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Photo: Lori Pottinger

*Katse Dam (shown here under construction in 1996) was feared to be targeted for sabotage during the recent conflict.*

## 17 Killed at Katse Dam

by Lori Pottinger

**I**n the early morning hours of September 22, South African troops staged a surprise invasion of Lesotho to quell growing anti-government protests which threatened to become a coup. The military action set off eight days of violence that left the poverty-stricken nation in chaos and its capital in ruins. In addition to dozens of casualties and extensive property damage in the capital city of Maseru, 17 people were killed at Katse Dam, which was apparently feared to be a target for sabotage.

Although the invasion was ostensibly about preventing a coup, many news sources stated that protecting the Lesotho Highlands Water Project (LHWP) was an important factor behind the order by President Nelson Mandela's deputy-in-charge to send troops, tanks and helicopters into Lesotho (Mandela was out of the country at the time). The US\$8 billion water project, of which the 185-meter-high Katse is the first of five large dams to be

completed, is a huge scheme to pipe water to South Africa's industrial heartland.

An eyewitness near the dam said South African troops "arrived at Katse in six helicopters at the same time they invaded Maseru. The rumor was that Lesotho soldiers there were planning to blow up the dam." In the days following, South African troops lined the road to the dam, and soldiers went village to village searching for arms.

The cost of the destruction in Lesotho was estimated to be about one billion Rand, and the cost to South Africa for the 8-day invasion was R25 million. (One Rand is worth about 17 cents US). "This is the greatest crisis Lesotho has had to face," said Prince Seeiso Bereng Seeiso, the younger brother of Lesotho's king. "Lesotho has not got a large economic base. It has been absolutely shattered," he added.

Amnesty International visited Lesotho in October to investigate human rights

*continued on page 14*

A

new book warns that a better approach to water-resources management will be needed if we are to avoid widespread global water conflicts in coming years. "The very nature of water management is changing quite dramatically from the last century, when the stress was on building large dams and irrigation systems," says Peter Gleick, author of *The World's Water 1998-1999: Biennial Report of Freshwater Resources* (see page 11 for a review).

A necessary requirement to averting water conflicts will be to make every drop of water go farther: not just in terms of conserving water, but in the number of people who have adequate water supply. Unfortunately, change is coming slowly to institutions like the World Bank, the world's most influential development agency and a major funder of large dams and water projects.

In June, the World Bank approved a second loan for the Lesotho Highlands Water Project (LHWP), a multi-billion-dollar water transfer scheme that will pipe Lesotho's water to South Africa's industrial heartland. The Bank loan was pushed through despite calls from South African citizens to delay the remainder of the project while water conservation efforts were expanded. The controversial project, which began sending Lesotho's water to South Africa in January, recently helped unleash what a South African ecologist calls "the first water war" in the arid region.

The September invasion of Lesotho by South African troops (see cover story) has all the earmarks of a water conflict. Although ostensibly about restoring order in the face of a coup, a major factor behind the military intervention was protecting the LHWP's Katse Dam — South Africa's largest investment in the region. When the shooting was over, 17 Lesotho soldiers had been killed near Katse. A recent news story in the South African newspaper *The Star* states that "protection of the dam and its pipeline supplying [the region] with water was a top priority of the occupation force."

The project has been fraught with social problems from the beginning. Local people have lost their fields, access to water sources and often their homes. Schemes to compensate them for their losses have been essentially unable to make things right. The boom brought about by the massive construction works has not benefitted the majority of Lesotho's impoverished people. And while water experts expect Lesotho itself to be plagued by severe water shortages in the not-too-distant future, the LHWP's huge reservoirs will be just a cruel taunt when drier days come, as its waters do not belong to Lesotho.

Will the project at least meet the needs of South Africa's poor black population, which continues to suffer from a highly inequitable water distribution system dating from the days of apartheid? The biggest obstacle to providing South Africa's poor with water is not so much a question of supply, but of water equity, and allocating the money to pay for the infrastructure to pipe it to the townships. The Lesotho project, however, has led to a near doubling of water prices in South Africa's most populous region, putting water even more out of reach for the poor.

Who then are the beneficiaries of this project? An industry award ceremony may shed some light on this question. The Concrete Society of Southern Africa recently recognized the project for its "exemplary and excellent use of concrete." At the awards ceremony, Makase Marumo, the head of the Lesotho agency in charge of the project, called Katse Dam a "standing symbol of partnership between the project sponsors and the construction fraternity."

The World Bank is a key member of this fraternity. Its loans have been crucial in securing the financial backing from other sources which have made the Lesotho project possible. It has allowed construction to continue while longstanding compensation problems linger. It has pressed for moving new phases forward despite the availability of better alternatives.

The Bank's recent lending for water projects reveals a disturbing slowness to adapt to the world's growing emphasis on sustainable water management. In the past few years, nearly half of its water sector loans have been for large-scale infrastructure projects, while alternatives such as small-scale irrigation, watershed management and water conservation remain a tiny slice of the pie (less than 6 percent since 1996, up from 2.4 percent in the decade ending 1990). This prejudice toward big infrastructure projects promotes unsustainable, inequitable water management — the perfect setting for future water wars. The World Bank urgently needs to reverse its approach to water management to one that will help avert rather than worsen the world's growing water crisis.

Korinna Horta and Lori Pottinger

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# Japanese Activists Gear Up for Another Dam Fight

by Susanne Wong

**F**lowing 200 kilometers across the island of Shikoku, the Yoshino River starts as a mountain stream, falls into powerful rapids and ends in a lush tidal wetland near the city of Tokushima. These river wetlands, home to numerous animals and several endangered species, are currently threatened by the construction of the US\$900 million Yoshino River Dam, which was approved by a government-appointed committee in July despite opposition from local residents.

"The newly approved dam will be an ecological disaster and a textbook example of wasted tax money," warns the Yoshino River Symposium, one of more than 20 local groups in Tokushima working to mobilize citizens to fight the project. In one month, the symposium collected nearly one thousand electronic messages from local and international supporters as part of its campaign to gather one million messages of opposition to the dam. On October 24, more than two thousand people gathered at the river for a two-day rally to protest the dam and celebrate the river. Participants listened to stories from noted performers and activists, including 1998 Goldman Environmental Prize winner Hirofumi Yamashita, who is leading another dam fight.

The 700-meter-wide dam was voted one of the "top 10 wasteful public works projects" in Japan last year by a group of prominent scholars and journalists. The new dam will replace a nearly 250-year-old stone weir. "The existing weir attests to the foresightedness and ingenuity of riverside residents in past ages," according to a statement by the Yoshino River Symposium. "It is a simple and effective structure that has become a part of the river's ecosystem, working with nature while fulfilling its function for the benefit of people."

Planned for construction 13 kilometers upstream from the river's mouth, the new dam will destroy an internationally recognized tidal wetland and habitat for many rare and endangered species. The Yoshino River houses the largest variety of fish species in Japan. The tidal flats provide habitat for the country's second-largest variety of insect species and provide a crucial stopover for migratory shorebirds on their journey between Russia and Australia. So far, 153 species of wild birds, such as the peregrine falcon and osprey, have been sighted in the wetlands, which was designated as an "East

Asia/Australasia Shorebird Network Site" in 1996. Construction of the dam would destroy this delicate habitat and trivialize Japan's international commitment to the protection and wise use of wetlands under the Ramsar Convention on Wetlands.

In light of the government's dismissal of the dam's potential impacts, local citizens established the "Group to Demand a Referendum on the Rivermouth Dam." Within a few weeks, nearly 8,000 volunteers and 220 stores signed up to gather signatures to force the municipal assembly to vote on whether or not to hold a referendum.

## Government Supports Project

The growing movement to fight the dam is already facing significant resistance from the government. In Tokushima, the municipal and prefectural assemblies have passed resolutions supporting the national Ministry of Construction's dam plan. The governor of the prefecture and mayor of Tokushima continue to assert that citizen opinion has been sufficiently taken into account and that a referendum "may not necessarily be needed." Evidence points to the contrary. According to an Asahi Shimbun newspaper poll taken in July, 44 percent of Tokushima prefecture residents oppose the dam and only 26 percent are in favor. The poll also found that 71 percent think the decision of whether to build the dam should ultimately be decided by "Tokushima residents themselves," while only 16 percent believe the decision should be made by the government. "Why don't you ask us about the river? We have lived with it and have better knowledge than you," said one farmer.

Even if the initiative to gather signatures for the referendum is successful, groups in Japan face major struggles to make sure that politicians listen to the will of the people. Local governments have often failed to schedule referendums despite widespread citizen support for a vote. Out of 33 citizen campaigns calling for referendums between 1995 and 1998, only eight have actually been held. If the referendum is approved, it would mark the first time a referendum on a dam issue was placed on the ballot in Japan.

The Yoshino River Dam is a replica of a highly controversial dam built on the Nagara River's mouth near Nagoya City. The Nagara River Estuary Dam was widely opposed and sparked a process of re-evaluating the nation's river management system.

As a result of these efforts, the Ministry of Construction revised river legislation for the first time in 100 years and canceled or suspended 18 dam projects throughout Japan in 1997. Still, there are plans to build 570 dams, more than half as many dams as were built from 1956 to 1988, when Japanese dam building was at its height.

Most dam projects now scheduled were originally planned in the 1960s, when Japan's economy was booming and industrial water demand was at a peak. However, today's economy in Japan is quite different and recognition of problems associated with dams is widespread. In spite of this, dam building continues due to the lack of an informed and participative decision-making process, the use of public works to stimulate economic growth, and lucrative ties between politicians, bureaucrats and industry. As a result of public pressure, the Ministry of Construction has been forced to make changes on issues of transparency, public participation and environmental assessment, though NGOs say the changes made are unsatisfactory. The renewed push to build the Yoshino River Dam reflects that additional reform is still needed. ■

## What you can do

Send a message expressing your opposition to the Yoshino River Dam project to the Yoshino River Symposium; it will be delivered to the appropriate government agencies.

Fax: 81-886-26-1480 (From overseas)

E-mail: [daiju@mandala.ne.jp](mailto:daiju@mandala.ne.jp)

Post mail: 4-3-201 Yoshino River Symposium Office, Minami Maegawa-cho, Tokushima City Tokushima Prefecture, 770-0808, Japan

For more information on the Yoshino River, please refer to the Yoshino River Symposium's web page with entries in both English and Japanese at: <http://yoshinogawa.mandala.ne.jp/>

For more information about wasteful public works and other environmental issues in Japan, please see Japan Environment Monitor's web page at: <http://www.yin.or.jp/user/rdavis/>

## Second Dam Demolished for Salmon

by Roberto Epple

**T**he Vienne River, the second most important tributary of the Loire River, is flowing freely again in the area where it had been blocked by the four-meter-high Maisons-Rouges Dam. Salmon and other migratory fish such as eels and shad are now able to swim upriver and reach their former spawning grounds, which represents a fifth of the whole Loire basin.

The destruction of the right part of the dam, which was finished in mid-September, allowed the reservoir to empty and the river to flow freely again. The demolition of the rest of the dam – its left section, consisting of various ineffective fishladders and the hydroelectric plant – will be finished by year's end. At the end of September, a program for the restoration of the riverbanks was launched, which required 45,000 cubic meters of backfill and 7,500 tons of rocks. This will be followed by major plantings to restore the banks' natural character.

The works, amounting to FF10 million (about \$1.6 million), have been supervised by the French state-owned electricity utility EDF, as was the case with the demolition of the 18-meter-high Saint-Etienne-du-Vigan dam (see *WRR*, August 1998).

At the end of the 19th century, salmon had about 800 hectares of spawning grounds on the Vienne basin. The 365-km-long Vienne has tributaries which are ideal for salmon. An important salmon restoration program was launched on one tributary in 1975, but it has been largely unsuccessful because of the ineffectiveness of the Maisons-Rouges fishladders.

The demolition of the Maisons-Rouges Dam, together with that of the Saint-Etienne-du-Vigan Dam, the construction of an efficient fishladder on yet another dam in the watershed, and the efforts undertaken to improve other small obstacles to salmon migration indicate the program to save the Loire and Allier salmon is under way. However, the species will be saved only when

the salmon hatchery planned for the Upper Allier, which is several years late, is completed. In 1997, only 389 salmon were counted on the middle Allier River, the sole tributary of the Loire where salmon still returned to spawn before Maisons-Rouges was destroyed. ■

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## Salmon Return to the Elbe River After 50 Years

by Roberto Epple

**H**alf a century after the last salmon disappeared from the Elbe River, about 30 salmon measuring between 60 and 70 centimeters were seen on a tributary of the river between Dresden and the Czech frontier in late October. The inhabitants of the village of Rathmannsdorf noticed the fish below a small weir, on a stream with the fitting name Lachsbach, which means "The salmon's stream."

Researchers confirmed that the fish were indeed salmon which had been released in the Elbe since 1996 as part of the "Elbe-Salmon 2000" program. The salmon came back near the area where they had been released, about 10 km from the salmon hatchery where they were bred. Initiated by the Saxonian state's Agency for Agriculture and Fisheries, and supported by the "Living Elbe" coordination, the Elbe-Salmon 2000 program began in 1995 using eggs from wild Swedish stocks. The salmon experts based their work on the hypothesis that Elbe

salmon were genetically closer to Baltic salmon stock – which can live in rivers prone to freezing – than to Loire and Allier salmon. In 1996, the first juveniles were released, and then began their long journey to the open sea off the shores of Greenland in the North Atlantic.

This first success demonstrates that one needs only a few things to have salmon back on a river: no or few dams and a fairly clean river! The main course of the Elbe has indeed only one dam between the mouth of the river which has been equipped with an efficient fishladder. As for water quality, it improved spectacularly since Germany's reunification in 1989. In the post-war era, the Elbe was turned into a sewer with the construction of huge industrial chemical factories and was the most polluted river in Europe. Since then, about 70 purification plants have been built.

Key to the successful reintroduction of salmon was mustering the political will to make the fisheries' comeback a priority.

Now it must be made a permanent success. The next step will be to see if salmon reproduce naturally in the Lachsbach. If they do, it is possible that the natural cycle has resumed and that there is hope that a healthy salmon population will settle back in the Elbe basin for the long term.

The goals are now to continue improving water quality and reintroduce salmon in other tributaries in Germany and the Czech Republic, notably in the Saxonian Switzerland National Park. This will entail the decommissioning of small or medium dams which keep salmon from migrating up many streams and sterilize hundreds of hectares of spawning grounds. Following the example of the demolition of the Saint-Etienne-du-Vigan and Maisons-Rouges dams on the Loire basin in France, the Saxonian state's Agency for Agriculture and Fisheries and the Living Elbe campaign have already asked that some dams be dismantled to open up their ancient spawning grounds to salmon. ■

# Undamming the Snake River to Free Salmon

by Owen Lammers

The US Army Corps of Engineers, one of the world's most prolific dam building agencies, may soon become an advocate for the most aggressive dam-decommissioning program ever. The breaching of four major dams on the Snake River in Washington state is emerging as the most viable alternative in a Corps-led process to determine the best strategy for restoring Columbia River Basin salmon runs.

For thousands of years, millions of salmon and steelhead navigated the Snake and Columbia Rivers in the Northwestern United States. The salmon runs were so plentiful at times that it was said one could cross the river on the backs of the salmon, which could each exceed 100 pounds in weight.

Today, this treasure is all but lost. In the past 30 years alone, the last of these stocks have declined from 150,000 fish annually to little more than 10,000. Snake River coho salmon are now extinct, sockeye can be counted on a few fingers, and Snake River chinook and steelhead are now listed as endangered species.

Almost since the first dam was built in the Columbia River Basin, biologists warned of their impact on fish. Now the remaining Snake River salmon must navigate eight dams from their hatching grounds in the Idaho wilderness down 900 miles to the Pacific Ocean and back again two years later to spawn. Although up to 90 percent of the salmon returning from the Pacific manage to climb the fish ladders over the dams to reach their spawning grounds, the same is not true for the young fish swimming downstream to the sea. The reservoirs' warm slack water and non-native predators, along with the deadly

turbines in the dams, kill more than 80 percent of all young salmon before they reach the ocean.

## Costly Fixes Fail

Over the past ten years, \$1.7 billion has been invested in salmon recovery efforts in the Columbia Basin, more than for any other endangered species in the nation. Young salmon have been sucked from the river near the dams and put on trucks and barges to transport them hundreds of miles past the dams. Multi-million-dollar dam-by-pass systems have been constructed and investments in hatcheries made, but the decline in wild salmon continues.

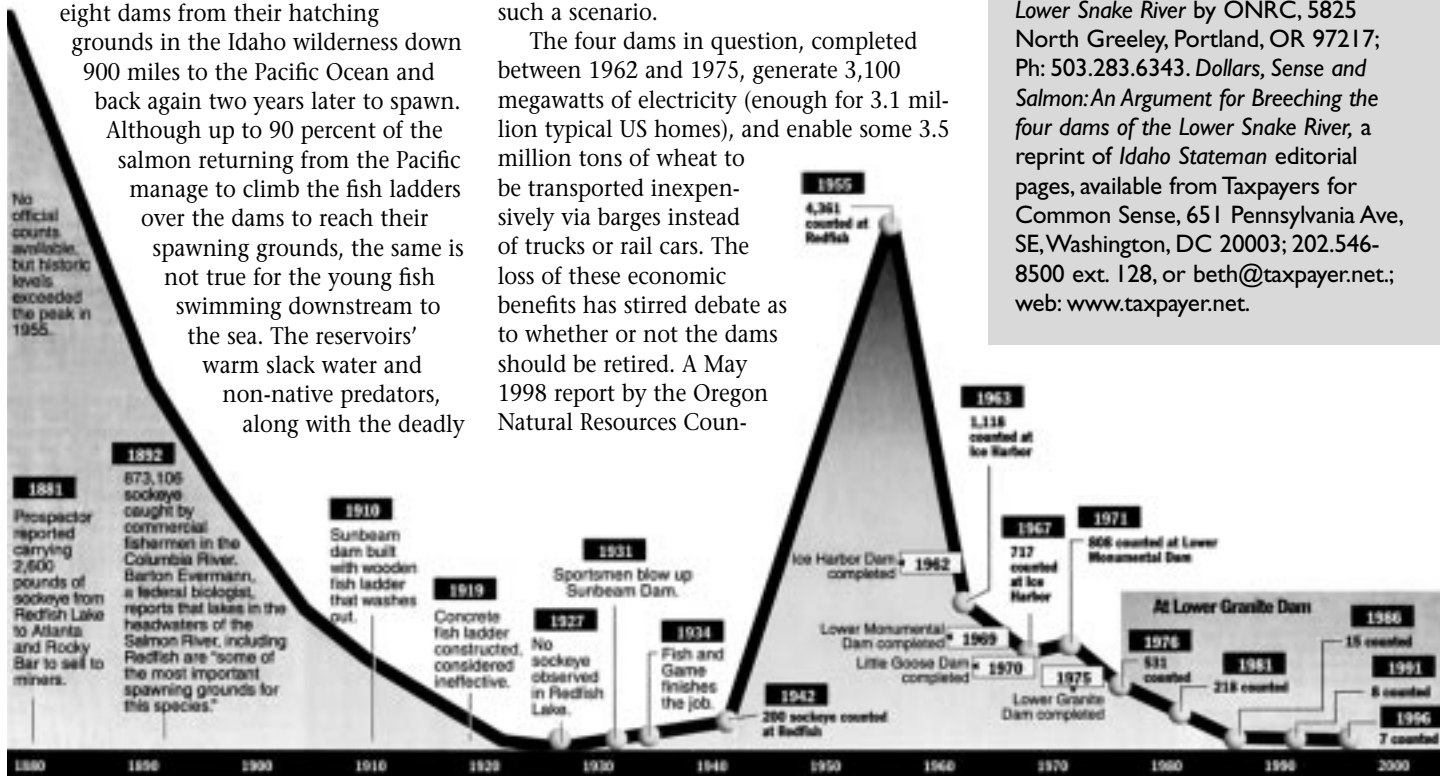
In 1996, the Army Corps of Engineers commissioned a report to identify what else might be done to revive the rivers' salmon populations. The report's author, an affiliate of the dam-building giant Harza Engineering, concluded that removing four dams across the lower Snake River would indeed be the surest way to help the endangered salmon. The findings corroborated the conclusions of another study earlier that year by independent scientists for the Northwest Power Planning Council. For the past two years the Corps has been engaged in an exhaustive process to assess the viability of such a scenario.

The four dams in question, completed between 1962 and 1975, generate 3,100 megawatts of electricity (enough for 3.1 million typical US homes), and enable some 3.5 million tons of wheat to be transported inexpensively via barges instead of trucks or rail cars. The loss of these economic benefits has stirred debate as to whether or not the dams should be retired. A May 1998 report by the Oregon Natural Resources Coun-

cil notes that the dams' power production is not competitive, and that all of the dams' benefits are subsidized by taxpayers.

The region would realize a net gain of between \$87 million and \$183 million annually if the dams were removed, according to two different reports on the issue (see box below). Savings accrue from ending subsidies for salmon recovery programs, as well as ongoing maintenance costs for the four dams, which are expected to rise dramatically in the next century. The figure also calculates benefits to local economies from recovered fisheries.

The ONRC report argues that since upwards of \$164 million annually will still need to be spent to keep the salmon from going extinct, the net economic gains of a thriving salmon fishery far outweigh the benefits of river transportation and energy revenues. A few independent economists have been somewhat critical of these findings, but most seem to be waiting to review the results of the current US Army Corps process, scheduled to be completed before the year 2000. ■



**For more information, these two publications are helpful:** *Restoring the Lower Snake River* by ONRC, 5825 North Greeley, Portland, OR 97217; Ph: 503.283.6343. *Dollars, Sense and Salmon: An Argument for Breaching the four dams of the Lower Snake River*, a reprint of *Idaho Stateman* editorial pages, available from Taxpayers for Common Sense, 651 Pennsylvania Ave, SE, Washington, DC 20003; 202.546-8500 ext. 128, or beth@taxpayer.net.; web: www.taxpayer.net.

Graphic: The Idaho Statesman

# Colombia Dam Drowns Rainforest, Fisheries

by Monti Aguirre

**F**ishermen affected by the Urra I Dam in northwestern Colombia took their protests against the Urra I Dam to the capital city on November 11, carrying a canoe from Bolívar Plaza to the Ministry of the Environment in Bogotá. The march was organized by the National Committee for the Defense of Urra Communities to call attention to the environmental and social impacts now being caused by the dam, which is partially constructed.

The 73-meter-high, 1,300-meter-wide Urra I Dam is located on the Sinú River in the tropical rainforests of the Sinú region. The cost of the project is estimated at US\$646 million, and is coming from a mix of state and foreign investors, including Norway's Nordisk Investment Bank, the Canadian Export Development Corporation, and Nordbanken. The 340-MW project is expected to contribute three percent to Colombia's energy system.

Urra I will flood 7,400 hectares. It is part of a larger hydroelectric development project which entails the construction of a second dam, Urra II, whose reservoir will flood an additional 75,000 hectares. The overall project's impacts include the loss of 82,400 hectares of tropical rain forest, and the total flooding of the Embera indigenous people's area.

Additional impacts include diminishing fish populations, loss of aquatic biodiversity and other changes to ecosystems downstream of the dam. The social impacts include increased unemployment and dete-

riorating quality of life for fishers (local people say there has been an 80 percent drop in the catch during project construction). Many people in the region are dependent on the river for fish, which is a primary source of low-cost protein, and for transportation.

Construction on Urra I was scheduled to be completed in mid-1998, but is on hold awaiting a ruling by the Constitutional Court, which was considering a claim against the project submitted by the indigenous Embera people. The accusations entailed violations of their fundamental rights, such as the right to life, to be culturally different and autonomous. A second claim was submitted by the Ombudsman of the People on behalf of ASPROCIG, an association of fishermen in the Superior Court of Montería. Both claims had previously been negated in lower courts, which claimed that local people's rights had not been violated.

On November 10, the Constitutional Court declared that the Urra I Hydroelectric project could only continue construction after getting an environmental license, according to Bogotá newspapers. The court also declared that indigenous people should be compensated, that local authorities should be consulted, that a health plan should be put into effect, among other mitigation plans.

The Constitutional Court also gave orders to the project's construction company, the ministries of the Environment and of the Interior, and to the National Institute of Agrarian Reform to create development pro-

grams for affected people for the medium- and long-range future. These plans are to be executed within a period of 20 years. Such programs have failed to restore incomes for dam-affected people nearly everywhere they have been tried elsewhere around the world.

Several people have been murdered in association with the construction of the project. A professor at the Córdoba University, Dr. Alberto Alzate Patiño, known for his opposition to the project and for pushing project authorities to hold the first environmental public hearing on the project, was murdered in 1996. Others who oppose the project have received continuous threats, which resulted in a lack of participation at the June 1998 public hearing. In August, Alonso Dominico Jarupía, an Embera leader, was found murdered, and others from his community have received serious threats. ■

## Death Threats in Brazil

Brazil's Indigenist Missionary Council (CIMI) of the Catholic Church says that its missionaries have received death threats after organizing a public debate on the Lajeado Dam in October. CIMI is concerned about the potential impacts of the Tocantins River dam on a Xerente indigenous community only 12 km. downstream from the worksite, and say that critical aspects regarding the hydroelectric project have been withheld from the public.

# Budget Cut for Itaparica Resettlement

by Glenn Switkes

**E**arlier this year, the Brazilian government cut US\$60 million from the resettlement program for Itaparica Dam – a reduction of more than 40 percent of the program's total budget. With this act the government breaks its commitment to assign adequate resources to resolve the problems of resettlers, who have never received promised irrigation water from the World Bank-funded project. The budget cut was announced even before Brazil's recent agreement for IMF emergency

loans mandated additional reductions in national and state budgets.

Some 1,776 families will be directly affected by the reduced resettlement budget. The Central Union of the Lower and Middle São Francisco has led the fight to get irrigation water for affected families. More than half of the affected families have waited for more than a decade since the dam was built in Brazil's semi-arid northeastern region, and now it appears they will be waiting even longer – if they ever get irrigation water at all.

In March 1997, affected people took their complaints to the World Bank's Inspection Panel, the independent body that investigates affected people's grievances on Bank-funded projects. In September, the Bank's Executive Directors narrowly voted against authorizing an investigation into Itaparica after the Brazilian government assured them that swift and decisive action would be taken to complete the resettlement program. Now, it appears that these

*continued opposite*

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# Hurricane Mitch Tragedy Threatened Honduras' Largest Dam

by Monti Aguirre

**T**orrential rains brought by Hurricane Mitch devastated Central America in October, taking approximately 25,000 lives and leaving over two million people homeless in a region already stricken by poverty. The rains also threatened the stability of El Cajón Dam, Honduras' largest hydro-electric project.

On October 31, the manager of the National Electric Energy Company (ENEE) called for the evacuation of people living downstream from the El Cajón dam site on the Humuya River as well as elsewhere in the Valle de Sula watershed.

El Cajón, completed in 1984 and built to generate 300 megawatts, is Honduras' main source of electricity. In 1991 it supplied 70 percent of Honduras' total electricity generation. In following years, droughts lowered water levels, causing the dam to function well below capacity.

During the four days of the storm, the water level in the dam's reservoir had risen 25 meters, to a height two meters above capacity. Leonardo Deras, the engineer in charge at the dam, said that after the evacuation ENEE released 500 cubic meters per second from the reservoir, which Deras termed "a relatively low discharge. The populations downstream were frightened, because they did not understand that the quantity of water released did not pose a threat."

About 1,000 families live downstream of the dam on farms and isolated settlements. Some of the valley's inhabitants used to live in prime agricultural lands now flooded by the dam's reservoir. When the hurricane subsided, hundreds of bodies were found floating in the reservoir, carried from upstream areas by the hurricane-induced flooding. Recovering the bodies has been difficult due to the many trees and other debris in the reservoir.

## Sedimentation Increases

Hurricane Mitch may have lasting impacts on El Cajón. Deforested areas in the watershed of the Humuya and Yure Rivers washed enormous amounts of sediment into the reservoir, which will further diminish El Cajón's storage capacity. Deforestation has been described as a major factor in the disaster, with mudslides and floods heavily concentrated in areas of extensive deforestation. "The hurricane was a natural disaster, but it was worsened by the action of man's deforestation," said Dr. Carlos Medina, a physician and biologist who served as the country's first environmental minister from 1992 to 1996.

In recent years, Honduras has lost about 225,000 acres of forests per year to deforestation. Cattle ranching, timber extraction, colonization and forest fires are the main causes of deforestation in Honduras. Speaking out

against deforestation led to the murder of environmental activist Carlos Luna, who was gunned down in front of his family in the small town of Catacamas, according to a November 11 *Boston Globe* report. Luna had decried logging in what is supposed to be an ecological "buffer zone" in the mountains outside of the capital.

Hurricane losses in Honduras, the second poorest country in the Western Hemisphere after Haiti, are being estimated at \$2 billion, and nearly 70 percent of the agricultural sector has been devastated. Honduras has an external debt of \$4.1 billion, with an unstable economy dependent on the export of coffee and bananas. NGOs in the United States have called for cancellation of Honduras' external debt. Temporary measures, such as re-scheduling the debt or a temporary moratorium would only prolong the economic instability of Honduras and neighboring Nicaragua, also hard hit by the hurricane. Some countries have already canceled all debts and others have pledged partial relief. ■

**For more information** on how to help indigenous communities affected by the hurricane, send an email to [monti@irn.org](mailto:monti@irn.org).

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## Itaparica continued from page 6

promises, and the subsequent establishment of an Executive Group for the Conclusion of the Itaparica Resettlements (GERPI), was merely a smoke-screen to keep the Inspection Panel from investigating the failure of the Brazilian government and the Bank to adhere to commitments they made in the loan agreement.

The budget cuts brought angry criticisms from nongovernmental organizations which are following the Itaparica controversy. According to Aurelio Vianna of the Brazilian Network on Multilateral Financial Institutions (Rede Brasil), "Almost ten years after the compulsory displacement of more

than 40,000 people, the actual social conditions for a meaningful part of the beneficiary population are worse than before the construction of the dam. After two loans totaling \$232 million, only 35 percent of the irrigation projects are fully implemented."

The Brazilian Movement of Dam-Affected People (MAB) wrote the World Bank in October to demand immediate action on the budget cut. The group's letter states, "The Brazilian government made a commitment to budget moneys to conclude the Itaparica resettlements. Only after mobilizations by dam-affected people (3,000 people

took over the dam site in March 1998) did the government pledge \$145 million for this purpose. Despite this fact ... GERPI has not taken any further actions ... This situation is unbearable. We want the commitments that were made as a result of the claim brought before the World Bank Inspection Panel to be honored."

MAB has requested the Inspection Panel to visit the Itaparica resettlement communities so that they may evaluate the situation and work with resettled populations to resolve these problems. At press time, MAB said it had not yet received a reply from the Bank on these issues. ■

# Harvesting the Monsoon

## Small Dams Make a Big Difference in the Lives of Indian Farmers

by Patrick McCully

“Now that we have more water our lives are much better,” says Sakarben, a strikingly dignified Rabari woman in her early 40s. The Rabaris – traditionally cattle herders but now mostly farmers – live in the semi-arid plains of Saurashtra, the broad stump of a peninsula jutting from the northwestern coast of India. Before three small dams were built across a nearby *nala* or seasonal stream, Sakarben and the other women in her family had been forced to sell their gold jewelry, then leave Saurashtra to work as diamond polishers in Surat, one of the industrial centers of Gujarat state. But now, although there is still plenty of hardship in their lives, Sakarben’s family can make a living from their own crops and animals, which can be supplemented as necessary with income from working on neighboring farms.

The technology that improved Sakarben’s life is very simple, relatively cheap to build, and easy to maintain. It consists of a well and three small earth embankments, the longest roughly 50 feet across and five feet high. Each of these so-called “nala plugs” impounds a small pond during the monsoon, which in Saurashtra occurs from June to September. After the monsoon, the pond gradually recedes. This year there was a lot of late-monsoon rain so Sakarben and her husband Nanabhajai think the water may last until March.

The main benefit from the nala plugs, however, is not the surface water in which women can wash clothes, children can



Herder from Vartoda village in front of a nala-plug pond.

Photo: Patrick McCully

splash and water buffalo can wallow, but the water seeps into the ground. Saurashtra, like much of the rest of India, is suffering from a groundwater crisis. Throughout the region, groundwater levels are plummeting, putting well water out of reach of those who cannot afford electric or diesel pumps. In the worst affected areas, farmland and even whole villages are being abandoned. Two-thirds of the villages in Gujarat now have no permanent, reliable source of water, mainly because of the over-exploitation of groundwater. In coastal areas, sinking water tables allows salt water to seep into aquifers. Nearly half the hand pumps in coastal areas of Gujarat were reported in 1986 to be yielding salty water.

Modern electrical or diesel-powered tubewells can draw water far faster and from far deeper than traditional dug wells. All over India, better-off farmers have taken advantage of government subsidies to install and operate tubewells, which raises their crop yields but has catastrophic impacts on groundwater levels and the livelihoods of their poorer dug-well-dependent neighbors. Eventually even tubewells become useless as aquifers are pumped dry or become saline.

Before the nala plugs were built, Sakarben had to walk to nearby villages to fetch water, and her crops were dependent on the always unreliable monsoon. A failed monsoon would mean a failed crop and destitution for her family. Today, the newly built well near her home provides easy access to water year

round for her crops of corn, sorghum, lentils, tomatoes and chilies, her three precious cattle, and the sheep and goats she somewhat dismissively refers to as “smaller stuff.” (Until a few decades ago Rabari families would often have owned hundreds of cattle, but the enclosure of common grazing lands and soil erosion have largely destroyed this basis of the region’s pastoral economy.) Five other families also benefit from the groundwater recharge provided by the three nala plugs.

Sakarben lives near the market town of Savarkundla, which is the home base of the Kundla Taluka Gram Seva Mandal (Kundla County Villages Service Center), a Gandhian nongovernmental organization whose work in the area dates back to the 1930s. The Service Center started working on water issues in 1995 in response to the crisis caused by the over-exploitation of groundwater in the area. Since then they have built more than 1,000 nala plugs, and a number of check dams (slightly larger concrete versions of nala plugs) and percolation tanks (larger again) in around 35 villages.

Manubhai Mehta, a 60-year-old Gandhian dressed in the all-white cotton jodhpurs and long tunics typically worn by Saurashtrian men, heads the Center’s Water Resources Development Project. “When we started work,” he says, “water tables had dropped to around 50 or 60 feet, and in one village to 300 feet. Some of the wells were totally dry. The villages were suffering very bad short-



Sakarben draws water from her well.

Photo: Patrick McCully



ages of water for drinking and irrigation in the winter and people were walking long distances to fetch water."

Manubhai says that villagers first decide where a water harvesting structure should be built, then an engineer from the Service Center visits to discuss their plans and decide which type of structure would be most appropriate for their site and needs. The engineer then prepares design plans and a cost estimate. The villagers themselves provide the materials and build the structure with supervision from the engineer. Seventy-five to 80 percent of the cost of the structures is paid for by the Service Center (which is government-funded), with the remainder and all costs of upkeep borne by the beneficiary villagers. The villagers are encouraged by the Service Center to set up user groups to deal with maintenance and other management issues. Every full moon Service Center staff and farmers meet in a different village to discuss issues related to water harvesting, an important forum for passing on the idea to new villages.

### **By the People, For the People**

According to Manubhai, the success of the Service Center's project contrasts sharply with government-built water harvesting structures in the region – almost all of which have been washed out and abandoned. The small nala plugs are simple structures which can easily be eroded away if they are overtopped during floods. But where user groups are formed and have responsibility for maintaining the structures which benefit them, washed out plugs are soon repaired.

"Our dams are built by the people and for the people, not for the state," Manubhai says, "so the people maintain them."

Manubhai says that when they reported the results of the first three years of their project, government officials refused to believe that so many structures could have been built with the 35 million rupees (approximately \$830,000) spent to date.

The Service Center claims that this investment has resulted in an annual increase in income for farmers in the beneficiary villages of around 73.5 million rupees. While most of Saurashtra suffered acute drinking water shortages in the summer months before this year's monsoon, Manubhai says that only one of the villages where the Water Resources Development Project is working required water to be brought in by tanker.

Twenty-one earthen nala plugs and two concrete check dams have been built across nalas on land belonging to the village of Vartoda. One of these nalas had not contained water for around ten years. This year the water

collected during the monsoon is expected to last until January. Well recharge has enabled one local farmer to increase his irrigated land from less than two to eight acres. In one nearby well the water level has risen from 65 feet below the ground to just five feet.

In Bhagada village, wells are being recharged by 61 nala plugs and 17 check dams. A village committee decides where the next structure should be built and a user group is then established for each structure. Nathabhai Lavabhai Kolathia, head of the Bhagada committee, grows cotton, groundnuts, millet and oilseeds on his eight acres. He says that his yields have doubled in the three years since a six foot high concrete check dam was built nearby. The dam has recharged eight nearby wells, and has also helped vegetation grow along the side of the nala which will provide villagers with fuelwood and fodder. The dam cost 105,000 rupees (\$2,500), a quarter of which was provided by the user group in materials and labor. "The increased production has lifted the need for labor in the village and daily wages have risen from 25 to 60 rupees," says Nathabhai. "Another improvement is that there is now farm work outside the monsoon."

The Service Center works to prevent the benefits of the structures from being monopolized by wealthier farmers by discouraging direct withdrawals from the impoundments. The water is only supposed to be used to recharge groundwater from wells, thereby ensuring that the beneficiaries are decided more by local geology and topography than by wealth. "Equal distribution and no privatization' is one of our slogans," says Manubhai.

hai Mehta. Another is "water in the farm should stay in the farm, soil from the farm should stay in the farm," which means that topsoil which would otherwise be carried off by monsoon floods is trapped behind the small dams and then spread out over fields during the dry season, a practice which helps maintain the storage capacity of the ponds and provides rich soil for the farmers.

The nala plugs and check dams being built by the Savarkunda Service Center are a new technology to nearby villages, but are based on ancient practices that are now undergoing a revival as villagers all over India grow disenchanted with large-scale government water projects. In state after state, NGOs are trying to resuscitate traditional water harvesting systems which have been almost totally neglected by India's water managers, who favor tubewells and big dams. A 1997 report from the New Delhi-based Centre for Science and Environment, *Dying Wisdom: Rise, Fall and Potential of India's Traditional Water Harvesting Systems*, documents the incredible diversity of these systems around the Indian sub-continent. The report reveals that water harvesting is nothing new to Saurashtra – ancient rubble dams found in the same district as Savarkunda are thought to have been used for trapping water and silt five thousand years ago. ■

*For more information on Dying Wisdom, the recent report on traditional water harvesting methods, contact Centre for Science and Environment, 41 Tughlakabad Institutional Area, New Delhi 110 062 India. Ph: 91.11.698.6399; Fax: 91.11.698.5879; email: cse@sdalt.ernet.in.*

## **Big Water Projects Drown Out Small Schemes**

The Service Center's work is just one of numerous successful NGO-run water harvesting initiatives bringing hope to drought-prone parts of Gujarat. Gujarati engineer Ashvin Shah calculates that the widespread implementation of small-scale water-harvesting schemes in Gujarat could easily collect a fifth of the rain which falls on the state, an amount 50 percent higher than the water supposed to be delivered by the state's notorious Sardar Sarovar Dam. Shah believes that water harvesting and the use of water from existing reservoirs could help solve Gujarat's water crisis far more quickly and cheaply than Sardar Sarovar, and unlike Sardar Sarovar, could help reverse the growing gap between rich and poor farmers in the state.

Unfortunately the Government of Gujarat is not listening to creative voices such as Shah's, but is instead hell-bent on building its big prestige dam project, regardless of its overall costs and impacts. Sardar Sarovar is justified to the Gujarati populace because of the water it will supposedly deliver to needy villages in Saurashtra and neighboring Kutch. But the main reason for the dam is clearly to increase water deliveries to relatively wealthy central Gujarat to supply industries and enable large farmers to switch to water-intensive, high profit crops such as sugar cane. While hundreds of millions of dollars have already been poured into Sardar Sarovar, funds for small-scale irrigation schemes in the state have been cut to a trickle.

# World Bank's Record on Resettlement Remains Troublesome

by Lori Pottinger

A recent report by the World Bank's Operations Evaluation Department (OED) – which reviews the Bank's record on complying with its own directives – paints a gloomy picture of the Bank's resettlement record for large dams. The report, *Recent Experience with Involuntary Resettlement* (June 1998), provides a detailed analysis of the resettlement record of eight dam projects approved between 1984-91 in six countries.

Surprisingly, despite the report's acknowledgment of major problems with the Bank's resettlement record, the OED recommends that its compensation policy be fundamentally weakened by de-emphasizing the current policy of offering replacement land to displaced farmers.

The OED authors' findings reveal a history of stubbornly repeated shortcomings with Bank-funded resettlement. "Bank commitment to the principles of resettlement is visible in the case studies," the report states. "The problems are with the appropriateness of Bank intervention and with effective follow-through."

The OED's biggest concern is over the Bank's ability to restore the incomes of resettlers. The authors state that the Bank showed only "intermittent interest" in providing follow-through to support its resettlement programs once a loan was disbursed. On project planning, OED found "no evidence" that the Bank assisted borrowers "in avoiding unnecessary resettlement operations or reducing the scale of unavoidable displacements." Another problem stems from the Bank's typical practice of gearing compensation disbursements to a project's construction schedule, which OED notes results in the Bank "exit[ing] the project before staff can determine the probability of reaching the Bank's overarching objective of restoring or improving incomes and standards of living."

In other words, as NGOs working on Bank projects have long known, the primary motivator is building a project, not rebuilding the shattered communities left in its wake.

Dana Clark, of the Washington, DC group Center for International Environmental Law, says the OED report "confirms a continued pattern of failure. It is no coincidence that the majority of claims to the World Bank's Inspection Panel have involved involuntary resettlement. The Bank's failure to implement its own resettlement policy has had horrific implications for people

whose lives are destroyed in the name of development." Clark notes that the most recent data available indicate that 1.9 million people are being displaced by projects in the Bank's current portfolio, and that these numbers continue to grow.

The OED report notes that efforts at income restoration are largely unsuccessful, and that even on projects where recent improvements have been noted, the affected communities have suffered from "decades of neglect and poor performance" and that these years of neglect have "caused irreparable harm." Says Clark, "How can the Bank portfolio increase involuntary resettlement when the institution is fully aware of the devastating social impacts? The Bank should focus its energies and resources on those who have suffered and are suffering from its past and current projects before subjecting additional millions of people to the same fate."

## Land for Land Issue

Some NGOs find disturbing the report's recommendation that the Bank move away from its policy on offering replacement land for lands lost to a project. The OED report states, "The land-for-land strategy should be treated as the starting point rather than the rule," recommending that cash options be more widely considered. The report states, "Big dam sites usually eliminate the only productive farming systems in the region, while the people in the flooded valleys have few skills easily transferable to other activities. One immediate conclusion is that the Bank should disregard the impractical demand, pressed by some NGOs, that it choose between land-for-land or no dam."

Peter Bosshard, with the Swiss organization Berne Declaration, says that the report's recommendation to move away from land-for-land is "outright dangerous." Bosshard believes a shift away from land-for-land compensation will result in more misery for communities affected by World Bank projects. "This is a massive setback from earlier achievements. Alternatives to land-for-land compensation such as cash compensation or so-called income-generating schemes have been tried for years if not decades. Several investigations by the Inspection Panel and countless other reports demonstrate that at least in rural settings, such options have universally failed. Even the OED report confirms that the Bank's 'special incomes strategies,' which it studied in two countries, 'have been uniformly ineffective.' As long as cash

compensation and income-generating schemes have not worked, the Bank should not tinker with the principle of land-for-land compensation. It should rather make sure that resettlement is minimized beyond the point of economics."

The report's recommendations on land-for-land are apparently based on the Bank's poor record of implementing it effectively, rather than a belief that a land-based approach is flawed. Warren Van Wicklin, one of the OED report's authors, said, "We really wrestled with the land-for-land issue, and definitely support it where possible. But in reality, resettlers lose the best land in the area – river valley land – and it's replaced with the most awful land around, because that is what is left. What works best is offering a range of options, with land-based options being just one of many."

Van Wicklin said that the Bank management response to the report includes many of the OED's recommendations, including a requirement for Bank supervision until a project's resettlement plan is fully implemented, a better accounting of whether or not incomes have been restored, and follow-up measures if they have not.

Van Wicklin hopes that the management response to the report, which is now part of the public record, will give affected communities and NGOs some leverage on future projects to make sure the Bank sticks by its own commitments to improve resettlement on its projects.

The World Bank has helped finance more than 600 large dams. For years it has been criticized for its failed resettlement on large dam projects. From Itaparica Dam to the Lesotho Highlands Water Project, from India to Africa, on water projects and hydroelectric dams, the Bank's ready response has always been a variation of, "without our involvement, affected people would be worse off." Another ongoing theme is "lessons learned," in which the Bank admits to past failures but claims that future projects will not suffer the same mistakes.

"This is a lame excuse for not implementing its own resettlement policy," says Kay Treakle of the Washington, DC-based Bank Information Center. "If they're going to insist on being involved in projects with major resettlement, they must make it work. And if they can't, they should stop funding such projects until they find a workable, up-front process to determine whether or not people can actually benefit from being resettled." ■

## IN PRINT

### ■ **The World's Water: The Biennial Report on Freshwater Resources 1998-99**, by Peter Gleick. Island Press, 1998.

A thorough, well-documented and fascinating look at a broad range of water issues, from water-borne disease to large dams. Includes a chronology of water conflicts from 1500 to the present; charts showing each nation's percent of population with access to fresh water over time, and freshwater withdrawals by country and sector. The Water Briefs section includes updates on scientific discoveries or new technologies pertaining to fresh water.

"Large-scale water projects can no longer be expected to provide the answer to most water problems. In particular, in arid and semi-arid regions that cover about 30 percent of the earth's land area, large-scale irrigation schemes and dams are increasingly out of favor. Major new projects are going to compete with new opportunities for innovative smaller scale, locally managed technical, institutional and economic solutions to water quality and water problems. These include micro-dams, shallow wells, low-cost pumps, water-conserving land management methods and 'rainwater harvesting' approaches. Such methods are more

cost-effective and less disruptive to local communities, in part because of traditional experiences of these communities."

■ **Keepers of the Water**, directed and produced by Al Gedicks. This documentary video passionately portrays the battle to stop a mine that threatens the Wolf River. The headwaters of the Wolf lie in the springs, marshes and wetlands of Forest County, Wisconsin, the homeland of the Sokaogon Mole Lake Chippewa Tribe. Waters flowing through the Chippewa's wild rice lake and into the Wolf are threatened by the heavy metals that will leach out of Exxon and Rio Algom's proposed metallic sulfide mine and an associated 355-acre toxic dump site. The tribes believe the pollution will destroy the sacred Wolf River. This film documents the broad alliance of native and non-native communities, environmental organizations, sportsmen, politicians and Exxon shareholders who mobilized around the issue. Frances Van Zile Anishinabekwe, a Chippewa, notes, "This isn't an Indian issue, nor is it a white issue. Everybody has to take care of that water." To order, contact: Al Gedicks, 210 Avon St. #4, LaCrosse, WI 54603 or call 608-784-4399.

■ **The World Bank and the G-7: Still Changing the Earth's Climate for Business**, by the Sustainable Energy and Economy Network (Institute for Policy Studies) and the International Trade Information Service. 1998. Available on the web: [www.seen.org/wbstill/index.html](http://www.seen.org/wbstill/index.html). Or contact IPS, Ph: 202.234-9382, Fax: 202.387.7915.

This report offers an amazing look at the World Bank's funding of fossil fuel projects and its impacts on global climate change. In the past five years, the Bank's contribution to global warming was 1.3 times that of all the world's countries in 1995. The Bank's big bucks for fossil fuels greatly benefits transnational corporations and industrialized countries, and comes at great expense to the world's poorest people.

"Roughly one-fifth of all World Bank lending is devoted to increasing energy and power supply in developing countries. Its energy lending portfolio is dominated by fossil fuels; more than three-fourths of all its energy lending is spent on oil, gas and coal power projects, making it the largest multilateral financier of climate-changing fossil fuels in developing countries. Since 1992, the year most of the world's countries signed the Climate Convention in Rio de Janeiro, the World Bank and its subsidiary organizations have administered an aggressive \$13.6 billion spending program to expand international investment in and ownership of coal mines, oil and gas fields, and fossil-fueled power plants in developing countries and economies in transition. Another \$3.9 billion in loans and credits are pending. While public moneys are doled out via the World Bank under the banner of 'poverty alleviation,' about nine out of every 10 energy and power projects financed by the World Bank benefits at least one corporation headquarters in the wealthy Group of 7 (G-7) nations.

## Plan for Siberian Hydroelectric Dam Comes to Life Again

by Mary Rees

**T**he Katun River, in the Altai Republic of southern Siberia, flows through some of the most pristine, intact forests left in Russia. Several years ago a growing environmental movement defeated plans to build a hydroelectric dam on the Katun River. This year, however, plans for the Katun Dam have been revived, and promoters announced they've found new investors, specifically naming Global Power, Light & Water Company.

Global Power is apparently an American consortium representing a group of investment companies, including Enersource Capital and Eco-Waste Conversion Corp. The consortium is negotiating with the Altai government to lease land in the construction area for at least 25 years. Besides the proposed 57-meter dam, which would flood southern Siberia's most pristine and sacred river, Glob-

al Power wants to construct a second power station for local use, open up the area to coal mining, and build five factories to process up to 10 million tons of industrial and post-consumer wastes per year.

Altai Governor S. Zubakin supports the plan, in hopes that it will alleviate acute unemployment and stabilize the present situation in the republic. Local citizens fear that wastes from other parts of Russia will be imported to the processing plants and ruin the area's spectacular natural treasures. The regional newspaper *Postscriptum* predicts that the plans, if carried out, will turn Altai Republic "into a gigantic construction yard in the next few years."

Perhaps most disturbing is the fact that the potential American investors are reportedly imposing a gag rule on their partners and their own employees. According to the

*Postscriptum* article, "The American side suggests considering any information received from their partners, no matter in what form (oral or written), confidential. It also proposes coordinating any publication of information in the mass media with Global Corporation; at the same time, all sides must take responsibility for actions of their staff that have led to leakage of information." ■

*The author is with the Pacific Environment and Resources Center (PERC).*

**For more information** on this campaign, contact PERC:  
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Fax: (415-332-8167), or  
Ph: (415-332-8200).

## SHORTS

Robert Franke, a German high school student, won this year's International Stockholm Junior Water Prize for his design of Aquakat, a solar-driven reactor for the decontamination of industrial waste water. The Aquakat uses the photocatalytic properties of semiconductors to degrade persistent chemicals which cannot be degraded by methods typically employed in wastewater treatment facilities. The proposed procedure is claimed to be cost-efficient and of particular relevance wherever solar power could be used as an energy source. The Stockholm Junior Water Prize, now in its second year, is awarded annually to high school students who have contributed to water conservation through outstanding research.

In mid-September mining residues spilled into the Rio Blanco, a tributary of the Aconcagua River, which supplies water to the city of Los Andes and to Aconcagua Valley, one of Chile's most important fruit and vegetable growing regions. Authorities responded by closing all intake valves for the river's water and ordering all neighboring communities not to use the river's water for the next 72 hours.

In September, India's Gujarat state government angrily forced the World Commission on Dams (WCD) to cancel a series of meetings in the region, threatening to arrest commissioners if they tried to visit the controversial Sardar Sarovar dam project as planned (see *WRR*, Oct. 1998). Just a few weeks later, the same government officials welcomed the industry group International Commission on Large Dams (ICOLD) to the state, allowing them to visit the disputed Sardar Sarovar Project. ICOLD honorary president Jan Veltrop, who is also a WCD commissioner, said, "There's an enormous prejudice against the WCD in India." Although ICOLD was invited to meet with villagers affected by the Sardar Sarovar, the offer was refused. Says Shripad Dharmadhikary of the Narmada Bachao Andolan, "It is clear that ICOLD is also not interested in hearing the voices of the critics."

## News Briefs



## UPDATES

**CHILE:** Endesa, the Chilean electric company that is building a controversial dam on the Biobío River, said in early November that the future of the US\$500 million Ralco hydroelectric project is at risk because of delays. Construction on the dam has been paralyzed since August 12 due to conflicts with indigenous Pehuenche families who refuse to leave their land for the project. In mid-November, a construction company working on the project laid off 216 workers. Endesa General Manager Jaime Bauza said construction would have to begin soon, or the project, which is planned to begin operating in 2002, could be irreversibly affected. Pehuenche leaders representing the families who signed the agreements are asking for the acceleration of Ralco's construction, while the eight families opposed to Ralco's construction reiterated on November 5 that they will leave their ancestral lands only when they are dead.

In late August, the environmental organization Sustainable Chile released a study with the Energy Research Program (Prien) of the University of Chile which shows that Ralco Dam is not necessary to meet the country's electricity needs. The study claimed it is possible to save electricity over the next 20 years equivalent to Ralco's production. Sustainable Chile Director Sara Larraín said the government, in promoting Ralco, is not applying an energy policy which benefits citizens. She said that Endesa's monopoly over electricity and its push to expand energy supply has caused consumption to rise by 10 percent every year, while the economy has only been growing by 7 percent. The group notes that Endesa's monopoly and the government's pro-dam position will make it difficult for Chile to develop a sustainable energy policy.

Another issue affecting the project is an ongoing drought that is Chile's worst in 30 years. Reservoirs in Northern Chile have a 65 to 90 percent deficit which has greatly reduced

the country's hydroelectric generating capacity. Chile gets 60 percent of its electricity from hydropower, so the electricity industry is now vying with the agriculture industry for limited water resources. According to the National Agricultural Society, Chile's agriculture industry has lost \$38 million to the drought, with wheat crops being the hardest hit. Electricity supply has been unstable for four months and imposed rationing will be in effect until December 31. *Aleta Brown*

**PHILIPPINES:** On October 27 the Export-Import Bank of Japan (JEXIM) signed an agreement with San Roque Power Corporation for a US\$302 million loan for the 345-MW San Roque Dam, located on the Agno River. JEXIM funding for this dam was approved despite strong local opposition to the \$1.5 billion project, which at 200 meters high and 1,000 meters long would be the largest private hydropower project in Asia. "The people of Itogon municipality demand the outright cancellation of the project because of its tremendous social and economic impacts," says Joan Carling of the Cordillera Peoples Alliance, the leading Philippine group fighting the dam. "Already, almost two hundred farmers from San Roque have had their houses demolished to make way for the dam." JEXIM is currently considering another request by the Philippine government for a \$400 million loan to finance construction of the dam and spillway. The project is being constructed by a consortium led by New York-based Sithe Energies Inc. and the Japanese Marubeni Corp. *Susanne Wong*

**BRAZIL:** On November 25, a Mato Grosso state judge gave the São Paulo state electric company CESP permission to resume filling the reservoir of Porto Primavera Dam (now renamed "Engenheiro Sérgio Motta Dam" after the late architect of Brazil's telephone privatizations), overturning a restraining order obtained earlier this month by the new government of Mato Grosso do Sul state. Ben-Hur Ferreira, who was a party to

the court action to halt the filling of the reservoir, was ambivalent about the judge's decision: "This project has been underway for 18 years, and has consumed more than US\$8 billion. The damage has already been done." Some 1,700 families will be resettled for the dam.

The reservoir filling had been delayed for more than seven months, after environmental groups took the project to court over a lack of environmental and social protections for the project. Environmental groups, including Ecology and Action (ECO), the Association in Defense of the Paraná River and its tributaries (APOENA) and SOS Atlantic Coast Forest (SOS Mata Atlântica), also are calling for establishment of a new ecological reserve, between the Pardo and Taquaruçu Rivers, in partial compensation for critical ecosystems which will be drowned by the dam, and to protect aquatic species. *Glenn Switkes*

## ALTERNATIVES

**US:** Newly released statistics on water use by the US Geological Survey (USGS) show that more people in the US are using less water – 402 billion gallons per day (bgd) for all uses, or 2 percent less than in 1990 and nearly 10 percent less than in 1980, despite a continuous increase in population over the same period. The reductions come after 30 years of continual increases in the nation's total use of surface and groundwater, an upward trend that finally began to taper off after 1980.

"The nation is clearly using surface- and ground-water resources more efficiently," said Robert Hirsch, USGS chief hydrologist. "Enhanced citizen awareness of the value of water and conservation programs in many communities across the country have helped to cut water use, as have improved irrigation techniques and more efficient use of water by industry."

Irrigation is the nation's top freshwater use category – 134 billion gallons per day in 1995. When fresh and saline water are combined, more water continues to be withdrawn for thermoelectric power generation (190 bgd, of which 58 bgd is saline) than for any other category.

In a state-by-state comparison, California accounts for the largest total water use (46 bgd), followed by Texas, Illinois and Florida. Two dozen states and Puerto Rico had less water withdrawn during 1995 than during 1990.

The USGS water-use report, searchable by county and watershed, along with an expanded section on trends, is available on

the World Wide Web at:  
<http://water.usgs.gov/public/watuse/>

**ENGLAND:** A new water-recycling venture that will cut residential water use by about 30 percent is now being tried at a new housing development in Lancashire, according to a November 16 BBC news story. The pilot project, called Waterwise, will take all the waste water from 123 homes, clean and recycle it on the site and return a third of it to be flushed again down the toilet. Steve Marjot, the project manager for the water company, said, "For years people have said 'isn't flushing the toilet such a waste of water?' Now we have the answer." About a third of England's treated residential water is flushed down the toilet, while only 10 percent is used for drinking or cooking.

Waterwise uses tried and tested methods of water treatment. All the water that leaves the house is collected in an underground tank, where it then passes through a fully enclosed treatment plant known as a "black box." Two-thirds of the cleaned water then passes along a pipe to a nearby river under license from the Environment Agency. The other third goes through further water treatment and disinfection before being stored in a large underground tank for use when toilets are flushed. The water company and the home builder who teamed up on the project told the BBC they hope to extend Waterwise nationwide. England has been experiencing widespread water shortages in recent years.

**CANADA:** Quebec is spending C\$160 million on a wind power project that will help the province reduce its greenhouse gas emissions. The first seven of 133 windmills started turning in early October at the Le Nordais Wind Farm on the blustery north coast. The wind farm's 55-meter-high windmills can produce 100 megawatts, enough to power 16,000 households, making it the largest such development in Canada. "Only about four other projects in the world were built to be this size," said Yvan Dupont, president of Axor International Inc., a member of the consortium building Le Nordais. Several years ago the consortium won a 25-year contract from HydroQuebec to generate wind power at 5.4 Canadian cents a kilowatt-hour. With the development, the world's wind power production now stands at about 8,000 megawatts. With Quebec accounting for more than half of Canada's wind energy potential, Axor hopes to build more sites producing up to 3,000 megawatts of wind power. Worldwide, the wind power industry is growing by 25 percent a year.

## DA N G E R O U S D A M S

**TAJIKISTAN:** On November 6, a rebel commander in the northern part of this former Soviet republic threatened to blow up a dam and flood vast areas of Central Asia if the government did not meet his demands. "It will flood vast territories of Central Asia," Col. Makhmud Khudoberdyev warned in a statement received by the ITAR-Tass news agency. He said his guerrillas had mined the dam on the Kairakkhum channel as a "deterrence measure." The dam's reservoir is large enough that it is referred to locally as a "sea." The government, which had no immediate reaction to the threat, said it had surrounded Khudoberdyev's headquarters and had recaptured Khodzhand, a city in the north of this small, impoverished nation. Dozens of people have been killed in recent conflict here. The rebels oppose last year's peace agreement ending the country's six-year-old civil war and want fresh elections.

**NORTH AMERICA:** The giant Moses-Saunders Dam across the St. Lawrence River is destroying fish habitat and indirectly tainting the fish, says a major study by Canada's University of Ottawa. The study's research shows that the Moses-Saunders Dam and a second hydro dam downstream are now the biggest sources of damage to the river and the living things in it. The Moses-Saunders Dam has so changed the flow of water upstream that whole communities of water plants, bottom-dwelling creatures and fish have been destroyed, the study says. And it says the dam, which has raised water for the St. Lawrence Seaway since 1958, appears to make cancer-causing pollutants collect in one area in the reservoir near the dam wall. Half the bottom-feeding fish there have cancerous tumors around their mouths, where they are exposed to chemicals in the river sediment.

The C\$2.2-million study put together the first picture of the biology, water quality and human communities along the upper St. Lawrence between Montreal and Lake Ontario. The dam is owned jointly by Ontario Hydro and the New York Power Authority. Now it needs a new license to keep operating. Hydro dams in the US need a license from the Federal Energy Regulatory Commission (FERC), and the Moses-Saunders license expires in 2003. To renew it, its operators must prove the dam is not a serious environmental hazard.

*Ottawa Citizen*

**Lesotho Dam** continued from page 1

violations surrounding the military conflict and expects to publish a report by the end of the year. When complete, the publication will be available on the organization's web site: <http://www.amnesty.org>.

### **Adding Devastation to Poverty**

Lesotho is a mountainous, land-locked country completely surrounded by South Africa. Until 1993 it was under a military dictatorship. For years it has been almost completely dependent on South Africa economically, since up to half its male work force labored in South Africa's mines – jobs which have greatly diminished in the past few years. Now the tiny nation, which is the size of Belgium and one of the world's poorest, has become dangerously dependent on the LHWP, which brings in construction remittances and royalties from the sale of water.

The massive scheme, which is one of the world's biggest infrastructure projects, accounts for a good portion of Lesotho's gross domestic product – a factor that played a role in the recent World Bank approval of loans for the next dam, despite credible alternatives that could have delayed construction by up to 20 years.

Yet despite the project's importance to the national economy, the nation's poorest have seen few benefits from its construction. Those directly affected by it – having either lost farmland, houses or access to communal grazing lands – have seen their living standards decrease, with little hope for a near-term turnaround in their fortunes.

Most recently, leaders from nearly 100 Highlands villages which lost communal grazing lands to Katse Dam petitioned project authorities and the World Bank about lack of progress in helping them recover from these losses. For years they have received fodder to feed their animals who once grazed on lands now submerged by the reservoir, but that form of compensation was abruptly stopped in recent months. LHDA has allocated approximately R400 million for its Rural Development Plan which is to replace short-term compensation such as fodder, but the funds do not yet seem to have made their way to the Highlands communities affected by the project.

The villagers' petition states, "Just before the end of last year we were told by the project that we would be given money instead of fodder. Some of us began developing plans for how to use these funds. Unfortunately, we have not yet received any of this money, and it is now the end of 1998. ... Our cattle are dying. Our oxen are becoming too weak to plough and sow the fields. Now we say the

## **Rivers Group Calls for New Approach to South African Water Resources**

*The LHWP has been controversial for its approach to water resources as well as for its social and environmental impacts. Many groups in South Africa have criticized the nation's water ministry for emphasizing water supply projects before fully exploring alternative measures such as conservation. The following describes the key tenets of a new approach for South African river- and water-management being advocated by the South Africa Rivers Association (SARA). It is excerpted from an article by Graeme Addison which appeared in the South African newspaper The Star (Nov. 3, 1998).*

In the view of many, [water minister] Kader Asmal has proved himself to be the most forward-looking and effective Minister of Water Affairs in South Africa's history. His national programme to protect water catchments is a start towards protecting the remaining wild rivers. To take it to the next step, a thorough re-examination of South Africa's policies on dams and rivers would include:

- Research and development in desalination technology. It is in the interests of engineers to undertake this, there is no shortage of technical expertise, and the capital outlay on plants and pipelines would at least equal the current outlay on pouring concrete into river valleys. The whole thing could be designed as an RDP job-creation project. Politically, the ANC could generate support for desali-

nation if it publicly recognised that dam-building is unsustainable and began to promote the alternative with all its benefits in spending, job-creation and research.

- Secondly, Asmal should call a national conference on water supply technologies and demand management, a Summit on Water involving all stakeholders. The consulting engineers and foreign bankers who have dominated for so long must hear their critics and consider the alternatives.

- Lastly, a National Wild and Scenic Rivers Act should be drawn up along the lines of a similar piece of legislation passed 25 years ago in the USA. Conservationists have vowed that they will oppose new dams – but they are really powerless to prevent them unless Parliament acts to protect the heritage of South Africa's rivers.

A river is not just a drain for sewage or a resource for the flushing of toilets. It is a living ecosystem on which all other ecosystems depend. Rather have a bit of sea-salt in your coffee than bleed the country dry, or fight wars over water.

*For more information on SARA, contact: Southern African Rivers Association  
Head office: Ph/Fax +27.12.667.1838  
P.O. Box 645  
Irene 0062 South Africa  
e-mail: [sara@intekom.co.za](mailto:sara@intekom.co.za)*

project should give us our fodder without any delay or unconditionally give us our lump sum payments within the coming month."

An October 26 letter from the local group Highlands Church Solidarity and Action Centre to the head of LHDA, the parastatal in charge of building the dam, states, "Affected people have not been well-informed as to why they are no longer receiving fodder. People are not clear as to what they must do in order to access their compensation money ... The compensation payments are now nearly five months late and are the source of growing resentment towards the LHWP in the affected communities. Affected people suspect that corruption and negligence are the cause of this delay."

At press time, villagers still had not received either fodder or emergency compensation in response to their plea for help.

Ryan Hoover, a volunteer working with affected communities in the Highlands, says that project authorities have unreasonable expectations of communities applying for development money: "I'm amazed at the detail that LHDA is requiring village communities to come up with in their development plans. They're asking for itemized budgets, addresses of suppliers, cash flow predictions." Hoover added that LHDA has promised to train people in making detailed development plans.

At a recent meeting with NGOs in Lesotho, LHDA said it will proceed as planned with the controversial communal assets compensation program. LHDA said it has begun village-level meetings to convince communities that this program will benefit them, and will undertake some pilot projects in selected villages. ■

**Regular Publications**

**World Rivers Review** subscriptions are automatic for IRN members. Back issues are \$5.

**Reports**

**The Asian Development Bank's Role in Dam Building in the Mekong Watershed** by Aviva Imhof, 1997. 19 pp, \$10.

**Proceedings of The First International Meeting of People Affected by Large Dams.** 1997. \$15.

**The Relationship Between Primary Aluminum Production and the Damming of the World's Rivers,** by Jenny Gitlitz. 1993. 150 pp, \$20.

**Considering the Hidrovia – A Preliminary Report on the Status of the Proposed Paraguay/Paraná Waterway Project** by Owen Lammers (IRN), Deborah Moore (EDF) & Kay Treakle (BIC). 1994. 60 pp, \$15.

**River Dolphins – Can They be Saved?** by Elizabeth Carpino. 1994. 42 pp, \$15.

**Damming the Rivers: World Bank Lending for Large Dams** by Leonard Sklar & Patrick McCully, 1994. 89 pp, \$20.

**Lessons Unlearned: Damming the Mekong River,** by Steve Rothert. 1995. 70 pp, \$15.

**Technical Review of the Mekong Mainstream – Run-of-River Hydropower Report,** by Philip Williams & Steve Rothert, 1995, 7 pp, \$3.

The following campaign information packets are available for \$15 each: Three Gorges Dam (China) • Pangue Dam / Biobío River (Chile) • Arun III Dam (Nepal) • Nam Theun 2 (Laos) • Xiaolangdi Dam (China) • Lesotho Highlands Water Project (Lesotho) • Mekong Hydroelectric Development (Southeast Asia) • Hidrovia Dossiers I-5 (South America) • Bakun Dam (Malaysia) • Epupa Dam (Namibia)

**Other Resources**

**Large Dams, False Promises,** writer and producer, David Phinney; executive producer, Andrea Torrice. 33 min. video, \$35. Features the stories of three dams: Sardar Sarovar (India), Three Gorges (China) and Balbina (Brazil). The stories illustrate the destruction that large dams are causing to ecosystems and riverine communities worldwide.

**Silenced Rivers: The Ecology and Politics of Large Dams,** by Patrick McCully. 1996. 350 pp. \$20/members, \$25/non-members. This book covers the environmental and social effects of large dams around the world.

**River of Words Teacher's Guide.** 1996, 50 pp, \$5. Classroom and field activities on watersheds for grades K-12. Supports IRN's international environmental poetry and art contest, conducted annually in partnership with The Library of Congress Center for the Book.

**Beyond Big Dams: A New Approach to Energy Sector and Watershed Planning,** edited by Juliette Majot. 1997. 126 pp. \$20. Explores small-scale hydro, and local solutions to energy needs.

**Information Services**

**World Wide Web:** IRN's web site has hundreds of items on river campaigns around the world, links to other sites of interest, WRR articles, maps and a detailed list of the items on file in the IRN library. It is updated twice a week. Visit it at [www.irn.org](http://www.irn.org)

IRN's resources are used to support the information needs of non-profit organizations as well as individuals and institutions. General research fee per hour is \$50 (\$25 minimum per request, plus photocopy and mailing charges).

For more information about IRN's activities and publications, or to order our more detailed publications brochure, contact IRN, 1847 Berkeley Way, Berkeley, CA 94703; Tel.: (510) 848-1155; Fax: (510) 848-1008; e-mail: [von@irn.org](mailto:von@irn.org)

**About IRN**

IRN was formed in 1986 by a group of hydrologists, engineers and environmentalists to address a common concern: the worldwide prevalence of unsound, destructive freshwater management projects. We devote much of our organizational resources to stopping the construction of large dams and promoting viable alternatives. Our work is intended to reflect the environmental and human rights implications of river development in an effort to redirect the practices of international finance institutions, commercial financiers and the dam-building industry. Please become a member by sending in the coupon below.

IRN exposes the myths behind high dams and other destructive river development projects. We defend the people, land, forests and animals that depend on rivers wherever we can: in the offices of government, the board rooms of business and the streets of our cities. Please join us by becoming a member.

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To pay by Visa or MasterCard, provide card number and expiration date. Checks or international money orders in US dollars should be made payable to IRN. Contributions are tax-deductible. Mail to: International Rivers Network, 1847 Berkeley Way, Berkeley, CA 94703 USA.

# Bakun Evictions Begin Despite Dam Postponement

by Patrick McCully

**T**he government of the Malaysian state of Sarawak recently began evicting families for the Bakun Dam although the multi-billion dollar project has been indefinitely postponed for financial reasons. Indigenous communities living in the area to be flooded by the dam have vowed to resist resettlement.

"The exodus exercise of the people affected by Bakun Dam is now in progress," said Sem Kiong Angin coordinator of the Indigenous Peoples Development Centre (IPDC) based in Belaga, the town nearest the dam site. "It is a sad moment for the people who will part with their friends, relatives and even family members."

The IPDC organized a meeting in early October of people who do not accept resettlement, which drew 50 representatives from most of the 15 affected communities. Kiong says that all those at the meeting "expressed their strong willingness to stay and even if forced to move they will fight until the end."

Another local organization, the Bakun Region People's Committee (BRPC), declared

in a November 3 press release that the evictions were "unjustified, unnecessary, untimely and shortsighted."

Both IPDC and BRPC have protested the small and poorly constructed housing at the resettlement camps (built by British contractors Bucknall's) and the fact that the evictees are forced to pay for their replacement houses and land title. Evictees have also complained that the three acres of land allocated to them is insufficient and that some of the land is waterlogged and unsuitable for crops.

Kiong says that gambling and drinking are major problems at the resettlement sites and that compensation payments will soon be squandered. So far only 30 percent of promised compensation has been paid.

Bawai Along from the village of Sungei Long Gang told local reporters that he would have to find a job because of the inadequacy of resettlement land and the need to pay monthly installments on a new house. The only jobs available were in an oil-palm plantation "but, to reach there," said Long, "we have to travel for an hour by a Land Cruiser."

Kua Kia Soong, spokesperson for the nationwide Coalition of Concerned NGOs on Bakun, has urged the federal government to stop the resettlement program. "The future of the project has still not been clarified to the nation, why is there a need to resettle the natives?" he told a news conference. ■

## What You Can Do:

Write a respectful letter to the following officials, urging a halt to the forced evictions and the initiation of a dialogue with affected communities.

YAB Dato' Seri Dr. Mahathir Mohamad, Prime Minister, Pejabat Perdana Menteri, Jabatan Perdana Menteri, Jalan Dato' Onn, 50520 Kuala Lumpur, Malaysia, Fax No: 6-03-2383784

Dr James Jemut Masing, Minister of Tourism, Fax No : 6-082-441957, or c/o Sarawak Tourism Board, Fax No : 6-082-416700

Address Correction Requested

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