intelligence agencies, recently published a study on China's key river basins which found that water shortages will force China to import as much as 175 million tons of grain by 2025. World grain exports, which tripled between 1960 and 1980, have leveled off and may not be able to satisfy China's need. "Because China's potential demand is so large, it cannot import the grain it needs without driving world grain prices up, writes Lester Brown in the TK issue of *World Watch* magazine. The water crisis could mean rising grain prices for countries importing grain from China, which could effect political stability in these countries.

China's farmers now face strong competition for water from cities and industry. Residential demand for water is projected to increase from 31 billion tons in 1995 to 134 billion tons in 2030. The demand for water by industry is projected to grow even faster, from 52 billion tons to 269 billion tons, the *World Watch* authors calculate. Half of China's 617 cities are facing water shortages, and another third are seriously short of water. Urban water use is growing at an annual rate of 10 percent, according to *China Environment News* (September 1997). For many cities, shortfalls can be filled only by diverting water from agriculture.

A recent Chinese survey reports the water table beneath much of the North China Plain, a region that produces nearly 40 percent of China's grain, has fallen an average of 1.5 meters (roughly 5 feet) per year over the past five years. And the Yellow River, one of China's two major rivers, has been affected by water shortages since the early 1970s. Beginning in 1985, it has run dry each year, with the dry period becoming progressively longer. With literally hundreds of new upstream projects withdrawing water in the years ahead, ever less will reach the lower basin. And in a recent *InterPress Third World News Agency* article, Professor Lei Hengshun of the Yangtze Technology and Economy Society warns that in the next 20 years, parts of the Yangtze River will become as dry as the Yellow River is now.

"The Chinese will need to restructure their entire economy to make it more water efficient," said Brown. "In agriculture, they can shift to more water-efficient crops and livestock products. In energy, they can move to less water-intensive energy sources. And in industry, they can make big jumps in saving water."

But just as demand for water is rising, China's major rivers are being threatened not only from overuse

but also by contamination. In May, pollution killed 500 tons of fish in one of the country's most famous lakes - Donghu, near Wuhan in Hubei province. It is estimated that 80 percent of China's major rivers are so polluted by industrial waste they can no longer support life.

China's environmental crusaders are pinning much hope on the new government of former economic czar Zhu Rongji who was elected premier in March. Spending on environmental protection forms part of an ambitious plan by Zhu Rongji to boost a flagging economic growth by increasing investment in basic infrastructure. China hopes to raise a vast sum abroad for a grand environmental clean-up, as well as invest 180 billion yuan (US\$21.6 billion) of its own for the project.

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- Visit the [Three Gorges Campaign Page](#) for more information.



1847 Berkeley Way  
Berkeley, CA 94703 USA  
phone (510) 848-1155  
fax (510) 848-1008  
email: [irn@irn.org](mailto:irn@irn.org)

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Volume 13, Number 3 / June 1998

## **RIVER ACTIVISTS' NOTEBOOK: Vistula River Faces Seven New Dams**

*by Jacek Bozek and Sally Naylor*

The Wisla (or Vistula) River is one of Europe's largest, most important rivers, with a catchment area that covers more than half of Poland. Rising in Poland's Beskidi mountains and winding its way northwards to the Bay of Gdańsk, it serves as an important ecological corridor, linking the Baltic Sea to the Danube basin in the south, the Varta basin in the West and the Bug in the east. It supports great biodiversity: its sandy islands, steep banks, and riverine meadows and forests provide important breeding sites for many species of birds, including some which are now rare in Europe because of the impact of dams and diversions on the region's rivers and wetlands. The river has been crucial in human history as well, and its valley includes many important cultural landmarks.

Now the government is proposing to build a series of seven dams (called a "dam cascade") along the 394-km length of the lower Wisla, each reservoir extending back to the previous dam. There is already one dam on the river. The proposal also includes an east-west waterway linking the River Odra in the West, and several more new dams on the Odra. Project promoters claim the dams will solve Poland's water supply problems, reduce floods, supply electricity and improve navigation. But most of these claims are unrealistic or even contradictory.

First, improved water supply is not realistic as long as water quality remains unimproved. More than 45 years of neglect, industrial pollution and untreated sewage have made the Wisla one of the greatest contributors to the pollution of the Baltic Sea. The dams are more likely to further harm water quality than to improve it, and increased water extractions envisioned as part of the scheme will reduce water quality downstream in addition to harming ecosystems that help increase water supply, such as forests and wetlands.

As for power production, the Lower Wisla cascade would provide a 3-4 percent rise in total installed power, but without an equal reduction in energy produced from fossil fuels, the net impact will be negative. Poland currently has an over-capacity of energy production, and the technology is old and not the most efficient. Thus, improved efficiency (such as conservation measures known as "demand-side management") would be a better investment than new power supply.

As for floods, the cascade would actually increase the risk of ice-jam floods. While it might reduce the risk of smaller floods, its dams are not designed to handle extreme meteorological conditions. In terms of navigation, the demand for water transport would have to grow at very optimistic rates to make this a valid justification for the project.

## **Campaign to Save Wisla**

The Teraz Wisla ("Wisla Now") campaign is working to stop the construction of the Lower Wisla cascade and advocating integrated, sustainable alternatives. The campaign is a project of the Polish ecology group Klub Gaja. In 199?, the campaign helped organize a workshop for national and local government, called "Vistula, the Way to the 21st Century." The campaign also sponsored a grassroots event called "Day of the Vistula." The first event, in 199?, included happenings in over 50 towns and cities throughout Poland, and linked a network of groups and individuals in a day of celebration and education about the river and threats facing it.

Klub Gaja is also fostering an informal network of groups working on the campaign, which will meet on a regular basis. The campaign also produces information on the Wisla and the projects proposed for it, including the [semi-regular? monthly?] news sheet "Wisla Fax," and a handbook "How to Save The River." The Wisla campaign also includes lobbying, peaceful direct action and high profile educational and awareness-raising events. Next steps include developing our network further by inspiring and supporting local projects with non-governmental organizations based along the Wisla, gaining more protection both legally and socially for the most interesting natural and cultural areas, promoting sustainable solutions for development, and increase awareness to enable people to play an informed, active role in the decision-making process for the Wisla.

## [Danube Dam Forms Political Divide](#)

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- If you would like to find out more about the Wisla campaign, contact:  
Jacek Bozek  
Klub Gaja  
PO Box 261, 43-30  
Bielsko-Biala 1  
Poland  
Tel/fax 00.48.33.12.3694  
e-mail: [klub@gaja.most.org.pl](mailto:klub@gaja.most.org.pl).
-





1847 Berkeley Way  
Berkeley, CA 94703 USA  
phone (510) 848-1155  
fax (510) 848-1008  
email: [irn@irn.org](mailto:irn@irn.org)

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Volume 13, Number 3 / June 1998

## **Danube Dam Forms Political Divide**

The Vistula is just the latest of Central Europe's rivers to galvanize environmentalists. For more than 20 years, Europe's longest river--the Danube--has been at the heart of a raging controversy, set off by the Czech and Hungarian governments' 1977 agreement to build the huge Gabčíkovo-Nagymaros Dam project. This US\$500 million project inspired a lot of "firsts" in the ensuing years, including the world's first international day of environmental protest, the first public-works project to spur a political revolution, and the first environmental dispute to be brought before the UN's World Court. Ongoing protests and widespread public opposition forced the Hungarian government to withdraw its support of the controversial hydroelectric scheme in 1992. After the 1989 Czech revolution, Slovakia pressed forward with the scheme despite the overwhelming changes in the political climate. The Slovakian government redesigned the project to divert 80 percent of the Danube's water into a bypass canal on Slovakian territory, thus avoiding building the contested project partly on Hungarian territory. Construction began in 1992, and after 72 hours of nonstop work Hungary was missing an 18-mile stretch of river.

The Green Danube Programme, a project of WWF, has since studied the dam's impacts and has found major changes to the area's groundwater reserves, wetlands and forests. More than 8,000 hectares of floodplains are affected by the project. NGOs also contend that energy conservation measures could more than make up for the dam's output. They note that Slovakian power plants have a low efficiency rate, as do Slovakia's Communist-era industries, which use up to two-thirds of the nation's energy. The World Court was asked to intervene in 1993, to determine if Slovakia had the right to divert the river and if Hungary had the right to back out of the original agreement. Its September 1997 ruling found both parties in the wrong and urged them to reconcile the issue themselves to complete the objectives of the dam project. It is uncertain what will happen next, but NGOs will continue to press for a return of the Danube to its channel and better protections of water supplies, wetlands and forests.

### [Vistula River Faces Seven New Dams](#)

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- For more information contact:  
Green Danube Programme,  
c/o WWF Austria,  
Ottakringer Strasse 144-116,

A-1162 Wien  
Tel: +43.1.489.1641  
Fax: +43.1.489.16.4129.

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1847 Berkeley Way  
Berkeley, CA 94703 USA  
phone (510) 848-1155  
fax (510) 848-1008  
email: [irn@irn.org](mailto:irn@irn.org)

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Volume 13, Number 3 / June 1998

## **Anti-Dam Protests Lead to General Strike in Pakistan**

A general strike to protest a government plan to build the massive Kalabagh Dam on the Indus River crippled most cities and towns in southern Pakistan on June 17. The strike call to protest the controversial US\$4.7 billion dam came from nationalist groups in Sindh Province, an area that will suffer major environmental harm if the project is built. At least two car-bomb blasts in the city of Karachi were thought to be linked to the anti-dam strike call.

According to the Sindh Research Council (SRC), irrigation experts and politicians of the Sindh province, the dam will flood 80,000 acres, threaten the ecology of the lower Indus River and possibly create water shortages. The project has received financial support from the World Bank, Asian Development Bank, and the Italian and Japanese governments. The World Bank helped fund the project feasibility study, a three-foot thick document that "skipped over the displacement of some 80,000 people," according to World Bank sociologist Michael Cernea. An estimated 124,000 people will be displaced by the project and many more affected by ecological damage.

In his latest address to the nation on July 11, Premier Sharif expressed continuing resolve to build the dam, saying that just as his government had surprised the world by conducting the nuclear tests it would surprise the nation by constructing the dam.

The project would have major environmental impacts in two provinces, Sindh and the North West Frontier Province, and harm downstream farming communities in the Indus delta. "The dam may bring some land under cultivation in Punjab, but only at the cost of the fertile lands of Sindh and with more water consumption per acre. Consequently, there will not only be a net loss of food production in Pakistan but many Sindh areas will even be deprived of drinking water," according to a June 13 statement by the World Sindhi Institute (WSI). The WSI release states the group will stage "a hunger strike unto death in Washington, DC" should construction begin.

Environmentalists point out that reduced flow in the river would lead to sea intrusion in the fertile eastern coastal areas of Sindh, killing the mangrove forests and in the Indus River delta. Provincial politicians and environmentalists say that the construction of the dam would also lead to severe water-logging and salinity in the canal-irrigated districts of the North West Frontier Province. They point out that Pakistan is faced with the acute problem of water-logging not because of any lack of water but because of its excess. The country has 40 million acres of irrigated lands, of which 15 to 20 million acres

are severely water-logged and too saline for fertility. The World Bank estimates that the rehabilitating each acre would cost at least US\$1,000.

But Premier Sharif's government is adamant that the dam will be built. He maintains it would help irrigate hundreds of thousands of hectares, and generate 2,400 MW of hydroelectric power. At least US \$28.4 million has already been spent on the project.

Sources:

Environment News Service

web site: [www.lycos.com/envirolink/news/index.html](http://www.lycos.com/envirolink/news/index.html)

AFP and others.



1847 Berkeley Way  
Berkeley, CA 94703 USA  
phone (510) 848-1155  
fax (510) 848-1008  
email: [irn@irn.org](mailto:irn@irn.org)

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Volume 13, Number 3 / June 1998

## In Print

*Sharing Water in Southern Africa* (1997) lays out the difficult choices that will need to be made in coming years if the region is to avert a water-management crisis while also addressing growth and economic development in a sustainable way. The 121-page well-illustrated book, published by the Desert Research Foundation of Namibia, describes the severe water constraints that affect most of the region's 11 nations and evaluates water-management methods. The book offers a fair, honest assessment of the entire water picture, analyzing the various engineering approaches to water supply, describing the inequities of water distribution, comparing the various uses of water and their relative economic value to the region, and describing the threats facing the region's water supply. A valuable resource. Available from The Desert Research Foundation of Namibia (1997).

For more information, contact:

**DRFN**  
P.O. Box 20232  
Windhoek  
Namibia.

*Lifelines of Western Namibia: Ephemeral Rivers and their Catchments* is a 1995 video on water management in one of the harshest, driest places on earth. The deserts of Namibia are nourished by just a handful of perennial rivers and are under continuing threat of over-exploitation. The TK-minute color video reveals how upstream communities threaten the livelihoods and ecosystems of downstream communities by over-pumping aquifers and creating small dams to hold back the seasonal floods. Shockingly, per capita water use in at least one of these upstream communities is among the world's highest, and up to two-thirds of water is wasted through leaking pipes and other problems. The overall message: "Catchment awareness must be the guiding principal" in the region's water management, taking into account all users - including the environment.

Available for \$40 (PAL format; add \$25 for NTSC) from:

**Doxa Productions**  
email: [joelle@doxa.co.za](mailto:joelle@doxa.co.za)

or the

**DRNF**  
P.O. Box 20232  
Windhoek  
Namibia

A new report by Oregon Natural Resources Council shows how retiring four dams on the Lower Snake River will result in an annual savings of \$87 million for the region, as well as save important fisheries. *Restoring the Lower Snake River: Saving Snake River Salmon and Saving Money* (1998) clearly explains the economic and environmental benefits of removing the four dams, which are blamed for killing 81 percent of ocean-bound juvenile fish and 40 percent of returning adults. The report notes that the government has already spent \$1.7 billion attempting to bring salmon runs back to health. "We have paid to transport salmon for hundreds of miles in trucks or barges just to get them past dams. We have built multi-million-dollar dam bypass systems, and supported hatcheries just so a few young salmon will survive the gauntlet of dams. We have been poor stewards: our fish are still dying. It is time to stop treating the symptoms and address the root cause of their decline. Dams kill salmon. Perhaps even more significantly, dams destroy rivers, and salmon need rivers." The authors estimate that dam removal could result in sustainable populations of salmon within 20-25 years. Highly recommended.

Available for \$5 from:

**ONRC**  
5825 North Greeley  
Portland, OR 95217-4145  
Tel: 503.283.6343  
Fax: 503.283.0756  
email: [info@onrc.org](mailto:info@onrc.org).

*Risky Business: The Grasberg Gold Mine, by Project Underground* (1998), is an "independent annual report" on the activities of P.T. Freeport Indonesia, the consortium that operates the world's largest gold mine in Irian Jaya. It lists problems the company has failed to disclose to its shareholders, from its complicity in human rights abuses to the destruction of rainforests and rivers. The pollution of water sources has been extreme. The report states, "Freeport expects to dump three billion tons of waste rock in local alpine valleys, and as much as 285,000 tons of potentially toxic mining waste into local rivers every day." The disposal of mine waste, called tailings, has turned the local Ajkwa River into a veritable stew of heavy metals - unsafe to drink and too acidic to support most life forms. Now the company has taken some surreptitious steps to expand into a nearby national park, arguably Indonesia's most important protected areas. The report, which was presented at a recent Freeport shareholders' meeting in Louisiana.

Available for \$6 (shipped to addresses in the US and Canada) or \$8 (all others) from:

**Project Underground**  
1847 Berkeley Way  
Berkeley, CA 94703

Excerpts from the report appear on their web site: [www.moles.org](http://www.moles.org).

A new video, *Water: Sacred and Profaned*, (1998) explores the sacred nature of water and its impacts on our lives. The film features six US writers, naturalists and teachers who have used their work to reveal our connectedness to rivers, streams, lakes and wetlands. Former Poet Laureate Robert Hass talks about using the IRN-sponsored River of Words environmental poetry and art contest to help children connect with their watery world: "It doesn't matter whether they're urban children or suburban children, or whether they live in the country. Their relationship to water is fundamental." The 27-minute color video, set in beautiful watersheds around the US, is the perfect inspiration for environmental education teachers taking their classes through the River of Words watershed program.

Available for US\$20 plus \$4 shipping from:

Foundation for Global Community

Attn: Distribution

222 High Street

Palo Alto, CA 94301

Ph: 800.707.7932

Fax: 650.328.7756

web: [www.globalcommunity.org](http://www.globalcommunity.org).



1847 Berkeley Way  
Berkeley, CA 94703 USA  
phone (510) 848-1155  
fax (510) 848-1008  
email: [irn@irn.org](mailto:irn@irn.org)

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## News Briefs

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### MINING

**SPAIN:** On April 25, a dam containing the toxic wastes of the mine burst, releasing five million cubic metres of toxic mud and acidic water onto the surrounding landscape in Andalusia. The toxic waste entered the Agrio River, a tributary of the Guadamar River, which feeds wetlands within Doñana National Park. Since April 27, government authorities and non-governmental organisations have collected 20 tons of dead fish in order to avoid the further poisoning of birds and mammals higher up the food chain. The Spanish government recently approved a long-term action plan for the area affected by the spill. The eight-year plan includes a \$30 million loan to clean up the contaminated bed and banks of the river.

Long-term threats include possible pollution of the groundwater with heavy metals such as iron, manganese and lead. To reduce contamination that will occur when autumn rains mobilize the heavy metals, several million tons of toxic sludge are due to be removed during the next few months. Measures are also to be taken to protect the Doñana national park from the threat of long-term contamination. The government's plan also indicates that two new laws are being drafted and will be submitted to Parliament within a short time: a civil responsibility act and an environmental impact evaluation act.

The owner of the mine, Canadian-Swedish conglomerate Boliden Ltd., has agreed to pay for the clean-up and to guarantee farmers reimbursement for millions of dollars' worth of crops killed by the toxic flow. The Madrid daily *El Mundo* reported on May 6 that Boliden had also caused an environmental disaster in northern Chile, where around 500 children in a poor area of the city of Arica were poisoned. The toxic waste spilled in Chile occurred at Boliden's lead, arsenic and mercury treatment plants.

**US:** Another Canadian mining company is creating controversy in the Southwest. On May 5, three NGOs filed a lawsuit against the US Forest Service for failing to comply with the National Environmental Policy Act in its approval of the Carlota Copper open pit copper mine in Arizona. The mine, proposed by the Canadian mining company Cambior, Inc., would consume 3,000 acres of the Tonto National Forest and be situated in the middle of Pinto Creek, a free-flowing desert stream originating in the Pinal Mountains 70 miles east of Phoenix. Cambior proposes to pump an average of

600 gallons of water per minute from the aquifer beneath Pinto Creek. Local residents, the White Mountain Apache Tribe, the Hopi Tribe, national and local environmental groups, and the Union of Plumbers and Steamfitters Local 741 are opposed, citing impacts on the environment, water quality, wildlife habitat, and local quality of life. Cambior made headlines in mid-1995 when the tailings dam at its Omai gold mine in Guyana failed, spilling huge quantities of cyanide-poisoned water into the Essequibo River.

**KRGYZSTAN:** Government officials in this Central Asian nation said 240 cases of mild poisoning were registered a week after a truck en route to the mine crashed in May, spilling 1,762 kilograms of granular sodium cyanide into the Barskoon River. Canadian-based Cameco Corporation attempted to dismiss reports that the cyanide spill near its Kumtor gold mine in Kyrgyzstan had sickened hundreds of villagers, killed livestock and polluted a resort lake. Despite Cameco's assurances that water quality remains unaffected by the spill, local officials believe the contamination could eventually reach Lake Issyk, a nearby resort, and have recommended that all fishing in the lake be suspended. Cameco said it has been unable to confirm reports that the Kyrgyz government was preparing a US\$8-million lawsuit against the company. The Cameco spill is the latest in a growing list of Canadian mining accidents overseas (see stories above). Kumtor gold mine is two-thirds owned by the government of Kyrgyzstan and one-third by Cameco. The gold mine, which began production in 1997, produced 500,000 ounces of gold in its first year of operation.

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## **BIODIVERSITY**

**INDIA:** A 330-MW dam being proposed on the Kishenganga River in a remote Himalayan valley threatens the livelihoods of 25,000 Dard Shin tribals and the valley's pristine wildlife habitat. If the 103-meter dam is built, the Gurez Valley - a valley so isolated that it is only accessible for two months each year when the snow melts - will be forever changed. The US\$500 million hydroelectric project would destroy old growth forests, alpine fauna archaeological treasures and wildlife, much of which have been unstudied. Species identified in the valley includes the endangered Snow Leopard, Hangul Deer, black bear, ibex, marmot, barking deer, musk deer and others.

Valley residents were not consulted before the Indian government entered into a deal with the Swedish consortium Skanska International and a number of other Indian contractors. It is estimated that over 1,200 families will be displaced when construction begins later this year on the first road ever built to the Gurez Valley.

"You can build new modern houses for us, but you can not create homes for us. It has taken us centuries to transform our mud houses into the home of Dard civilization . . . This dam will devour our homeland where our culture has flourished for centuries. It threatens our distinct identity. We will not let ourselves be sacrificed for a developmental project that has least benefits for us," wrote Farida, a young Dard Shin student, in a letter to the regional government.

*For the latest information on the "Save the Gurez Valley" campaign, please visit the Kashmir Environmental Watch Association website at: [www.geocities.com/~kewas](http://www.geocities.com/~kewas)*

**INDIA:** The governments of Goa and Karnataka plan on building a dam across the Mahadayi River which will threaten a vital tiger habitat, despite efforts to declare the entire area a sanctuary. These governments are promoting the project, in part, to generate substantial revenues from logging in the submergence zone. Bittu Sahgal, an editor for India's *Sanctuary* magazine, says that the timber revenues will be used to enrich contractors and their paid collaborators in government. Apart from tigers, the many limestone caves in the region are home to a variety of bats, including the Wroughtons Freetailed Bat, which are found nowhere else in the world, according to the Bombay Natural History Society.

**US:** A huge hog-processing operation threatens a national wildlife refuge that is a migratory mecca for mid-continent shorebirds, the National Audubon Society and American Bird Conservancy warn. Seaboard Farms, Inc. has plans to build the processing plant in Great Bend, Kansas, directly between Cheyenne Bottoms and Quivira National Wildlife Refuge. The plant would process four million hogs a year, most raised on adjacent farmlands. Cheyenne Bottoms is a Wetland of International Importance under the Ramsar Convention. 600,000 shorebirds of at least 39 species concentrate at Cheyenne Bottoms alone in spring migration, and another 200,000 use the area in fall. Quivira and Cheyenne Bottoms host nearly 90 percent of the entire global population of Stilt Sandpipers and Wilson's Phalaropes. Endangered and threatened species regularly using these sites, include Whooping Cranes, Bald Eagles, Peregrine Falcons, Least Terns and Piping Plovers.

Large hog operations have been implicated in the serious pollution of a growing number of waterways in the North America, including Chesapeake Bay and numerous rivers. Last year there were 40 animal waste spills in three states which killed more than 670,000 fish.

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## **DAM DECOMMISSIONING**

**US:** In late May, Secretary of the Interior Bruce Babbitt signed papers with state and private officials and a coalition of conservation organizations clearing the way for the removal of the 917-foot Edwards Dam, which spans the Kennebec River in Maine (see WRR, February 1998, for a previous story on Edwards Dam). When it comes down (expected to be late summer 1999), the dam - which has blocked 17 miles of prime fish-spawning habitat for 160 years - will be the first hydropower dam removed in the United States. It also marks the first time that the Federal Energy Regulatory Commission (which licenses about 2,000 other dams) refused to relicense a dam.

"Today, with the power of our pens, we are dismantling several myths: that hydrodams provide clean pollution-free energy; that hydropower is the main source of our electricity; that dams should last as long as the pyramids; and that making them friendlier for fisheries is expensive and time consuming," Secretary Babbitt said. "There are 75,000 dams in this country, most built a long, long time ago," he

continued. "Many are useful but some are obsolete, expensive and unsafe. They were built with no consideration of the environmental costs. We must now examine those costs and act accordingly."

For more than 160 years, the Edwards Dam, which currently generates 3.5 megawatts, has prevented free passage of Atlantic salmon, American shad, river herring, striped bass, shortnose sturgeon (listed as endangered under the federal Endangered Species Act), Atlantic sturgeon, rainbow smelt and American eel. Under the Lower Kennebec River Comprehensive Hydropower Settlement Accord, Edwards Manufacturing and the City of Augusta will relinquish their hydropower license and ownership of Edwards Dam to the State of Maine by January 1, 1999. The State in turn will dismantle the dam in 1999 and return the property to the city.

The accord also embodies a unique partnership among the City of Augusta, State of Maine, Department of the Interior and other federal agencies, private conservation organizations, upstream dam owners, and a downstream ship yard. This diverse group will work together to ensure funding for dam removal and associated restoration work. Trust funds established under the agreement will be used to help restore and manage fisheries in the Kennebec River during the next 15 years.

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## **TROUBLED WATERS**

**US:** In an unprecedented warning about US drinking water supplies, officials cautioned pregnant women in April to avoid drinking tap water to reduce the risk of miscarriage. In California, state health reports released in February note that the use of chlorine to disinfect municipal water can create by-products associated with high incidents of miscarriage. In Indiana, public officials alerted the public to monitor groundwater for nitrates after an upsurge in miscarriages.

Federal officials claim that pollutants entering drinking water supplies from waste sites pose even greater risks to public health. "Even though we don't have all the data, it is fair to say all unmonitored groundwater is at risk of contamination from toxins coming from waste sites," says Dr. Barry Johnson, Assistant Administrator of the federal Agency for Toxic Substances and Disease Registry (ATSDR). ATSDR notes that more than 41 million Americans live within four miles of highly contaminated hazardous waste sites and that there are potentially 436,000 hazardous waste sites nationwide. According to the Environmental Protection Agency, more than 19 million Americans rely on unregulated groundwater wells. As cities expand due to increasing housing pressures, the number of pregnant women in areas without municipally treated water supplies is on the rise.

[Shorts](#)

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1847 Berkeley Way  
Berkeley, CA 94703 USA  
phone (510) 848-1155  
fax (510) 848-1008  
email: [irn@irn.org](mailto:irn@irn.org)

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## Shorts

A study of 102 streams in Wisconsin shows that even low levels of suburban development severely damages streams. "Researchers have known that a heavily urbanized area can cause problems for a stream, but everyone just assumed 'urbanized area' meant some place like downtown Milwaukee," says John Lyons, a Department of Natural Resources watershed ecologist and member of the team that studied how land use affects water quality. "We're not talking about downtown - we're talking about suburbia - subdivisions, strip malls, highways, parking lots and driveways."

The US Department of Energy and private investors have teamed up to invest \$32 million in US solar energy ventures. The investment will support 1,000 systems in 12 states and Puerto Rico, as part of the Clinton administration's Million Solar Roofs Initiative. The awards support innovative technologies such as a photovoltaic roofing tile that integrates the system into a conventional flat roof structure, and a joint venture to expand manufacturing, installation and support of standard photovoltaic systems among residential and commercial developers in the Northeast and California.

The entire country of Zimbabwe ground to a halt on May 4 after a line-fault cut electricity supplies from Mozambique and South Africa. The result was a sequence of breakdowns that led to a nationwide power failure, the South African *Mail and Guardian* reports. The Zimbabwe Electricity Supply Authority said the problem began with a fault on the line from Mozambique's Cahora Bassa Dam. This cut power imports from South Africa and Mozambique, and then tripped Zimbabwe's overburdened power stations. At the same time, emergency power supplies from Zambia were lost, and the country lost all electric power at 10:30 am, causing traffic jams in cities, trapping people in elevators and bringing production lines to a halt.

The spring issue of Korean Federation Environmental Movement News lists the threat of massive dam projects as one of the top ten environmental problems facing Korea in 1997. "The government has revealed plans to build 34 more dams in Korea by 2011," the spring 1998 issue states. "The Auraji River has first quality water and is the only river in Korea where an intact, healthy ecosystem survives. Nonetheless, plans exist to dam the river Construction is scheduled to begin in early 1998."

[News Briefs](#)

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1847 Berkeley Way  
Berkeley, CA 94703 USA  
phone (510) 848-1155  
fax (510) 848-1008  
email: [irn@irn.org](mailto:irn@irn.org)

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