

SPECIAL FOCUS on Asia

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Early optimism: Project officials met with Merrill Lynch executives in 1994. The company later declined to invest in the dam.

Three Gorges Dam Swamped by Problems

by Doris Shen

The floodgates of dissent against the world's largest dam, China's Three Gorges project, may have finally cracked beyond repair. In a land where speaking out against the project is strongly discouraged, 10,000 dam-affected people have signed a petition urging the government to solve major problems with the resettlement program. And in February, a series of articles in Chinese publications that were unusually critical of the project have given rise to speculation that high-level support for the dam is eroding.

The first major exposé within China of the dam's extensive social problems was published in the February issue of the influential policy journal *Strategy and Management*. The article details a host of problems facing the resettlement efforts for the dam. Up to 1.9 million people are expected to need to be moved for the huge project, whose reservoir will drown a 400-mile-long stretch of the Yangtze River.

The article describes the acute scarcity of arable land in the steep, eroding hillsides along the river where most resettlers will be moved. It quotes one person slated for resettlement as saying: "If you want me to move there, you'll have to make me do it at gun point."

The rare criticism, by a Chinese scholar using a pseudonym, made the cover page of the *New York Times* and the *Washington Post* on March 18, among other newspapers.

The *Strategy and Management* article cites a detailed case study of Yunyang county, where 120,000 people must be moved. People in this county are being relocated onto land too steep to farm, and yet are farming it anyway. The funds allocated for terracing and other sustainable farming measures to reduce erosion are less than half the needed amount, according to the article.

Since industry in the region is already faring poorly, new factory jobs for resettlers

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International Rivers Network**Executive Director:**

Juliette Majot

Staff:

Monti Aguirre, Aleta Brown, Selma Barros de Oliveira, Lorena Cassady, Yvonne Cuellar, Annie Ducmanis, Dzhennet Eshchekova, Tracy Furman, Mary Houghteling, Aviva Imhof, Owen Lammers, Patrick McCully, Pamela Michael, Lori Pottinger, Steve Rothert, Elyse Shafarman, Doris Shen, Glenn Switkes, Susanne Wong, Petra J. Yee

Interns:

Elizabeth Brink, Ignacio Fernandez, Lisa McNally, Nicole Nerio, Teerapong Pomun

Board of Directors:

Paul Strasburg (*Chair*),
Philip Williams (*President*),
Dan Beard, Patricia Chang, Bob Hass,
Dorka Keehn, Lauren Klein, Joshua Mailman, Walter Sedgwick, Brian Smith, Francesca Vietor

Contact Information:

International Rivers Network
1847 Berkeley Way
Berkeley, CA 94703 USA
Tel: (510) 848-1155
Fax: (510) 848-1008
E-mail: irn@irn.org
World Wide Web: <http://www.irn.org>

International Rivers Network is an affiliate organization of Friends of the Earth International.

A

ll over Asia, rural villagers are challenging the powerful interests who have appropriated their rivers in the name of "development." From China to the Philippines, from the Mekong to the Narmada, dam-affected communities are holding demonstrations, taking over dam sites, and pushing project authorities to take responsibility for the problems they have created.

These struggles are a powerful reminder of all that is wrong with the current model of development in many low-income countries. It's a model where expert opinion always takes precedence over local knowledge (no matter how shallow the expert's knowledge base), and where decisions about natural resources are made by those at the top, with no input by those who will be most affected by those decisions.

Says Boonteng Temdee, a fisherman from one of the villages affected by the Pak Mun Dam in Thailand, "EGAT [the Thai electricity utility] never asked me or any of these people about fish, our river or the dam. No one from EGAT ever asked us what we thought. They told us what we had to do."

Long before the Pak Mun Dam was completed in 1994, villagers knew that their primary source of livelihood – the rich fisheries of the Mun River – would be destroyed by the dam. They knew that fish migrate up and down the river, and that the dam would block this migration. They told the Thai government and the World Bank, and demanded that their rights be recognized. They were ignored.

In 1991, World Bank staff told Bank executive directors: "The lack of understanding [of] project design has been the cause of much unnecessary criticism of the project... Pak Mun is not a storage reservoir project impounding a large and stagnant mass of water. The adverse impacts associated with such type of storage, such as impact on fisheries ... is, therefore, not relevant to Pak Mun..."

Six years after Pak Mun was completed, at least 3,080 families are still fighting for compensation for lost fisheries. At this writing, 2,000 of these people are camped at the dam site, demanding compensation from the Thai government and the World Bank. They will not move until their demands are met.

In many parts of Asia, dependence of local communities on rivers for all aspects of their lives – including fresh water, fish, farming and transportation – renders them highly vulnerable to the substantial changes in river systems brought about by dams. Yet more often than not, these people are asked to sacrifice their lives and their livelihoods to a lofty notion of national development.

But who really benefits from the development of rivers? Certainly not the poor and marginalized. At the Narmada in India, more than 200,000 people are being asked to make way for an irrigation scheme that will benefit rich farmers in Gujurat. At San Roque in the Philippines, the Ibaloi indigenous people are being asked to sacrifice their culture and community to benefit foreign mining companies and industrial producers. On China's Yangtze, 1.9 million people will be forcibly resettled for the world's largest dam, making the claim of public benefits rather dubious.

At what point do the trade-offs become too much? When will the World Bank, the Asian Development Bank, governments, and other powerful interests recognize that GDP growth does not equal a rise in living standards, that only poverty trickles down from poorly planned development schemes, not wealth?

The stories in this issue show the harsh realities of a number of dam projects. But they also reveal windows of opportunity to create critical change. One such window has been opened by the people affected by Pak Mun Dam, who are demanding reparations from the Thai government and the World Bank. The payment of reparations should be mandatory for the funders and backers of all dams that result in unmitigable harm to local people's livelihoods.

Another opportunity revealed by stories herein is to stop the construction of – or at least redesign – projects to reduce human suffering. Such an approach would solve serious problems caused by the Sardar Sarovar Project, Three Gorges and San Roque.

Finally, the story of Laos presents a window of opportunity that could be opened by the donor community and governments now backing hydropower development as an engine of growth for the small nation. The Asian economic crisis presents an opportunity to reassess hydropower schemes, and to replace this flawed model of development with one that recognizes and respects the rights of local communities to their river resources.

We at IRN draw inspiration from the struggles of these communities. We feel confident that through their efforts, the momentum for change will come.

Aviva Imhof

Thousands More Narmada Villagers Face Submergence

by Patrick McCully

SPECIAL FOCUS
on Asia

After being halted for more than four years, contractors have started pouring concrete again at India's notorious Sardar Sarovar Dam on the Narmada River. The go-ahead for the Gujarat state government to restart construction came from India's Supreme Court, which ruled on February 18 that another five meters (16 feet) could be added to the height of the partly completed dam wall. An additional 3,000 families in 58 villages are at risk of losing their land to submergence or being otherwise seriously affected by the extra five meters of concrete.

Work restarted the day after the court ruling in the presence of senior Gujarat officials and a group of priests chanting Vedic hymns. According to one Indian newspaper, the ceremony "re-created the jubilant atmosphere the State first witnessed when the . . . first stone of the dam was laid in 1979." The Sardar Sarovar Dam and its canal system are located in Gujarat while most of the 245 villages which could eventually be submerged are in the states of Maharashtra and Madhya Pradesh.

Two weeks later, villagers held their own celebration in Domkhedi, a village on the bank of the Narmada. The residents of Domkhedi, like all those living along the river for the first 70 kilometers or so upstream of the Sardar Sarovar Dam, are "tribals" or adivasis, the indigenous people of India, with a culture, religion and economy distinct from that of mainstream Indian society. Every March, adivasis from 50 villages gather in Domkhedi to mark the religious festival of Holi. This year marked possibly the last ever Holi celebration here, as much of the village may be submerged when the monsoon comes mid-year. A journalist from the *Indian Express* described the scene:

"Dancing through the night, hundreds of [adivasis] – bodies painted with limestone, fruit hanging from their shoulders, imposing headgear flaunting peacock feathers – bore a steely stoicism that hid the torment within. 'They can drown our houses and our farms, but . . . we will not leave this place; we will run to the hills to escape the water, but we will not leave,' says Huliah Bhola Vasave, sarpanch [headman] of Domkhedi. But he can't conceal the catch in his voice, just as Keshubhai Vasave sitting next to him can't hold back the tears in his eyes . . . Domkhedi exists without even basic facilities like electricity, transport, telephone and postal services. It survives on its river-based economy and its culture, which



Children in the Narmada Valley at a school run by the NBA. The school will be flooded.

Photo: Patrick McCully

the tribals do not wish to part with. 'It is better to suffer and die here rather than live a dead hostile life at a resettlement site a hundred kilometers away,' says Vasave."

A few days after Holi, representatives from affected villages met on the bank opposite Domkhedi. According to the Narmada Bachao Andolan (Save the Narmada Movement), the villagers vowed "not to leave their lands and villages under the pressure of fraud and threat of submergence." The Narmada Bachao Andolan (NBA), which is made up of the residents of hundreds of Narmada Valley villages together with urban-based activists, has been struggling for the rights of the people of the Narmada since the late 1980s. The villagers meeting in Domkhedi strongly criticized the state governments involved in the Sardar Sarovar Project for misleading the Supreme Court about the resettlement situation in the valley, the costs and benefits of the mammoth project, its environmental impact and the viability of alternatives.

The NBA is currently preparing evidence to present to an independent Grievance Redressal Authority which the Supreme Court has mandated to investigate the condition of the thousands of "oustees" already moved to resettlement sites. On April 15 the Court will reconvene to consider the Grievance Redressal Authority's report and decide whether to give permission to Gujarat to raise Sardar Sarovar by a further five meters – which would flood the land and homes of thousands more.

The Gujarat government has repeatedly told the Supreme Court that resettlement and rehabilitation has been satisfactorily completed for all families affected by the dam so far

and those who would be affected by adding another 10 meters to its height. Yet people who have moved to resettlement sites – some as long as two decades ago – have faced great suffering for reasons including poor-quality replacement land given resettlers; shortages of land, drinking water, fodder and fuelwood; increased sickness and death; intimidation from the villagers already living in the resettlement areas; the fragmentation of their communities and rising debts. In the last few years hundreds of families have returned to their original villages, preferring to face the uncertainty of life in the submergence zone to the misery of life as "oustees."

On March 15, more than 1,000 adivasis marched to the office of the senior official in charge of resettlement in Maharashtra and demanded that the government verify the claims of land availability made to the Supreme Court. Officials were forced to admit that they had served notices of impending submergence to 527 families, while stating to the Court that only 184 families need to be resettled. Officials also admitted that, contrary to their statement to the court, resettlement land and amenities were not available even for 184 families in the coming months. The NBA has demanded that the government of Maharashtra admit the falsity of their resettlement claims to the Supreme Court, request an immediate work stoppage, and start criminal proceedings against the officials responsible for misleading the Court.

At press time, hundreds of tribal people from the Narmada valley and their supporters were planning a human rights march to chal-

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“We Will Not Be a Party to Our Own Death”

Philippine Dam Draws Fire from Indigenous People

by Aviva Imhof

In the mountainous Cordillera region of the Philippines, the indigenous Ibaloi people of Itogon Province are fighting for their lives. The threat to their land and livelihoods comes from Southeast Asia's largest private hydropower project, being built by US independent power producer Sithe Energies and the Japanese Marubeni Corporation.

The US\$1.19 billion, 345-megawatt San Roque Multi-Purpose Dam Project is being celebrated by the hydropower industry as a major success story in private sector financing. No other private hydro project of its size has been able to secure the necessary financing, particularly in high-risk, economically embattled Southeast Asia. If completed, San Roque would be the tallest dam – at 200 meters – in Asia and will provide power to the burgeoning mining, agribusiness, export industry and tourism centers planned for Northwestern Luzon. The government also claims that the project will irrigate 87,000 hectares of farmland, reduce the perennial flooding of at least 16 downstream towns during the rainy season, and provide clean water for communities in Northern Luzon.

Yet, for the Ibaloi – some of whom have already been displaced once before by upstream hydropower projects – there is little to rejoice about. The Ibaloi are a distinct tribe, with their own socio-political institutions, traditions and rituals. They rely mainly on agriculture for their everyday subsistence, supplemented by fishing and small-scale gold panning. By working hard, generation after generation of Ibalois have lived in abundance and peace.

Santahnay, the Ibaloi peoples' community organization, has stated, “We stand for the defense of our ancestral land, for the respect of our indigenous culture, and for the recognition of our right to self-determination as indigenous Ibaloi people... We strongly and resolutely oppose the construction of the San Roque Multipurpose Dam... We are determined to fight against the project to the limits of our own capacity. We will not be a party to our own death.”

Project Status and Financing

San Roque is one of 22 large dams planned for the Cordillera region, and is the first one to be built in the region as part of a wide-ranging development plan of former President Fidel Ramos. The dam site is

located on the Agno River in Pangasinan Province, but reservoir inundation will occur in Itogon Province, home of the Ibaloi people.

In 1997 the National Power Corporation (NPC) gave the San Roque Power Corporation (SRPC) the rights to build, operate and maintain the project for a period of 25 years. The SRPC is owned by a Japanese trading company, Marubeni (41%); Sithe Philippines Holdings, Ltd, a subsidiary of US energy company Sithe Energies, Inc. (51%); and a Japanese utility company, Kansai Electric (7.5%). In April 1998, US construction company Raytheon won a \$700 million sub-contract to design and build the facility. Prepara-



San Roque Dam opponents meet near the site.

tion of the site began in 1998, and construction is slated for completion in 2004. The project is currently on hold while financing is being secured.

Project authorities say 49% of the total cost of \$1.9 billion will go to the power component of the project, 9.7% to the water quality and maintenance system; and 1% to flood control. In October last year, the Export-Import Bank of Japan (JEXIM) approved a \$302 million loan to the private sector developers to finance the power component of the project. Funding for the non-power components is expected to come from a \$400 million loan the government is still negotiating with JEXIM. Other financing is expected to come from a consortium of Japanese commercial banks and equity provided by the project sponsors.

JEXIM is reportedly holding off on any loan disbursements until it is satisfied that the project will conform to its environmental and indigenous people's criteria. JEXIM's environmental guidelines state that people resettled by projects it funds must have given their consent. Given the strident opposition of the populations slated for resettlement, it appears that JEXIM's support for this project violates its own guidelines. Japanese and international NGOs, together with the Cordillera People's Alliance and Santahnay, have been calling on JEXIM to withdraw from the project. In March this year, an international appeal was delivered to the Japanese Prime Minister, Keizo Obuchi, urging him to withdraw all financial assistance for San Roque. The appeal was signed by 77 citizens' groups, 12 National Diet members and more than 500 individuals from 26 countries, including more than 450 Ibaloi people. At the time of writing, no response had been received and JEXIM was still indicating it would support the project.

History Repeats Itself

The Ibalois already have experience with large hydro dams – the Binga and Ambuklao dams were built upstream of this site in the 1950s. During that time, the Ibalois were called upon to sacrifice their lands and their lives for the sake of “national development.” Though both dams generate electric power, nearby communities have seen few benefits and most still have no electricity. Many of those relocated were never compensated for the loss of their homes, lands and livelihood. Some died in malaria-infested relocation sites, while others suffered from hunger in infertile lands and areas with very limited employment opportunities.

Now, the Ibalois are being asked to “sacrifice for the majority” again. But they are not doing so quietly. In a statement released last year, the Movement Against San Roque Dam and All Megadams (MASRDAM) said the San Roque Dam is not a good development tool for the country, and that “the majority are being sacrificed for the interests of a few elite.” MASRDAM states, “Agrarian reform and secured employment, not megadams, will lead to the country's development.”

Said history teacher Lito Calderon, who participated in a recent day of protest against the dam: “Foreign investors and

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multi-national mining companies stand to benefit more from this project than we do." He added there are many other projects which the government should prioritize, "projects that will really benefit the people."

If completed, the dam will negatively affect 2,325 Ibaloi households. In February, 1998 more than 160 tenant farmer families occupying land around the dam site were moved despite the fact that no permanent resettlement site had yet been built. They were promised land, houses, alternative livelihood sources and social services, but instead the National Power Corporation distributed \$250 per family as compensation. Nearly a year later, most of the displaced families were finally given houses in the new resettlement site. Another 402 families in Pangasinan will be required to relocate before the project is completed.

It is estimated that about 100 hectares of productive rice fields will be submerged by the reservoir. Homes, terraced rice fields, orchards, pasture lands, gardens and burial grounds of the Ibalois close to the Agno river will eventually be inundated by the rising waters. The government claims that only three households will be affected in this area, yet independent studies show that at least 343 households will be impacted by the reservoir.

"We strongly and resolutely oppose the construction of the San Roque Multipurpose Dam... We are determined to fight against the project to the limits of our own capacity. We will not be a party to our own death."

Ibaloi peoples position paper, August 1998.

Aside from those areas to be directly submerged, residents of other higher-lying areas in Benguet may also be displaced because of the accumulation of silt resulting from mining operations upstream. At present, heavy soil erosion and siltation of the river system has already occurred as a result of large open-pit and bulk mining operations in Itogon. With the passage of the Philippine Mining Act of 1995, more large mining companies have applied for concessions in the area. If these applications are approved, the siltation of the Agno River will increase tremendously.

Given the high rates of siltation and erosion resulting from the present mining operations, the economic life span of the San Roque Dam is already under question. It is doubtful the dam reservoir will be able to contain the volume of mine tailings, soil and silt that will be impounded there beyond 28 years.

Furthermore, while the government claims that the project will control the occurrence of floods on the Agno River, the project's Environmental Impact Assessment (EIA) admits that "the reservoir is vulnerable to mismanagement with respect to flood routing." The EIA states that this may result in "catastrophic flooding" in some downstream areas. There is local precedent for this: the Ambuklao Dam has caused larger and more serious floods downstream over the past few years as its reservoir has silted up. The dam is non-functional today due to siltation.

It is not just individuals or families who will be affected by the project. Whole communities will be uprooted. The Ibalois of Dalupirip, like those of Binga and Ambuklao, will end up scattered in different places. And with their disintegration, the dissolution of their indigenous socio-political institutions will follow. Their traditional knowledge, beliefs and systems will break down. Dalupirip, and a whole unique culture, will be lost forever. ■

Pak Mun Villagers Occupy Dam, Demand Compensation

By Aviva Imhof

More than 5,000 disgruntled villagers occupied the Pak Mun Dam site in Thailand on March 23 to demand compensation from the Thai government and the World Bank. The villagers have set up their own settlement on the edge of the dam and intend to stay indefinitely, until their demands are met.

Eight groups of villagers affected by various development projects – including six dams – in northern Thailand have united at Pak Mun to demand reparations from the Thai government.

The Pak Mun villagers are demanding compensation of 15 rai (2.4 acres) of land for the 3,080 fishing families who lost fisheries income because of the project. The cost

of this would amount to US\$45 million. If the government and World Bank fail to respond, villagers are demanding that the dam gates be opened to allow fish to migrate upstream. The villagers are also demanding funding to correct and prevent the problems they are now experiencing with intestinal and liver flukes and the debilitating disease schistosomiasis.

The 136 MW Pak Mun Dam, which was completed in 1994, was built by the Electricity Generating Authority of Thailand with \$24 million in financing from the World Bank. The project is located on the Mun River, six kilometers upstream of the confluence of the Mekong, in Ubon Rathchatani Province. From the outset, the project was highly controversial due to the predicted

impacts on the rich and productive fisheries of the Mun River. Between 1990 and 1997, there was intense opposition to the dam by thousands of people living in communities along the Mun River.

As a direct result of the dam, more than 20,000 people have been affected by drastic reductions in fish populations upstream of the dam site, and other changes to their livelihoods. The dam has blocked the migration of fish, and a \$1 million fish ladder, promoted by the World Bank's fisheries experts as a mitigation measure, has proved useless. Whole communities have been disrupted and many people have been forced to move to Bangkok to support their families.

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Urura Dam Activists Murdered in Colombia

by Monti Aguirre

Opposition to the Urura I dam is costing Embera indigenous people their lives. In February, four indigenous leaders were assassinated, presumably by the right-wing paramilitary death squads who have threatened leaders of the affected peoples' movement in the past.

The paramilitary groups are generally alliances between militias, local elites, large land owners and narco-farmers. Terror, threats, disappearances, forced displacements, assassinations and massacres are the way they keep their power over local people.

According to the Higher Indigenous Authorities of the Sinu and Verde Rivers in the Alto Sinu region, those killed were Alejandro Domico Jumi, Argemiro Domico, Euclides Domico and Abelardo Bailarin. In addition, ten indigenous people were kidnapped, including Eugenio Domico, a former community chief; Solangel Arias Domico, member of the Indigenous Higher Council, and Gabriel Domico, a nurse aid. Their whereabouts was still unknown at press time.

The 340 MW Urura I Hydroelectric Project is 98 percent completed. The project is owned by the Electric Corporation of the Caribbean (CORELCA), which serves 1.2 million customers along Colombia's Atlantic coast. Last year, the US company Houston Industries Energy Inc. and its Venezuelan partner, Electricidad de Caracas, bought a 65 percent interest in state-owned CORELCA for US\$1.05 billion; the venture expects to turn a profit within a year, according to a 1998 Luxner News report.

Urura I will flood 7,400 hectares, much of it Embera land and parts of Paramillo National Park. Dam proponents claim that the project will open for agriculture 10,000 hectares of the Lorica wetlands downstream (by cutting off water to the wetlands), drain an additional 16,000 hectares, irrigate 150,000 hectares of new land and provide flood control.

Affected peoples have not been consulted throughout the project's long history. "We did not know about the project, we had never seen a dam, and we could not imagine what it would be like," said an Embera leader at their community house in Tierra Alta, the closest town to the dam site.

The Embera Reserve and the Paramillo National Park have been a hotbed of activity by both the leftist guerrilla group Revolutionary Armed Forces of Colombia (FARC) and of the right-wing paramilitary forces of Carlos Castano. The Emberas have seen six of their people killed, have had their houses and

canoes burned, and have been continuously harassed since construction of the dam began in 1993. A few years ago, a professor at the University of Cordoba was murdered after he raised the need for a public hearing about the dam. Although the crime was never solved, many people suspect his death was because of his probing into the dam's impacts.

Urura S.A., which manages the project for CORELCA, has promised economic compensation to the indigenous peoples and fishing and farming communities of the area, but the company has failed to come through thus far. Although the constitutional court ruled last November in favor of an Embera claim, it was not until February 11 that the company responded to it by making an offer to the Emberas. The mayor of Tierra Alta refused to comply with the ruling of the Supreme Court. The Court had established that construction of the dam can only proceed with the approval of the Emberas. Death squads have threatened new massacres of Emberas people if the dam project is stopped.

Communities Keep on Fighting

In this region, where the gun is the law and violence is shockingly commonplace, communities downstream of the dam refuse to be intimidated. "We feel that we are walking with our tombstones on our backs," said a representative of the Association of Producers for Community Development of the Lorica Wetlands Area (ASPROCIG). "We are defending our right to life, and Urura is taking our bread away from us," said a member of the group.

ASPROCIG was created in 1989 by organizations of fishing people and small farmers, and now includes 92 organizations and representatives of the Zenú and Embera Indigenous peoples. Initially ASPROCIG was formed to devise community development programs, but when construction of Urura I began, several groups joined in to organize around the impacts of the dam on their communities.

A recent technical document, published by Urura S.A., the Ministry of the Environment, the National Institute of Fishing and Aquaculture and the Valley of Sinu Corporation, maintains that fishing in the Sinu River Basin has increased significantly after the construction of the dam. Local communities maintain that these assertions are untrue.

The ASPROCIG communities have joined together to create a technically sound, com-

prehensive proposal for compensation and mitigation of the dam's impacts, but Colombian Environment Minister Juan Mayr Maldonado has not met with ASPROCIG to discuss their plan, despite invitations to do so. The Ministry of the Environment is in charge of issuing the environmental and operational license for the dam.

"NGOs have been declared targets of the paramilitaries because we haven't agreed with the dam project, but it was imposed upon us," said a fisherman. "Since the river was diverted to construct the dam, the fish started to disappear, and that is our source of work," he said. Another fisherman said, "Although we are not experts, we are the ones who live here, and depend on the resources of this area." ■

What You Can Do

The Urura-affected people call upon allies around the world to urgently send faxes and/or e-mails to Mr. Mayr. Letters should do the following:

■ Express your concern about the killings, and urge him to exercise his authority to push for an investigation of the assassinations. Demand that the rights of indigenous peoples, fishing communities and peasants be respected.

■ Urge him to meet with ASPROCIG to discuss their mitigation and compensation proposal, to seriously consider the measures proposed by the affected people to improve the situation in the region.

Send your letter to:

Dr. Juan Mayr
Ministro del Medio Ambiente
CI 37 N0. 8-40.

Santafe de Bogota D.C.

Colombia

Fax. (091) 288-9754

e-mail: juan_mayr_m@hotmail.com

* Please send a copy of your letter to: asprocig@colnodo.apc.org; camaemka@col3.telecom.com.co, and onic@colnodo.apc.org

For more information, or to subscribe to a Colombia/dams listserv, write to: Monti Aguirre: monti@irn.org

Proposed Uganda Dam is Drowning in Difficulties

by Stephen Linaweaver

The proposed Bujagali Falls hydropower project in Uganda has suffered serious setbacks in recent months. In January the Uganda Electricity Board, Uganda's state-run utility, refused to sign the Power Purchase Agreement (PPA) proposed by project developer AES, Inc. A month later the Uganda Parliament refused to approve the project, based on problems with the PPA. In February, the World Bank, which has been brought in to review the power agreements, slapped a one-year suspension on the signing of the PPA, according to the *Uganda Monitor*, Uganda's leading daily. Then on March 16, a local environmental organization filed an injunction to stop AES from reaching an agreement with the government before the project's environmental impact assessment is approved.

The US-based AES, Inc. – the largest independent power-producer in the world – proposes to build a 290-megawatt hydroelectric plant with a 30-meter-high dam on the Nile River, 50 miles east of Uganda's capital city of Kampala. The project is the first private power project in East Africa. According to the *Uganda Monitor*, the dam's US\$523 million price tag is greater than 16 percent of the country's gross domestic product.

The proposed dam would flood a 10-mile swath of the Nile corridor, including the Bujagali Falls, a spectacular series of rapids which are a popular retreat for tourists and whitewater rafters. It is also likely to harm water quality, increase water-borne illnesses, increase water hyacinth infestations and harm fisheries. Almost 200 hectares of productive agricultural land will be lost to the project, amounting to an annual loss of US\$675,000 at current prices, according to project documents. Potential resettlers have complained that their lands have been undervalued in project appraisals.

The Victoria Nile is already dammed by the Owens Falls Dam, built in 1954, and the Owens Falls Extension Project, currently under construction. Both are within 10 miles of the proposed dam.

Leaders of the Busoga Kingdom, some of whose people would be displaced if the dam were built, have publicly condemned the project, stating that the Bujagali Falls themselves are of "great social and cultural signifi-

cance" to their society. Moreover, the Busoga argued that the societal costs of the dam – which would displace hundreds of families and affect an additional 6,000 people – far outweigh its benefits. Many have raised concerns about the loss of the thriving ecotourism industry, a business which brings in as much as \$600,000 per year to local towns, mostly from whitewater rafting expeditions.

The project's most organized opposition has been the "Save Bujagali Crusaders," a coalition of local residents and environmentalists formed in early 1998 by Martin Musumba, a former district chairman. The Crusaders have argued that the falls are one of Uganda's great national treasures, and that the dam is unnecessary. Current demand for power in Uganda will be met when the 200 MW Owens Falls Extension Project is completed in the year 2000. The Save Bujagali Crusaders have been a thorn in the side of the AES Corporation, constantly informing the public of the project's impacts and stating their case before the Parliament.

Unfair Power Agreements

In the past few months AES has run across increasingly serious stumbling blocks. On January 20, the Uganda Electricity Board refused to sign the Power Purchase Agreement with AES. The UEB was especially concerned by a clause that stated it would have to buy all the potential power produced by AES at a set price, regardless of whether or not the power was actually produced. Such a deal, while often sought by hydropower companies, can be crippling to a developing nation such as Uganda.

On February 18, the Parliament refused to approve the construction of the dam, citing several problems with the controversial Power Purchase Agreement. The PPA states that the Uganda government must buy the power produced by AES if the Uganda Electricity Board fails to do so. Isaac Musumba, the Chairman of the Parliamentary Committee on the National Economy, stated Parliament's concerns publicly in the Ugandan press, sparking debate and arousing suspicion about the project among citizens.

Parliament's greatest concern was the hydrological guarantee of the PPA. This clause states that the UEB, or alternatively the Uganda Government, must pay for the

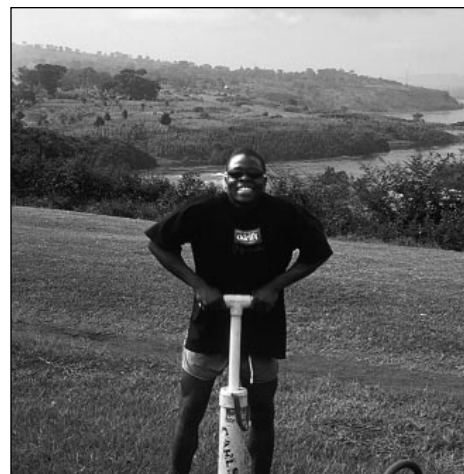


Photo: S. Linaweaver

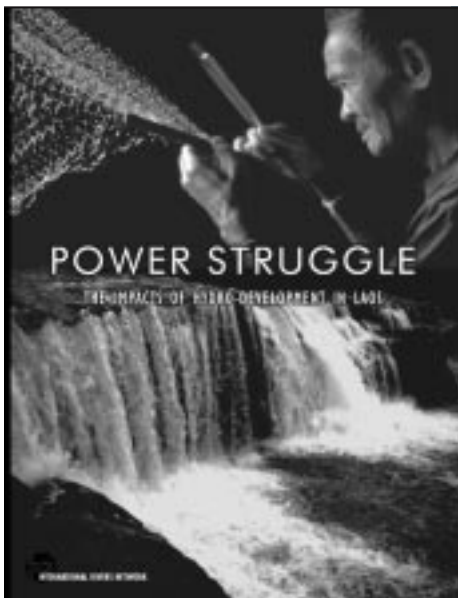
This Ugandan kayaker would lose his livelihood to the dam. Where he is standing would be flooded by the reservoir.

full capacity of the Bujagali Falls Dam, not necessarily the actual power produced. If Lake Victoria drops significantly and the flow of the Nile decreases, Uganda will still be forced to pay for power that is no longer being produced. Other major concerns of Musumba and the Parliament revolve around the need for external markets to make the project feasible. According to the Parliamentary Committee on the National Economy, 265 of the 290 MW produced by the Bujagali Falls Dam would have to be sold to neighboring countries to cover the cost of the project. Furthermore, the Committee fears that once transmission and distribution costs are added, the majority of Ugandans will be unable to afford the power. More than 90 percent of Ugandans live in rural areas with no access to a power grid.

Finally, Parliament raised the crucial point that the loss of tourist revenue from Bujagali Falls, as well as the loss of the aesthetic value of the Falls themselves, has not been included in factoring the cost of the power. With these figures included, building a dam at Bujagali Falls would make the effective cost of power even higher.

Although AES says power from the dam will cost under 6 cents per kilowatt hour, the National Committee on the Economy estimates it will cost 10.5 cents/kwh, a figure that includes transmission costs, distribution costs, taxes, and foreign exchange risk

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Indenture

Dam-Development Schemes Prove a P

*A new IRN report, **Power Struggle: The Impacts of Hydro** provides a comprehensive analysis of the economic, social and environmental impacts of hydropower development in Laos. Based on field visits conducted in 1998, **Power Struggle** contains six case studies of hydro projects at various stages of implementation. Herein is a summary of its scope.*

Acting on the advice of the World Bank and Asian Development Bank, Laos has borrowed millions of dollars in the past decade to develop its hydropower resources for export to Thailand. In spite of the government's hopes that this will fuel national development, there are already signs that the strategy is not working.

Many people are concerned that the dependence of the Lao people on their rivers for all aspects of their lives – including for fish, fresh water, irrigation and fertilization of crops, transportation and recreation – renders them highly vulnerable to the very substantial changes to river systems that large dams would bring, and that these costs may outweigh any economic benefits.

Plans to dam Lao PDR's rivers go back as far as the mid-1950s when foreign engineers envisaged a grand plan to build a cascade of seven dams on the mainstream of the Mekong River and identified numerous smaller projects on its tributaries. While these plans never came to fruition, largely due to years of war and political instability in the region, they had a profound influence on the development path prescribed for the country as it moved out of isolation in the mid-1980s.

The changes to Lao PDR brought on by the fall of communism created a critical gap in the Lao government that was quickly filled by advisors from bilateral western donors and the multilateral development banks. Faced with very little experience in the ways of capitalism, a shortage of educated personnel, and a dwindling level of financial assistance from its allies in the Eastern Bloc, the Lao government has had little choice but to listen to its foreign advisors, primarily the IMF, World Bank, Asian Development Bank and United Nations Develop-

ment Program, as well as the dam-building consultants and engineers which flocked to the country in the late 1980s and early '90s. These advisors urged Lao PDR to develop its hydropower resources and sell the power to neighboring Thailand, whose power demand was expected to grow by as much as 12 percent per year to 2010.

The quandary was how to raise the massive capital required for large dams, which involve high initial construction costs and long capital payback periods. The ADB and World Bank encouraged the Lao government to allow private sector participation in the hydropower sector through a new mechanism called Build, Operate, Transfer (BOT). The private sector would build the project with its own financing; operate, maintain and manage the facility for up to 30 years; and then transfer ownership to the government. Thus the private sector would invest the capital and absorb the risks. Enormous aid resources were poured into exploring these options.

Unfortunately, the risks to the Lao government were not made clear. In retrospect, privately funded projects which have gone forward have invariably involved either bad deals for the Lao government or hidden agendas on the part of the private developers.

In 1998, International Rivers Network visited six dams at various stages of implementation in Laos, including Nam Theun-Hinboun, Nam Leuk, Nam Theun 2, Houay Ho, Xe Pian-Xe Namnoi, and Xe Kaman 1. These field studies found very fundamental problems common to all of the projects, including poor financial viability, inadequate resettlement practices, inadequate compensation, uncontrolled logging, problematic environmental impact assessments and lack of appropriate regulation.

Repeating Problems

While the Lao government has invested millions of dollars in encouraging private-sector investment in hydropower development, there are already signs that this strategy is not working. Out of the five projects built in Lao PDR to date, four involved concessionary financing from a public source, and one was financed entirely from a company's own resources. No other private consortium has managed to raise commercial financing, nor successfully negotiate a power purchase agreement with Thailand. Nor are they likely to until at least 2006, when Thailand may negotiate additional power purchases from Laos.

Those projects that have proceeded are already running into financial difficulties. As a result of the economic crisis, revenues for the first two public/private projects to be built in Laos have been affected due to the low tariff and the drop in the exchange rate. In 1998, in its first year of operation, Theun-Hinboun lost around \$10 million in revenue due to the devaluation of the Thai *baht*. The 150 MW Houay Ho Hydropower Project was funded entirely from Korean conglomerate Daewoo's balance sheet, and was completed at the end of 1998. The financial viability of Houay Ho is so poor that Daewoo has been looking to sell its stake for the past year but has had trouble finding a buyer. The 60 MW Nam Leuk hydropower project, owned entirely by the Lao government and due to be completed in 1999, is expected to incur a \$15-20 million cost overrun which will affect the economic viability of the project. The government may be forced to sell a part of the project to a private power company.

Hydropower is increasingly being used as a pretext to resettle ethnic minorities from upland areas to lowland areas as part of a government resettlement plan. Anticipatory

d Rivers

r Trade-off for Laos

**Development in Laos,
and environmental impacts
interviews conducted
power projects at various
and findings.**

resettlement is occurring in some proposed inundation zones long before it is certain that a dam will actually be built. At Houay Ho, Xe Pian-Xe Namnoi, and Xe Kaman 1, resettlement is taking place under very poor conditions, causing hardship and suffering for the ethnic minority groups who have been forced to move. A lack of arable land and fresh water supplies, coupled with an unfamiliarity with wet rice cultivation and separation from ancestral lands, has resulted in food shortages and increased rates of disease and mortality for those resettled.

Hydropower projects in Lao PDR are proceeding without adequate efforts to document the livelihoods of people living downstream and upstream from the dam site prior to construction. Plans to provide for compensation for livelihood losses occurring as a result of the dam are also insufficient. These impacts have been best documented in the Nam Theun-Hinboun case



These villagers were resettled for Houay Hay Dam.

study, where villagers in three different areas reported substantial declines in fish catches, flooding of vegetable gardens, transportation difficulties and fresh water shortages. As with resettlement costs, private developers must be held responsible for paying their fair share of the compensation costs of a project. It is also important to recognize that compensation will never substitute for an unobstructed riverine ecosystem.

Preemptive Degradation

Hydropower projects' reservoir areas are being logged long before a decision to build a dam has actually been made. Road construction has opened up more land for logging and has led to increased environmental degradation. In the case of Nam Theun 2, the military-run logging company has logged more than one million cubic meters of timber on the Nakai Plateau to clear the reservoir area even though the dam may never be built. Dam proponents now justify building the project on the basis that the Nakai Plateau is so degraded from logging that it is not worth saving. At Xe Kaman 1, all indications are that the dam may never be built, and that the project is in fact an elaborate logging scheme in disguise. In this case, the Lao government is foregoing lucrative logging revenues in anticipation of future proceeds from electricity sales that may never be realized. Meanwhile, some of mainland Southeast Asia's last remaining tropical rainforest, together with an array of rare and endangered species, may be sacrificed.

Dams are also being pushed through before all of the social and environmental costs of a project are known and accounted for, and in many cases the environmental impact assessment (EIA) process is being manipulated to protect hydro and logging interests. EIAs in Lao PDR are carried out by hydropower consultancy companies with vested interests in ensuring that projects proceed. EIAs for Theun-Hinboun, Nam Leuk, and Xe Pian-Xe Namnoi were heavily criticized for omitting crucial information and ignoring or downplaying concerns about the potential negative impacts of the projects.

Time to Rethink the Future

The Asian economic crisis, now expected to be more severe and protracted than originally anticipated, is having a significant impact on

Thailand's demands for power. In November 1998 it was reported in the Bangkok newspaper *The Nation* that the Thai utility EGAT has decided to delay power purchases from Laos until at least 2006. Lao PDR also faces competition from other neighbors, most particularly Yunnan Province of China and Burma.

The economic uncertainty of proposed hydropower development, coupled with the significant impacts that such schemes are having on the economy, environment and people of Lao PDR, point to the need for a fundamental rethinking of the government's economic development strategy. There is clearly a need for a reassessment of the best use of the scarce financial and human resources of the country, including the benefits from possible investments in areas such as tourism, agriculture and non-timber forest products as alternatives to hydropower. The fact that such an assessment has never been done points to the one-sided advice of the development agencies.

Far-reaching reforms are needed in order to ensure that future hydropower development in the Lao PDR is in the best interests of the country as a whole. Initiating such a process of reform will require substantial political will on the part of Lao decision-makers and the inclusion of people within the country who until now have been unable to participate in the hydropower debate. In the meantime, it is irresponsible of the Asian Development Bank, the World Bank, and other donors to be pushing ahead with the funding of individual hydropower projects as "aid" in the Lao PDR.

Rather than being an obstacle, the slowdown in the development of hydropower in Lao PDR, brought about by the Asian economic crisis, should be seen as an opportunity for the Lao government and the donor community to reconsider the problems with the current path of hydropower development and to initiate changes. Addressing the above problems through a process of fundamental reform will be needed to ensure a more sustainable and just path to future development for the people of Lao PDR. ■

Power Struggle is available for \$15 plus shipping from IRN. To order a copy of the full report in English or Lao, please contact IRN: Email: irn@irn.org, Tel: 510.848.1155, Fax: 510.848.1008. The report can also be ordered on our secure web site: www.irn.org.

Water Conservation: Success Stories from California

by William C.G. Burns

“**D**riven by a rising global standard of living and increasing food production, water demand is increasing at twice the population growth rate,” says Hans van Ginkel, Director of the United Nations University. And Klaus Toepfer, the executive director of the United Nations Environment Programme, recently stated that a future war over water is a likely possibility. These two are just the latest in a growing chorus of researchers, scientists and policymakers who warn that water demand is growing at an unsustainable pace.

Finding solutions to avoid such conflicts will require a new mind-set for many governments and water planners, as making each drop of water go as far as possible becomes the most critical effort, replacing the age-old water manager’s quest to find enough new supply to meet all demands. Water managers around the world are already beginning to change, and good ideas from all corners of the globe are beginning to see wider practice.

A new book of water-conservation success stories from California offers some universally useful ideas. California is something of a microcosm of the world’s coming water woes. It has been home to water fights that have inspired movies and novels, so rich were they in intrigue. It has seen the sometimes underhanded creation of a “water empire” to support a city in a desert – Los Angeles. The state’s water managers have come up with big water-transfer schemes so controversial that they made water management a topic of dinner conversation around the state. More recently, California has seen its growing demand come under fire, and some of its sources of water begin to dry up or be cut off as belated efforts to protect the environment are adopted.

Water has been a perennial source of friction between various groups of Californians – between farmers and environmentalists, industrialists and urban dwellers, water managers and resource agencies. The recriminations and distrust this has engendered has seriously interfered with initiatives to develop long-term solutions to some of the state’s most pressing water issues.

Sustainable Use of Water – California Success Stories (Pacific Institute, 1999) describes some of the lessons learned in the Golden State as it has begun to take the difficult steps toward more sustainable water practices. Most of these success stories hinge on

collaborative efforts involving a wide range of interested stakeholders, such as water managers and users, policymakers and members of the general public at the local level. The report is the culmination of a two-year study of water practices in the state, and details 40 “success stories” that could be instructive for other dry parts of the world. Five themes which emerged from the case studies are summarized below.

Cooperative partnerships are critical.

Groups often at loggerheads – including environmentalists, farmers and water agencies – have been able to find common ground on water issues when they come together with the intent of solving difficult water problems together. The collaboration between the Mono Lake Committee, a group formed to protect and restore the Mono Basin ecosystem in eastern California, and the Los Angeles Department of Water and Power (LADWP) exemplifies this.

After a successful lawsuit by the Mono Lake Committee substantially reduced the amount of water that LADWP was permitted to divert from the Mono Lake tributary, the Mono Lake Committee worked with LADWP to secure “replacement water” that would not threaten the viability of other ecosystems in the state. The Mono Lake Committee successfully secured state and federal funding that LADWP supplemented with some of its own resources to develop a series of water recycling and conservation projects that ultimately will replace all of the water LADWP used to divert from Mono Lake, more than 88,000 acre feet per year (enough to support 176,000 typical households in the region).

Perhaps the biggest lesson to learn from this case study is that litigation, even when necessary, may not be sufficient. The Mono Lake Committee could have simply declared “victory” and not sought to work with LADWP to find replacement water sources that wouldn’t threaten the environment. By encouraging conservation initiatives, the Committee ensured that impacts were not re-directed to other sensitive ecosystems – and that it would not have to fight the same battle with LADWP in the future.

Existing technologies have enormous untapped potential.

There are numerous projects in the state which demonstrate that large savings in water consumption can be accomplished

without costly investments in new technologies or infrastructure. For example, the Naval Aviation Depot in San Diego created a Zero-Discharge Team that looked for ways to minimize water waste in all aspects of its operations. Through simple fixes in equipment and changes in processes, it reduced water use by over 90 percent between 1987 and 1997, resulting in savings of more than a million dollars annually. The efforts of the Navy in San Diego, as well as many other initiatives outlined in the report, demonstrate how programs that get more from present water systems may eliminate the need for large dams and other large infrastructure projects.

Economic innovation leads to cost-effective changes.

The recent movement to measure the economic costs and benefits of water-policy decisions is encouraging technological innovation and helping to change water use patterns. For example, the city of San Jose implemented discounted rates to encourage the use of recycled water. Using recycled water can greatly reduce pressures on agencies to develop expensive new supplies. The Irvine Ranch Water District’s replacement of its flat-rate-per-unit charge for water with an ascending-block-rate structure has encouraged more efficient use of water, as has an innovative rate program in Marin County in northern California. Water managers and policy makers throughout the world need to explore the role that economic incentives can play in fostering water use efficiency and encouraging water recycling. This approach requires a concerted commitment to educate users about the benefits of such programs, as well as protections to ensure that the poor are not penalized.

Regulatory incentives and motivations are effective tools.

While there is now a tendency in some circles to demonize government regulations, the reality in water is that federal, state/provincial and local regulatory oversight, management and standards are some of the most effective tools for achieving sustainable water policy objectives. For example, farmers in the Sacramento and San Joaquin Valleys, as well as urban water agencies in Southern California, recognized that listing the depleted spring-run Chinook salmon under the Endangered Species Act might

continued opposite

Water Conservation continued

have severe repercussions for their operations. Thus, they worked closely with state and local agencies to remove dams and to create a siphon that substantially improved conditions for salmon without seriously disrupting water supplies. In this and many other cases, regulatory frameworks provide the impetus for innovative solutions that eliminate the need for more intrusive governmental measures in the future.

The value of information is high.

Several of the case studies in the report demonstrate that collection and dissemination of proper data and information can spur successful changes in water management and use. For example, a program devel-

oped by the University of California and the California Department of Water Resources to provide weather information to farmers is helping many of them to irrigate in a more accurate manner which is highly efficient. The California Irrigation Management Information System has helped participating growers reduce applied water use by an average of 13 percent while increasing yields by 8 percent. Again, the emphasis is on "smarter" use of existing sources of water rather than development of new supply.

The Pacific Institute does not harbor any illusions that all of the conflicts between stakeholders in California, or any other part of the world, will disappear through the adoption of the kind of initiatives described

in its report. However, the stories it recounts demonstrate that a commitment to cooperation by stakeholders and an emphasis on fostering efficiencies play an integral role in the quest for water solutions that meet society's needs while also protecting ecosystems. ■

The author is the director of communications for the Pacific Institute for Studies in Development, Environment, and Security in Oakland, California. The Executive Summary of the above report may be found at www.pacinst.org. The full report may be ordered from the Institute for \$20.00 per copy, shipping included. Contact Lorelei Muenster, 510.251.1600; pistaff@pacinst.org.

Narmada continued from 3

lunge the court decision. "The people's movement in the Narmada valley has reached to the critical stage, the outcome of which will be decisive for millions of people fighting against displacement, unjust and unsustainable policies and projects in the name of development," said an NBA action alert.

The dam wall had remained at 63 meters (207 ft.) above the river bed for the past four years. No water can be diverted from the reservoir into the project's main canal until the dam reaches the height of 97m. The state of Madhya Pradesh has urged that construction halt a couple of meters above this height. Gujarat, however, is determined to complete the dam to a height of 122m. Reducing the final height of the dam by some meters would spare much of the densely populated and highly fertile agricultural plain at the top end of the proposed reservoir in Madhya Pradesh, but would still submerge a large amount of adivasi land in the rugged hill areas nearer the dam.

If the Sardar Sarovar Project is completed as the Gujarat government intends, around one million people would be directly negatively affected. Over 200,000 people would lose land to the reservoir. Many more would be affected by other aspects of the project, including its canals, the town built for the construction workers, the reduced flow of water downstream, afforestation projects to slow reservoir sedimentation, and a wildlife sanctuary created as mitigation for submerged forest. No detailed resettlement and rehabilitation master plan has yet been produced.

Opponents of Sardar Sarovar say that the project will cost far more and produce far fewer benefits than claimed by dam supporters, and that more equitable, less destructive and cheaper alternatives exist. ■

Pak Mun continued from 5

In 1997, as a result of demonstrations in Bangkok coordinated by the Thai non-governmental organization Assembly of the Poor, the former government agreed to provide 15 rai of land per family in compensation for lost fisheries income. However, the new government, which came to power in 1998, has renounced all compensation commitments of the former government, and the communities are back to square one.

The World Bank has consistently refused to take any responsibility for the project's problems, despite the fact that the Bank was repeatedly warned by local communities and NGOs prior to approval that the impacts would be severe. A June 1998 World Bank Operations Evaluations Department (OED) report, "Recent Experience with Involuntary Resettlement," goes so far as to claim that Pak Mun was "among the best experiences with resettlement among Bank-assisted projects." The OED states that resettlement of families at Pak Mun was "highly satisfactory," that families received "exceedingly generous compensation," and that "there is no conclusive evidence of any impact ... on the fish population."

A March 15 letter from 27 Thai groups to the World Bank states that the dam "destroyed the Mun River, fisheries, and the way of life of people at Pak Mun ... The World Bank is responsible for the destruction, cares only about itself and not about people, and that the Pak Mun dam is development only for the World Bank."

Villagers are demanding that the World Bank take responsibility for its past mistakes. They say they are prepared to fight until their rights to just compensation are recognized, or until the dam is taken down. ■

Bujagali continued from 7

(because the power is sold to Uganda in dollars, and is sold to Ugandans in shillings).

Although all parties involved say they will re-assess the Power Purchase Agreements, AES faces yet another hurdle. The project's environmental impact statement (EIS), released in February 1999, still must be approved by Uganda's National Environmental Management Authority (NEMA).

In mid-March, the locally based National Association of Professional Environmentalists went to court to postpone negotiations on the project's power purchase agreement until NEMA has acted. According to the Ugandan newspaper *New Vision*, the group has requested a temporary injunction against AES from executing an agreement until NEMA has approved the EIS. The group's lawyers said the approval of the project by Parliament before the approval by NEMA is illegal. The lawyers argued that members of the public need to know whether AES has addressed all environmental issues before the government commits itself to buy the project's electricity.

Meanwhile, a February 11 article in the London-based *Financial Times* reports that the project's future is even "further clouded by another project" which is more economical, more flexible and with fewer environmental impacts. The Norwegian-proposed Karuma Falls hydro facility would use underground sluices rather than a dam, and would produce 200 megawatts at less than 5.5 cents per kilowatt/hour. The Uganda Parliament was recently presented with a full project proposal, according to a March 18 article in *New Vision*. The project development team told the newspaper their sources of financing were only waiting for a go-ahead from the Uganda government. ■

SHORTS

Rebels in the Congo Republic took over the 74-megawatt Moukoulou Dam in December and have been depriving the country's business capital Pointe-Noire of much of its power. Reuters reported that the besieged city is also facing a shortage of basic foods and drinking water caused by insecurity in farming areas where the militia is active. The power cuts have closed many small businesses. Last year, rebel forces seized the much larger Inga Dam and disrupted power to the capital city for two weeks.

Government officials are struggling to contain a massive acid leak at a protected marshland site in northeast England. Officials describe the leak, which went undetected for nearly two months, as one of the worst incidents they have seen, according to the Environment News Service. The leaking acid has affected half of the 70,000-square-meter Greenabella Marsh, which attracts many species of birds and was recently designated a "site of special scientific interest." The remains of invertebrates killed as hydrochloric acid poured into the marsh are still floating to the surface. The company, which manufactures titanium dioxide for industrial use, has been flushing the affected areas with sea water. Friends of the Earth-UK is demanding that the company be prosecuted.

Singapore's first wind turbine was recently installed by a team of engineering students from Singapore Polytechnic. The one-kilowatt turbine, combined with existing solar panels, will light a five-story building at the school. "Imagine wind turbines on the rooftops of high buildings ... to generate energy for up to 10 percent of Singapore's needs," a press release stated. The 10-meter-tall turbine can generate power at speeds as low as 13 miles per hour.

Three large dams in South Africa's Northern Province overflowed in early February due to heavy rainfall, according to Sapa news service. Mudslides and floods in the Ga-Sekororo region killed at least six people and injured four others. Eleven homes were destroyed and rescue operations were mounted throughout the week. The dams affected were the Tzaneen, Ebenezer and Magoebaskloof Dams.

News Briefs



RIVER PROTECTORS

CHILE: Mapu Domuche Newen (Women with the Strength of the Earth), a group of eight Pehuenche women at the center of the resistance to construct Ralco Dam on the Bio-bio River, organized a non-violent sit-in to protest illegal construction works at the dam site in January. "We are not willing to abandon our lands for all the gold of the world; we demand respect for our legitimate right to live on our lands," said a representative from the group. According to the nation's Indigenous Law, construction can only proceed if all land exchanges are approved. There are still ten Pehuenche families who refuse to negotiate with project authorities Endesa. The reservoir will flood 3,200 hectares, 638 of which are indigenous lands.

After the group paralyzed construction works, a special police force arrived, threw tear gas, and evacuated people by force. The police used a helicopter and vans from Bosch and Besalco, two project contractors. 28 people were detained, among them 10 Mapuche, including Nicolasa Quintraman, who received the 1999 EcoNobel Swedish prize. All but two foreigners were later released. Patricia Ballesteros from Spain and Lee Pope from the United States faced deportation for intervening in the affairs of the nation. Recently, the Supreme Court reversed the order of deportation. Meanwhile, asphaltting of the road continues, which will facilitate the construction of the dam. Besalco, the construction company in charge of civil works for the project, says it expects to finish construction in June. Construction of a power line is also underway.

US: The Santa Clara River, one of the last free-flowing rivers in Los Angeles County, is currently threatened by a massive 21,000-unit housing and commercial development project proposed by Newhall Land and Farming, California's third-largest landowner. The 12,000-acre Newhall Ranch Project would destroy habitat for many species of rare birds, plants and animals, such as the endangered Least Bell's vireo and the unar-

mored three-spined stickleback. Although supervisors approved the project in March, groups like the Santa Clarita Organization for Planning the Environment are going to court to try to reverse the decision.

Environmentalists are concerned that wildlife and water quality will be negatively impacted by the project, which will put virtually all of the river's tributaries into concrete-lined culverts and may also lead to increased groundwater extraction. Environmental groups have called for an environmental impact statement so that these problems can be more accurately investigated. "In Southern California, three-quarters of our threatened and endangered species depend on creeks and rivers," says Brian Troutwein of the Urban Creeks Council. "This project represents the single largest threat to this area's remaining waterways. It should not go through."

The process for approving the project has been riddled with corruption. Preliminary approval was given although no water supply has been identified for the development and despite concerns that the area was zoned for only 10 percent of the units proposed. According to one project opponent, "As you look at the campaign [finance] statements of the [Los Angeles] county supervisors, about 75 percent of all campaign contributions come from developers or development-related interests."

FISH STORIES

US: For 80 years, water flow in western Michigan's Manistee River fluctuated dramatically each day – ranging from 10-year floods to drought conditions. The variation was caused by a hydropower dam operating practice known as peak flow management, which permits the periodic release of large amounts of water. Such flows can cause aquatic creatures to alternately become stranded or swept downstream, negatively impacting the fish that rely on them for food. On the Manistee, a major Lake Michigan tributary, relief came in 1989. Peak flow management was abandoned. Water was allowed to flow naturally

through the Tippy and Hodenpyl dams as a result of terms specified in new hydropower licenses. Today, a decade later researchers at the University of Michigan and Michigan State University have found that survival of young Chinook salmon in the Manistee has increased since the late 1980s in response to a stable water flow.

"Natural reproduction is incredible now," says University of Michigan fisheries biologist Ed Rutherford. "It's gone from virtually nothing to approximately 700,000 smolts annually." But researchers found that although steelhead reproduction has also increased, these fish had a lower survival rate than young chinook. Rutherford suspects warm water temperatures may be the reason. Steelhead spawn and rear in the tailwater of dams, he explains, where summer water temperatures may be too warm.

Environmental News Service

US: The Washington-based Avista Corp. agreed in January to pay the Nez Perce tribe \$39.2 million over the next 45 years to settle historic claims made for damage to fish runs on the Clearwater River, reports the Washington-based *Spokesman-Review*. The original lawsuit was filed in the US District Court for Idaho and alleged that the now-removed dams at Grangeville and Lewiston, which were bought by Avista in 1937, depleted fish stocks on the river's main and south forks. Earlier this year, the Nez Perce Tribe formally endorsed the idea of breaching four dams on the Snake River as a way to save endangered runs of salmon and steelhead which the tribe has relied on for generations. Tribal officials have stated that breaching the dams is the best hope for the fish, which once returned from the Pacific by the millions each year. Last year, about 10,000 steelhead and chinook salmon returned to the Snake, along with two sockeye.

MINING

INDONESIA: People living in South Sumatra have suffered serious health and livelihood impacts from a December 1998 toxic spill at a commercial gold mine, according to the Indonesian nongovernmental organization WALHI. Pollution from the mine has caused problems for over 15,000 local farmers and their families in seven villages along the river. Farmers can no longer traditionally pan for gold since people have contracted skin irritations and sores from immersion in the contaminated water.

Since 1996, PT Barisan Tropical Mining, the company which operates the mine, has been exploring for gold and silver over a 46-

square-mile area close to Kerinci Seblat national park and ancestral lands of the Kubu indigenous people. Many farmers have lost jobs since land for the mine was purchased; others were forced by army intimidation to sell their land to the company. Mining operations have led to decreased production on remaining plantations and have also caused river bank erosion.

KURIL: The livelihoods of over 5,000 people living on Kunishir Island in the Russian Kuril archipelago are now threatened by illegal mining development, according to the California-based NGO Project Underground. The Russian mining company Kuril'skoye has begun the first stages of mining within the Kuril'skiy nature reserve in the valley of the Severyanka, one of the island's largest salmon spawning rivers. The first stages of development have already impacted two tributaries of the Severyanka and will result in the destruction of protected forests and salmon breeding areas.

The company is currently planning on dynamiting a 72-meter-wide hole at the mouth of the Udachny (or "Lucky") River on the shores of the Okhotsk Sea in order to process the gold ore with sodium cyanide. Experts from the Institute of Inorganic Chemistry at the Russian Academy of Sciences in Novosibirsk say that this process may result in cyanide eventually being transferred into the food chain together with heavy metals like antimony, arsenic and selenium. The Kunashir Bay is currently an important migratory route and breeding ground for all six Pacific salmon species, pollock, Pacific flounder, northern fur seal, and Steller's sea lion.

"The decision to approve this mine was not objective, and deliberately decreased the value of the unique island ecosystems protected in this area," says E.M. Grigoriev, Director of the Kuril'skiy nature reserve. Grigoriev claims that Kuril'skoye began mining operations before obtaining the required permission from the reserve and failed to go through an adequate environmental impact statement required for any kind of land use within the buffer zone. "The government did not present the real picture of the environmental consequences associated with this mining activity," said Grigoriev.

BRAZIL: Maszumi Harada, a scientist from Kumamoto University in Japan, says that fishing communities along the Tapajos River in the Amazon are suffering from a debilitating disease of the nervous system caused by mercury poisoning. The illness, caused by a toxic form of mercury called methyl mer-

cury, has been detected in at least 50 people in 10 villages and includes symptoms such as involuntary trembling, partial blindness, loss of muscle strength and deformities in new-born children. This is the first time Minamata disease has been diagnosed outside of Japan, according to *New Scientist* magazine. The disease was first identified in the 1950s, after more than 1,500 people living in or near Minamata, Japan suffered damage to their nervous systems from eating mercury-contaminated fish. Methyl mercury attacks the cerebellum, which coordinates voluntary movements, and destroys the personality, says Hiroshi Takahasi, a Japanese epidemiologist. Experts speculate that the mercury may originate from some 250 tons of mercury used annually by small-scale gold miners or from the leaching of natural mercury from soils due to deforestation. Takahasi warned that cleaning up the mercury could be nearly impossible.

US: In February, chemical giant DuPont Co. bowed to environmental pressure and agreed to halt plans to mine titanium along the edge of the Okefenokee Swamp, one of the world's largest freshwater wetlands. The agreement would end efforts by US-based DuPont to mine 39,000 acres on the refuge's eastern boundary in southeast Georgia.

Criticism from environmentalists forced DuPont to stop construction of the strip mine in 1997 pending further study. Under the agreement, about 10,000 acres of the proposed mining area would be added to the 396,000-acre refuge and mining would be prohibited on another 29,000 acres owned by DuPont and another landowner. The pact is contingent on efforts to raise an undetermined amount of money to purchase land, retire mineral rights and compensate DuPont, two timber companies and local governments for loss of revenue.

Jim Waltman of The Wilderness Society told Reuters that mining next to the Okefenokee "would have been like drilling for oil under the Statue of Liberty." Environmentalists criticized plans to dredge 50-foot-deep, 3-mile-wide pits along a 30-mile ridge that serves as a natural dam. DuPont planned to obtain titanium for white pigments used in products ranging from office paper to powdered doughnuts.

The Okefenokee, described by Native Americans as "the land that trembles when you walk," is one of the last strongholds of the Florida black bear and has one of the largest alligator populations in the country. The unique wetland is home to more than a thousand species of plants, birds and aquatic life. ■

Three Gorges continued from page 1 are too few to make a dent. "Since 1995, Yunyang county has basically been unable to relocate any more people into factories," the article says. Instead, many displaced townspeople have been given a "living allowance" of \$8.50 a month, which is "unable to satisfy the elementary living needs."

The article warns that the plight of these uprooted people "may become an explosive social problem, and the dam region will become a hotbed of sustained upheaval."

In addition to the journal article, indications that all is not well at the project were reported in two articles in the February 24 issue of *People's Daily*. This is especially significant since the *People's Daily* is known as "the tongue of the Party" and had never before criticized the project. An internal US State Department memo says the recent articles "depart sharply in tone from the 134 other Three Gorges articles which have appeared in the newspaper since August 1998."

Petitions from Resettlers

The critical articles come on the heels of an unprecedented show of resistance by affected people who have received poor treatment in the resettlement program. Last year, 10,000 resettlers affected by the Three Gorges Dam filed petitions with the Chinese central government, detailing extensive problems with the project's resettlement program. The petitions reveal not only rampant corruption, extortion, falsification of data and inadequate compensation, but also the unwillingness of government project managers to address the situation.

The petitions urge the central government to intervene, or face serious consequences: "In the future, when desperate relocatees rush to government compounds begging the government for food, what then? Once conflict breaks out it will be too late for the central government to send down officials to handle the matter."

In an act of desperation borne of having limited land available for resettlers, the government has offered bonuses to resettlers who will move to undesirable areas such as Inner Mongolia. A February 14 *South China Morning Post* article said the response to such schemes is "defiant and angry." One villager said, "No one wants to go. You have to leave everything behind. It is too far away and too cold."

So far, the government claims 160,000 people have been resettled, but sources inside China say the figure is less than half that. It is the largest dam under construction in the world today, and the scale of the resettlement situation seems destined to involve extensive human rights abuses.

Rampant Corruption

The petitions describe how project officials have been extorting illegal fees from resettlers and accepting bribes from people outside the inundation area so that they could be registered as relocatees entitled to compensation. According to the *Strategy and Management* article, towns also commonly added fake names to their resettlement list to get more funds, creating "a piggy bank from which power-holders can extract private gain."

"You can see where the money is going. Officials not able to draw their wages a few years ago are now living high on the hog, driving fast cars and smoking expensive cigarettes," said one inspector, a retired professor based in Fengdu, one of the cities to be submerged. "Corruption is now the greatest problem. We receive letters from people protesting all the time."

According to China's *Economic Daily*, the National Audit Office found that local officials on the project had already embezzled US\$28 million. The auditors discovered inflated claims and kickbacks from construction companies, which have subsequently built defective bridges, roads and buildings.

Chinese Premier Zhu Rongji, who formalized the hiring of 200 extra inspectors to mount a crackdown on the corruption, as well as on shoddy construction standards on the dam and associated building projects.

Shoddy building practices on the project have caught the attention of the country's top leaders. In his first visit to the dam site in late December, Premier Zhu warned Three Gorges construction workers to do only top-quality work on the project. "The responsibility on your shoulders is heavier than a mountain," he said. "Any carelessness or negligence will bring disaster to our future generations, and cause irretrievable losses." Zhu warned that "slight neglect" or "loose screws" could cause "endless troubles for future generations."

What IRN Is Doing

IRN led the effort to publicize the villagers' petitions, which helped focus international attention on the project's resettlement problems. IRN is also spearheading the effort to halt the flow of US and European financing for the project. Finally, IRN is increasing the size of the international coalition to stop future financing of the project. For more information, please write us: threegorges@irn.org

Funding Woes

On top of everything else, costs have spiraled out of control and the project is desperately short of funds. Yuan Guollin, vice general manager of the Three Gorges Development Company, recently told *People's Daily* he "wants the people to watch the Three Gorges project closely, since every day R30 million (US\$3.7 million) is spent on the project."

On March 16, the official New China News Agency quoted officials overseeing the dam project as saying it faces a \$3 billion shortfall of the \$9.7 billion needed for the second phase of construction, which is planned to be completed in 2003. A special tax has been added to electricity bills to pay for the project. In addition, Chinese state-owned companies are being forced to buy construction bonds, and state-owned banks are being pressured to issue loans to pay for it, a Chinese source told the *Washington Post*. It said officials also hope to raise \$600 million through stock offerings.

Lu Youmei, general manager of the Three Gorges project, said officials also are considering a plan to obtain capital from Western sources – perhaps by listing part of the Three Gorges operation on an Asian or Western stock exchange. "We still need to buy a lot of machinery from outside China so we will need a large amount of foreign exchange," Lu said. "We are still exploring our options."

Some Western analysts believe China will come up empty handed because the project is so controversial and has no obvious source of revenue. Already one private institution, BankAmerica Securities, has adopted a policy to not support the Three Gorges Dam directly. Western economists said that China appears to have funneled \$300 million raised in a bond offering in December into the project; that offering was registered in Hong Kong and Luxembourg, where there are no strict reporting requirements about how money raised will be used.

At press time, a battle was looming to prevent Morgan Stanley Dean Witter (MSDW), a global financial services firm, from investing in the project. MSDW is a 35 percent shareholder in China International Capital Corporation, which had been working with the Three Gorges Project Development Corporation on plans for a share listing on the Hong Kong and New York stock exchanges. The corporation is the state-owned company building the dam.

Franklin Research and Development Corporation, a socially responsible investment firm which manages client shares of MSDW, filed a shareholder resolution calling on the

continued opposite

Pakistani Dam Workers Badly Misused by Italian Company

by Francesco Martone

On a project the World Bank hopes to hold up as a model on social issues, labor relations have deteriorated to the point of becoming a human rights issue.

In February, the International Confederation of Free Trade Unions (ICFTU) wrote World Bank President James Wolfensohn urging him to help remedy the plight of Pakistani workers on the Bank-funded Ghazi Barotha Dam project. The letter caps a series of activities by Italian and Pakistani unions to support the rights of local workers on the massive project, which is headed up by the Italian company Impregilo.

In 1996 and 1997 Impregilo signed a series of agreements with workers' unions which defined their wage rights and other working conditions. The company has yet to fulfill its promises on wages, using the justification that it was experiencing financial problems because the Pakistani dam authority WAPDA, which was to finance the project, was in arrears for US\$110 million. Currently Pakistani workers working in Ghazi Barotha are paid around \$110 a month, while technical experts are paid around \$220. As of now the company states that some increase in salaries was selectively given, but labor activists say these increases were negotiated only with "puppet" trade unions, which according to international labor rules cannot be considered as legitimate representatives of the workers.

Labor rights on the project have been regularly squashed. In August 1997, the Pakistani police attacked a demonstration by the Ghazi Barotha unions in Islamabad to protest Impregilo's anti-union activities. Police arrested 200 protesters. Two months later, the company fired 600 workers who had been part of an effort calling for adequate salaries. In mid-1998, the Ghazi Barotha Awami Labour Union presented Impregilo with a set of demands, following the promises made in 1997 by the company for a re-negotiation for better terms. This was met with serious intimidation and

harassment of workers and union leaders, with the support of local police.

The police have been called many times to intimidate workers: according to a letter from the Pakistani labor organization APFOL (All Pakistan Federation of Labour) to the ICFTU dated October, 23, 1998, 5,000 workers were at that moment locked out, some of them thrown out of medical facilities in the camp. Some 800 workers in another construction camp were held captive and many were prevented access to the mess, so that they could not eat or drink.

Union leaders have suffered much police intimidation and arrests. The offices of the unions in Ghazi were shut down the same days, and 50 union workers fired. These firings added to another 850 workers laid off that month. A few days later the company offered some their jobs back, but the fired workers demanded that union leaders be released and all workers be reinstated. In November the National Industrial Relations Commission ordered Impregilo to reinstate all workers, and the police to leave the camp and reopen the union's offices.

The union leader came before the labor commission a few days later, and was promised that no arrests or police harassment would occur. But shortly thereafter, Impregilo requested the authorities to implement the Essential Services Act, a law dating back to British colonial times which suspends for all union rights, forbids strikes and restricts or bans collective bargaining for services and activities that are declared to be of public interest.

The October letter from APFOL said: "As a result of this law, workers of Ghazi Barotha project their service has been reduced to that of slaves and forced laborers." The act also violates the right of collective bargaining and strike.

In the meantime, Italian unions continue their campaign in support of their Pakistani union brothers. The international bureau of one of the major Italian unions, CISL, entered in negotiation with Impregilo calling

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for an immediate solution and to provide an adequate salary to workers. Construction-worker unions of Lombardy, where Impregilo's headquarters are located, are raising funds to support the arrested unionists and their families. According to an article in Pakistani newspaper *The News*, the latest development is that in January, Pakistan's National Industrial Relations Commission declared the Ghazi Barotha union illegal, in response to a petition from the construction companies. Consequently, the company refused to meet with local unions.

The responsibilities of project authorities WAPDA and of the Pakistani government in the anti-labor behavior were made clear in the international union's letter to Wolfensohn. The letter notes that the Pakistani government implemented privatization and deregulation policies for national public utilities at the urging of the World Bank. On December 22, 1998, the letter states, "the government issued a Presidential Ordinance that removed trade union rights of the 130,000 workers at WAPDA for two years." WAPDA was brought under the control of the military, with "30,000-35,000 junior army officers and around 250 officers drafted in." At the time, the union was campaigning against privatization.

The violations of workers' rights add to the already worrying situation of compensation for dam-affected communities. Project authorities said they would guarantee the involvement of local communities in resettlement programs, land compensation and in mitigating the socio-environmental impacts of the project. Around 20,000 people are likely to lose some land. As of May 1998, WAPDA had been able to purchase only half the land it needs for displaced families. Local communities also have suffered the impacts of construction activities. ■

The author is the Coordinator for the Reform the World Bank Campaign in Italy.

Three Gorges continued from page 14
company to review the transaction's impact on the environment and human rights in China. A five percent vote for the resolution is required for MSDW to consider it.

The MSDW Board of Directors officially opposes this resolution because it says that it

would "limit its flexibility" and "interfere with its business." The proposal, however, only asks the company to more carefully consider the risks of its transactions.

The ultimate cost of the Three Gorges Dam – the most critical figure needed to

assess its economic viability – remains a major unknown. The original cost estimate (\$8 billion in 1992) were doubled within one year. Official estimates are now as high as \$30 billion, and unofficial estimates are much higher. ■

Dredging Suspended for Channelization Project on Paraguay River

by Glenn Switkes

Brazil's new environment minister, José Sarney Filho, suspended so-called maintenance dredging on the upper stretches of the Paraguay River in February. The dredging had been taking place at four points just below Cáceres, Mato Grosso as part of the "Paraguay-Paraná Hidrovia," which is a channelization project that is intended to open the river channel to huge barge trains.

The action was taken after environmentalists presented videotape evidence from the national television news which showed barges careening down the river, breaking holes in the banks and opening up new channels in the delicate ecosystem of the Pantanal, the largest tropical wetlands in the world. The groups told the minister that the ecological impacts caused by the barges was incalculable.

The dredging had been authorized by the Brazilian environmental protection service, IBAMA, in response to a petition by the Transport Ministry, which had submitted a rudimentary environmental study to support its petition. According to technical

reports furnished by the Rios Vivos Coalition, the lack of data regarding the relationship of water flows between the Paraguay River and the vast surrounding floodplain of the Pantanal made it impossible to assess the changes in the wetlands that dredging might cause.

Sarney Filho has shown a remarkable openness to dialogue with environmentalists since taking office in January. In announcing his decision, Sarney Filho said that the states in the region have two choices: they can continue to make economic decisions without paying attention to the environment, or they can choose the path of environmental preservation. He advised them to do the latter.

In a related development, two commitments to try to minimize environmental impacts along the upper Paraguay were signed at a meeting held January 21 at the federal prosecutor's office. The first would require barge trains to carry a navy observer to monitor the impact of the barges' colliding against the riverbanks. Representatives of the Transport Ministry and Navy, as well as navigation companies operating on the Rio

Paraguay, also agreed to carry out studies to define the best vessel and convoy size for navigation between Cáceres and Lagoa Gaíva (north of Corumbá).

Soy growers, who stand to benefit most from the hidrovia project, denounced the decision, saying that it will make shipping on the Paraguay unfeasible, causing heavy economic losses. The project will enable navigation by huge multi-barge convoys all year round. Each barge convoy carries up to 6,000 tons of soy, destined principally for use as livestock feed in Europe.

It is expected that the hidrovia project would seriously alter the Pantanal by changing the hydrology of the region and dewatering the wetlands. The hundreds of thousands of people who depend on Pantanal waters for drinking water could also be affected. The project has been increasingly under fire, from officials as well as the environmental community. A year ago, IBAMA indicated it would not support the project if it would harm the Pantanal. The project is a joint venture by Brazil, Bolivia, Uruguay, Paraguay and Argentina. ■

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International Rivers Network
1847 Berkeley Way
Berkeley, CA 94703
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