

Proposed Dam in Mexico Leads to Social Unrest

by Monti Aguirre

Two Mexican community activists have been jailed for their alleged involvement in actions against the La Parota Dam in the southwestern state of Guerrero. Warrants have been issued for the arrests of nine other local activists.

Community leader Marco Antonio Suástegi Muñoz was arrested on July 27 on charges of having taken part in holding against his will an official of the Mexican Federal Commission of Electricity (CFE). Another activist, Francisco Hernández Valeriano, was detained the following day. The men are members of the Council of Ejidos and Communities against La Parota Dam (CECOP).

The CFE employee claimed he was forced out of his truck by 10 dam opponents and made to sign a document stating that his agency would withdraw its construction machinery from the dam site. Marco Antonio Suástegi's family claim that he was not present at the alleged road block and that he and his sister were punched by police during his arrest.

Mexico City-based human rights group Centro Prodh has denounced the "arbitrary

detention" of both activists. Centro Prodh has written to President Vicente Fox and other senior officials demanding an end to "harassment and intimidation" of opponents of La Parota.

Tensions have been mounting in the communities to be affected by the 532-foot-high dam since local people first learned about it two years ago. The dam could affect close to 25,000 people, according to community activists. On March 14 this year (the International Day of Action on dams), 3,000 people marched in Acapulco, demanding cancellation of the project. More recently, communities blocked CFE equipment and personnel from accessing the dam site. CFE is now sending their engineers and laborers accompanied by police.

"Today, July 28 marks one year since we began our campaign of resistance against the La Parota Dam, and we will celebrate with a demonstration in Acapulco demanding the release of our imprisoned compañero," states a communique from the affected communities. "This wave of repression will not stop our fight in the defense of rivers and our Mother Earth."

The 765-MW La Parota Dam proposed for the Papagayo River would flood 17,300 hectares. Numerous indigenous and peasant communities would be displaced. The electricity generated would support the regional electricity grid being built as part of the Inter-American Development Bank's infrastructural initiative known as the Plan Puebla Panama.

Affected communities have demanded that the Mexican Environmental Agency publicly release the project EIA. They say the project was approved without community participation and in an untransparent manner. ■

What is IRN Doing?

IRN is supporting the First Mexican Meeting of Peoples Affected by Dams organized by the Mexican Movement of Dam Affected Peoples and in the Defense of Rivers. The meeting will take place in early October in the community of Cacahuatpec, where La Parota Dam is proposed.

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World Bank Debars Canadian Company Convicted of Bribing in Lesotho Dam Case

by Lori Pottinger

The World Bank has at long last debarred a company convicted of corruption on Africa's largest dam project, nearly two years after a guilty sentence was handed down in a Lesotho court.

On July 23, the Bank announced that it would debar the Canadian firm Acres International for three years. The company had been convicted of bribing the head of the Lesotho Highlands Water Project (LHWP) in September 2002. The World Bank, which had previously concluded there was not enough evidence to debar Acres, decided to re-open its investigation into the company in April.

World Bank President James Wolfensohn has said that fighting corruption is a top priority at the institution, but thus far there had been little to show for it. In the Lesotho case, the Bank has long avoided the tough step of debarring major multinationals that benefited from its contracts. At least a dozen companies were found to have bribed the chief executive of the LHWP (now jailed for 12 years for taking bribes), and the Lesotho courts have managed to get convictions of four companies, but Acres is the first in this case to be debarred by the Bank, and by far the largest company ever to be debarred by the Bank. The company carried out almost \$17 million worth of business on the dam project. It has since worked with the World Bank on the Bujagali Dam in Uganda and the Nam Theun 2 Dam in Laos.

Since its conviction in Lesotho, Acres has also received three new contracts from the World Bank, according to Susan Hawley, a research consultant working on issues of corruption for the UK group The Corner House. These contracts, worth \$400,000, are in Tanzania, the West Bank and Gaza, and Sri Lanka.

About Time

Civil society groups were pleased that the Bank had finally taken action, but felt the company deserved a longer debarment. Graham Saul of Friends of the Earth Canada said, "It is good to see that the Bank is finally taking action after dragging its heels for years. But three years is a light sentence. The World Bank should have sent a stronger signal given the damage that corruption causes, especially to poor countries around the world." Others urged the Bank to debar all companies convicted in Lesotho courts for bribes on this project, rather than just companies working direct-

ly on World Bank contracts. Says Antonio Tricarico of Italy's Campaign to Reform the World Bank: "The World Bank should debar without any hesitation all companies working on its projects once they have been found guilty in the courts of a sovereign state."

The World Bank's press release states that its Sanctions Committee took into account "a number of mitigating factors," in deciding upon a three-year debarment, "including the fact that Acres had already been ordered to pay a criminal fine by the Lesotho courts and that the relevant persons involved in

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Some 20,000 people affected by Yacyretá Dam recently took to the streets of Encarnación, Paraguay to demand compensation for hardships they have suffered because of the dam. **See page 11 for full story.** Yacyreta is another project being scrutinized for corruption in hearings of the US Senate Foreign Relations Committee, along with the Lesotho dam project.

Defining “Renewables”

Is hydropower a “renewable” energy source? The big hydro lobby, no surprise, believes that the answer is an emphatic yes and is pushing hard to get policy makers and the public to agree with them (see page 8). The stakes are high. With rapidly increasing political support and public funding for renewables, widespread acceptance of hydropower as a fully fledged renewable technology could potentially bring the industry the funds and legitimacy it needs to reverse its 20-year decline.

The World Energy Council defines renewables as “forms of energy which are not exhausted by use.” Big-hydro lobbyists stress that hydropower is fuelled by streamflow which will continue as long as the hydrological cycle keeps turning; and that dams, if properly maintained and periodically rehabilitated, can last for many hundreds, if not thousands, of years.

But most larger hydropower plants depend on reservoirs, not just streamflow, and reservoirs are indeed “exhausted by use” – sometimes very rapidly, as was the case of China’s Sanmenxia Dam, which silted up within a few years after the reservoir filled. Worldwide, reservoirs are losing their capacity to the sediments at an average rate of 0.5-1% per year. In the next half century many existing reservoirs will become clogged with sediments, seriously compromising, and in many cases bringing to an end, the ability of their hydro plants to generate electricity.

Theoretically a sediment-filled reservoir could be dredged or otherwise cleaned out, rendering the reservoir a renewable resource. But available techniques to remove sediments or prevent their accretion have serious limitations, including the fact that they only work for specific reservoir types, and they are often prohibitively expensive.

Dams with “run-of-river” characteristics – those which don’t store significant amounts of water and depend mainly on simultaneous river flow for their power output – can usually pass incoming sediments. These hydro plants should be considered renewable in the strict technical sense, but they are normally small or medium-sized projects and represent only a small proportion of global installed hydro capacity. (It should be stated that the term run-of-river is an ill-defined one, and is increasingly used as a synonym for “low impact,” which is often far from the truth.)

So hydropower may technically be renewable, potentially renewable, or non-renewable depending on the characteristics of each individual project.

But the reasons for promoting renewable energies go beyond their non-exhaustibility. Renewable energies are receiving political and public support because they are generally seen as having very small overall environmental impacts. This is clearly not the case for hydropower. On a global level large hydro – including run-of-river plants – has had massively negative impacts on riverine, floodplain and estuarine ecosystems. Dams wipe out species, degrade water quality, deprive floodplains of nutrients, and eradicate ecologically essential river flow patterns. Reservoir hydropower in the tropics often leads to more greenhouse gas pollution than fossil-fuel power plants.

Renewables are also promoted for being more socially beneficial than fossil and nuclear technologies, in particular because they can be built in relatively small units, often using local resources. The decentralized nature of most renewables spreads economic benefits and affordable power over a widespread geographic area. Larger hydropower is by definition centralized. Studies show that windpower creates 4-10 times more jobs per unit of output than large hydro (and that biomass and solar power can create many more jobs than wind)*. Furthermore, dams have had major negative social impacts – the most obvious of which is the displacement of up to 80 million people.

Renewables are also seen as deserving of subsidies as they are mostly new and developing technologies which require support to bring them to a level where technological advances and economies of scale can bring down costs; and to put them on a more level playing field with conventional technologies – including hydropower – that have been heavily subsidized for many decades.

The question “is hydropower renewable” is a technical one. Decisions on which technologies to support with public policies and funding are political ones. The relevant question in terms of energy policy is “should hydropower benefit from initiatives to promote renewables?” For small hydros, which are much more likely than large plants to be technically renewable, environmentally benign, decentralized and socially beneficial, the answer is “yes,” conditional upon individual projects meeting the quality standards recommended by the World Commission on Dams. For new large hydro plants, the answer is an unconditional “no.”

Patrick McCully

* See Jose Goldemberg, “The Case for Renewable Energies,” Thematic Background Paper, International Conference for Renewable Energies, Bonn, 2004. www.renewables2004.de/en/cd/default.asp.

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The Endangered Mekong

Damming and Blasting Projects Threaten Fish, Families, Ecosystems

by Aviva Imhof

Seventy-year-old Por Sri has been fishing in the Mekong River since he was 14 years old. Fishing runs deep in Por Sri's family and his heart. His father and grandfather were fishermen, as is his son. But changes upstream could radically alter his family's peaceful existence.

"In the old days, there used to be a lot of fish," says Por Sri. "I could go out for just an hour or two and catch enough to eat and sell at the market. But these days, I can't catch very much fish. Today my son was fishing for nine hours and didn't catch anything. Our fish catch has decreased by at least half in the past five years."

Por Sri isn't quite sure why there are fewer fish in the river today. He says he notices that the water levels go up and down a lot in one day, something that never used to happen. He knows about the blasting of the Mekong River's rapids on the Lao/Burma border and thinks this might have something to do with it. What he is sure about is that not only have the number of fish decreased, but the fish migration patterns have changed as well.

Por Sri's story is not unusual. Across Northern Thailand and Laos, fishermen are complaining about the decrease in fish in the Mekong over the past few years. Some attribute it to over-fishing, others to destructive fish practices such as electric shock fishing, but many know about Chinese dam-building and rapids blasting projects, and wonder whether they might be part of the problem.

Rapids Blasting

China's Upper Mekong Navigation Improvement Project is part of a grand scheme to allow large ships to freely navigate from Simao, China to Luang Prabang in Laos. The first stage of the project has destroyed 10 major rapids and 10 scattered reefs along a 331-kilometer section of the Mekong from the China-Burma border to Chiang Khong in Thailand.

Only one rapid remains to be blasted, the Khon Phi Luang rapid on the Thai/Lao border. Concerns about the quality of the environmental impact assessment and border demarcation issues resulted in the Thai government halting the blasting of this rapid in 2003. Thai NGOs and local villagers are now fighting to protect Khon Phi Luang, which is one of the



Photo: SEARIN

Millions of people depend on Mekong fisheries, now threatened by blasting and dam projects.

only known remaining breeding grounds for the critically endangered Giant Mekong Catfish. The giant catfish, known as Pla Buek in Thai, weighs up to 300 kilograms and can measure up to three meters in length.

Chainarong Strettachau, Director of Thailand's Southeast Asia Rivers Network (SEARIN), says that the blasting of the rapids has had a major impact on fisheries in the Mekong. "The rapids are where the fish live and breed," says Mr. Chainarong. "Blasting the rapids destroys a primary habitat for fish. It's not surprising that fish catch has decreased as a result."

According to SEARIN, which has been monitoring implementation of the navigation project, water levels have fluctuated severely during the past three dry seasons when the rapids blasting work has been taking place. During the dry season, the Manwan and Daochaoshan Dams on the Mekong in China release water for one day to allow ships to pass from Simao in China to the port of Chiang Saen in Thailand, and then halt water releases for three days to allow for the blasting of the rapids. According to Chainarong, fluctuations have been up to one meter per day, and this is also impacting fish migration patterns and fish populations.

The rapids blasting has also led to severe erosion along the banks of the Mekong. Dur-

ing the rainy seasons of 2002 and 2003, four households living in Pak Ing village lost an entire bank of land to the river because of the unnaturally turbulent flow of the river. More alarmingly, on the opposite side of the river, 113 families living in Ban Don Sawan, a village in Laos, lost their land and homes to the rapidly flowing river.

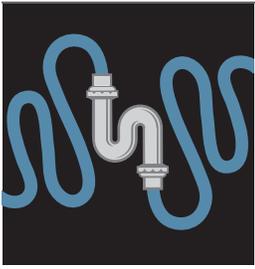
Adding Insult to Injury

Unfortunately, for millions of people living in the lower Mekong Basin, the problems are only just beginning. As more and more dams are built on the Upper Mekong in China, erosion, fisheries depletion and water level changes will worsen. Already two of an eight-dam cascade have been completed and a further two are under construction, including the massive Xiaowan Dam, which at 300 meters will be one of the largest dams in the world. These proj-

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What is IRN Doing?

IRN is building links with NGOs and academics in Yunnan Province of China to raise awareness about the downstream impacts of the Upper Mekong dams and rapids blasting projects.



India's New Government to Review River Linking Scheme

by Himanshu Thakkar

Although India's newly elected government did not instantly cancel the massive proposal to link most of the nation's rivers through engineering works the way Spain's new government shelved its own river-linking proposal earlier this year (see box, this page), there are several indications that the new administration is less than enthusiastic about the controversial scheme proposed by the previous government. The new Water Resources Minister has announced that the government has decided to review the feasibility of the proposals to link India's rivers. Many of the constituents of the new ruling alliance have said they do not see the need for such schemes or that they do not find them to be viable. The new government's policy plan (called "the Common Minimum Pro-

gramme") also says that the feasibility of the linking scheme will be reviewed. The address of the President to the joint session of new Parliament, the budget speech in the Parliament on July 8, and the address of the Prime Minister to the nation in June made no reference to the river-linking proposals. And the *Economic Times* reported on June 6 that "Highly placed sources told *ET* that the government was contemplating either abolishing the task force set up for this purpose or virtually reducing it to a mere academic body." All these are indeed welcome signs.

However, there is no clear message as yet to say that the new government will altogether abandon the scheme involving some 30 links and 37 rivers. It is yet to be seen how the new alliance copes with possible pressure from partners who feel they stand

to benefit from the water transfers, such as the parties of Tamil Nadu in the ruling alliance. The new national government will also have to be ready with a response to the Supreme Court, as the Court has been monitoring the progress of the proposals. There is already a new petition in the Supreme Court, asking it to order the government to extend the tenure of the National Task Force on Interlinking of Rivers, whose term expired on June 30; at this writing, there was no decision yet about the extension. There is also India's huge lobby of bureaucrats and engineers who would of course not like to see the scheme completely abandoned.

Says Dr. Sudhirendar Sharma of the Delhi-based Ecological Foundation, "There is no dearth of engineers who will list the

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Spain's River Linking Project Dropped

In his first week in office, Spain's new prime minister dropped a controversial plan by the previous administration to link the nation's rivers and divert water to the dry southern part of the country. The US\$4.5 billion scheme, approved three years ago, included plans for more than 100 dams and hundreds of miles of irrigation channels to transfer water from the Ebro River, Spain's longest.

The amount of water that would have been diverted from the Ebro was equivalent to one-third of Spain's domestic water consumption. The scheme would have destroyed habitat on which at least 55 bird species depend.

The new government said the scheme was being stopped for environmental and financial reasons. But politically, the project was highly unpopular, and prompted hundreds of thousands of Spanish citizens to take to the street in protests.

The Spanish Cabinet is now backing an alternative water plan that involves constructing desalination plants, which it says will provide the same amount of water as the pipeline but sooner and more cheaply.

Environmental groups that campaigned against the Ebro plan still have some con-



Spanish citizens held numerous large rallies to protest the water scheme.

cerns. Ecologistas En Accion said while the organization welcomed the abandonment of the "pharaonic" project, the new alternative would also be harmful. "Even if it has much less of an impact on the environment, it will help consolidate a model of non-sustainable development on the Mediterranean coast," the environmental

group said. The original plan was designed in part to support new tourist resorts along the Spanish coast. The Groundwater Project points out that, while Spain has the lowest rainfall in Western Europe, it consumes the most water per capita, after Italy. Spain's water prices are among Europe's lowest.

Rising Costs, Drowned Lives: The Sorry Math of Indian Irrigation Projects

by Himanshu Upadhyaya

The overall effectiveness of India's irrigation sector is in question as project costs skyrocket, while benefits fail to materialize and villages affected by these projects suffer a downward spiral of forced resettlement and failed efforts to restore livelihoods.

A new report by India's Planning Commission studied 380 large and medium ongoing irrigation and power projects across the country for cost and performance indicators. It reveals that just one-third of the planned irrigation potential of these projects has been realized, and despite the billions already spent, another US\$19.6 billion is needed to complete them. The report states that cost escalations on projects are several times higher than inflation.

The controversial Sardar Sarovar Project, being built by a Gujarat government-owned corporation on the Narmada River, is a prime example of what ails India's irrigation sector. This project's costs have increased at least five-fold since the initial cost estimates were completed in 1987. The nation's top audit institution, the Comptroller and Audi-

tors General (CAG), issued a report in 2002 that voices concerns over the project's unsustainable debt obligations.

The CAG reports that the overall expenditure on the project as of March 31, 2001 was \$2.4 billion, of which 22% was dedicated to interest charges and servicing debt liability. Debt servicing was not identified in the original investment proposal to Planning Commission, nor in revised cost estimates prepared in 1991-'92.

CAG further reported that as of March 31, 2001, the corporation's debt repayment obligations stood at \$2.67 billion. If we ask what percentage of overall costs would be consumed to make sure that the corporation doesn't default on its debt obligations, the startling fact dawns upon us that almost 48% of the overall costs would go toward debt servicing. Compare this to the mere 4.4% of project costs being devoted to resettlement and rehabilitation – shameful, for a country that claims to be building dams “for the greater common good.”

The Socio-Economic Review of Gujarat for the year 2002-'03 reports that \$3.39 bil-

lion has been spent on the project as of September 2003. Even after spending so much, the progress on the project's water-distribution system doesn't inspire confidence.

Although even the very first cost estimates showed that the irrigation network would require almost 45% of project funds to complete, only a fraction has been committed to the water-distribution system, while the lion's share of resources has been used on the most visible symbol of the project – the dam wall. Affected communities have, by comparison, gotten a pittance.

Given the financial mess the project is in, the Planning Commission should call for a review of SSP's economic viability. Otherwise, the nation risks witnessing a replay of the Bargi Irrigation project, a large dam on the river Narmada upstream of the SSP, which years after completion of the dam wall irrigates less land than what it submerged. ■

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virtues of mega-projects, economists who will weigh the benefits of river interlinking for the poor, and project-savvy bureaucrats who will favor the industry in supporting gigantic irrigation projects. But even bypassing the ecological concerns, engineering solutions alone have made water dearer for a vast majority. The engineer-bureaucrat nexus is still rooted to technological measures that have neither proved economically viable nor ecologically sustainable.”

The project would transfer water from so-called “surplus” to “deficit” basins. Two international river basins are involved. The claimed benefits include irrigation for an additional 35 million hectares, new power generation capacity of 34,000 MW, flood protection, navigation and so on. Critics note that many of India's rivers are already near death after an onslaught of over 4,000 large dams and diversions. They also note the poor record of costs versus benefits on the nation's large irrigation schemes (see

article, this page), and question how there can be a net increase in power generation when the transfer of water across mountains and over great distances will require a large amount of power.

While in the immediate future there is unlikely to be any clear message from government about this project, there are some interesting proposals in the budget of 2004. For example the Finance Minister said in his budget speech, “Through the ages, Indian agriculture has been sustained by natural and man-made water bodies such as lakes, tanks, ponds and similar structures. It has been estimated that there are more than a million such structures and about 500,000 are used for irrigation. Many of them have fallen into disuse. Many of them have accumulated silt. Many require urgent repairs. I therefore propose to launch a massive scheme to repair, renovate and restore all the water bodies that are directly linked to agriculture.” That sounds quite wise. He also

announced allocation of US\$22 million to take up this task on pilot scale in five zones of the country.

However, finance has not been the only constraint in the way of restoring water bodies. The most important constraint has been the total absence of a role for local communities in planning, decision-making, development and management of water systems. Also, such pronouncements have been made in the past, including by former prime ministers, but nothing has happened on the ground. More significantly, in that same budget, the minister went on to announce the allocation of \$607 million for the Accelerated Irrigation Benefits Schemes, a program that primarily goes for large projects. Clearly, “big is better” is still more compelling than “small is beautiful” in the minds of India's water bureaucracy. ■

The author is with the South Asia Network on Dams, Rivers & People in Delhi, India.

Tribes Celebrate Decision to Restore Trinity River Fisheries

by Elizabeth Brink

Hoopa Valley and Yurok tribes secured a victory in their effort to restore the Trinity River and their ancestral fisheries when a federal appeals court ordered implementation of the 2000 Trinity River restoration plan.

For decades, most of the Trinity's water has been diverted to service a fast-growing population in California. Serving as a major artery in a system of dams, tunnels, canals and reservoirs that supply 200 water districts for 30 million people, including the agriculturally rich Central Valley, has put tremendous pressure on the Trinity and those who depend upon it.

In 1984, the US Congress mandated restoration of the 112-mile-long river to help in the recovery of dwindling runs of salmon, steelhead and other species. In 2000, after years of studies, the Interior Department approved a plan backed by local tribes and conservation groups to increase the Trinity's flow. This plan was immediately challenged by a federal lawsuit brought by the Fresno-based Westlands Water District and other irrigation and power companies, who charged that the plan did not comply with federal environmental laws.

"Twenty years have passed since Congress passed the first major act calling for restora-

tion of the Trinity River and rehabilitation of its fish populations," Judge Alfred Goodwin wrote in the court's opinion. "And almost another decade has elapsed since Congress set a minimal flow level for the river to force rehabilitative action. Nothing remains to prevent the full implementation of the (2000 agreement), including its complete flow plan for the Trinity River."

"We're just elated," said Clifford Lyle Marshall, chairman of the Hoopa Valley Tribe, who explained that the decision would compel the federal Bureau of Reclamation to devote 47% of the river's flow to fish, with the remainder going to agriculture and power production. Previously, up to 90% of the river had been diverted to agriculture and power users, resulting in dramatic declines in salmon and steelhead populations.

"The river is a vital part of the economy of our tribe and Northern California," said Marshall. "The decision gives the river the priority it deserved in the first place. It means that the river will get water, salmon runs will come back, tourism will return, recreational fishermen will come back, people will be eating in the local restaurants, and the commercial salmon fishery may be sustained."

The court's unanimous decision was based on the law and over 20 years of scientific studies, but the outpouring of support for Trinity River restoration by the public, newspapers and politicians had a lot to do with the victory. The tribes increased awareness of the plight of the Trinity and Klamath rivers by holding public protests in 2004. Tribe members and their allies celebrated the International Day of Action on March 14 by picketing in front of the Northern California Power Agency, a member of the Westlands Water District.

More recently, they protested in front of Federal Energy Regulatory Commission offices in June, demanding decommissioning of dams on the Klamath River. Tribe members were in the UK at press time negotiating with Scottish Power, the owner of the worst dams on the Klamath as far as fishery health is concerned. The Yurok are asking the utility to consider the needs of their people, decommission the dams and restore the river.

Downstream tribes – the Karuk, Yurok and Hoopa – have suffered the most from the dams on the Trinity and Klamath. "While they kill the fish with their hydropower dams, downstream Native Americans go without fish to eat or electricity in their homes," said Troy Fletcher, executive director of the Yurok tribe, who noted that more than half of the homes, a school, and two churches are without electricity on the Upper Yurok reservation. Mike Orcutt, fisheries program director of the Hoopa Valley Tribe, added, "The tribe gets no power benefits from the dams, while the upriver projects have a big impact upon our fishery."

Flush from their victory on the Trinity, the tribes can now focus on demanding justice further downstream, while ensuring that the Trinity decision is implemented this time.

Marshall emphasized that this "wasn't a case of Indians versus farmers. The people of California raised their voice to support the Trinity River. The river should be regarded as a national treasure. We had a great alliance of people, with lot of efforts on many fronts. Public opinion drives public policy, and the people of California decided that for a small price, the Trinity River could be restored." ■

60 US Dams Decommissioned This Year

The explosive breaching of Embrey Dam on Virginia's Rappahannock River, broadcast nationwide in February, was just one of dozens of US dams to come down in 2004. According to American Rivers' annual survey of government and private conservation organizations, 60 dams in 14 states and the District of Columbia have or will be removed in 2004.

Rivers and streams will be restored in Alaska, California, Connecticut, Washington, DC, Illinois, Maine, Maryland, Michigan, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Virginia, and Wisconsin.

More than 145 dams, have been removed since 1999. This promising trend is the result of two converging developments: a growing appreciation of the ecological benefits of removing dams, and the aging of much of the dam infrastructure in the US.

"Communities across the country are electing to remove derelict and obsolete dams to restore their rivers, eliminate safety hazards, and save money," explained Serena McClain, of American Rivers' Rivers Unplugged campaign.

Communities that choose to pull out obsolete dams enjoy once again the benefits provided by healthy free-flowing rivers – better water quality, revitalized fisheries, new recreational opportunities, and recovery of habitat.

Helen Sarakinos of the River Alliance of Wisconsin says that generally, "dam removal is not a radical environmental move, it is a common-sense decision – the old dam isn't being used, the river would be much nicer without it, and it's cheaper to take it out than to repair it."

Rash of Dam Failures Raise Safety Concerns

A recent rash of dam failures the world over has raised red flags about the safety of dams large and small. Poor maintenance on older dams and shoddy construction on newer ones caused some of the problems, but climate watchers note too that unusually severe storms have played a role – illustrating how global warming-induced intensification of the hydrological cycle will worsen the problem of dam safety. Future issues of *WRR* will more thoroughly address the issues of dam safety and flood management in a time of changing climate, but for now, here's a round-up of news about some recent dam failures.

BRAZIL: The 55-meter-high Camará Dam, an irrigation dam in Brazil's semi-arid northeastern state of Paraíba, burst on June 17, sending a wall of water down the Mamanguape River. The 19 million cubic meters of water it unleashed killed five and left 3,200 homeless. The state's Water Resources Department blamed a "construction flaw" for causing a 100-square-foot hole in the dam.

Despite heavy rains, Camará dam was only at 65% of its capacity at the time of the accident. The dam had been budgeted to cost about US\$5 million, but final costs were in excess of \$10 million when its reservoir began to fill in December 2002. Investigators are looking into whether structural flaws were ignored in a rush to inaugurate the dam to benefit electoral candidates.

CHINA: Wang Shucheng, China's Minister of Water Resources, has warned that 30,000 reservoirs – 36% of the country's total – are facing serious safety problems. At a news conference in early June, the Minister complained that due to mismanagement and

technological backwardness, the dams' ability to withstand floods was limited.

China has the worst safety record of any major dam building country. In the period from 1954 to 2003, 3,484 of the country's 85,300 dams collapsed. In 1975, China experienced the world's worst dam disaster ever. The Banqiao Dam in Henan province collapsed in a typhoon in early August, along with more than 60 smaller dams. According to a report by Human Rights Watch, 85,000 people were killed by the flood wave from the reservoirs, and a further 145,000 people perished in the epidemics and famine that struck in the aftermath of the dam failures.

According to the Minister of Water Resources, small-scale dams built from the 1950s to the 1970s are presently facing most of the safety problems. While an average of 204 dams per year collapsed in the 1970s, the annual failure rate decreased to 18 during the 1990s.

A recent disaster reminded the Chinese public that dam failures still pose serious safety risks. On May 27, a 46-meter-high coffer dam built to allow construction of the Dalongtan Hydropower Project in Hubei province collapsed. The sudden flood killed



On June 6, 1976 the Teton Dam near Rexburg, Idaho failed during its initial filling. The deluge killed at least 11 people. At 350 feet high, it was the largest dam break in US history. Damages reached \$1 billion.

at least 14 people, including 12 kindergarten children. The dam was built by the same company that is responsible for building the Three Gorges Dam. The dam builder was accused of speeding up the construction at the expense of dam safety and flood prevention measures.

US: A mid-July deluge that pounded parts of New Jersey forced more than 800 people to flee their flooded homes and destroyed 13 small dams. No deaths or serious injuries were reported after the storm, which drenched the area in 13 inches of rain in 24 hours.

The damage to the dams underscored the vulnerability of the state's hundreds of small earthen dam during intense rainstorms. The latest dam failures brings to 19 the number of dams lost to flood damage since 1999. The state has 196 dams that have been deemed "high hazard."

Last November, New Jersey voters approved a \$150 million bond issue for restoration work on nearly 360 dams that state inspectors had determined needed repairs. Many are privately owned and were built years ago to create small private lakes. Seven of the 12 dams that washed away during this year's storm were on the repair list.

According to the Association of State Dam Safety Officials, the estimated price tag for the most critical dam rehabilitation projects in the US is \$10 billion. More than half of the dams in the country are privately owned, and therefore do not qualify for federal funds for repairs or safety oversight. ■

WCD on Climate Change and Dam Safety

"When most large dams are built, the assumption is that the river flows in the future (total runoff and severe floods) will be much like those in the past. In some cases the historical time series of hydrological data is too short and may not reflect cyclical phenomena. Climate change has introduced another level of uncertainty about changing flows within the life span of most dams. The safety of large dams is affected by changes in magnitude or frequency of extreme precipitation events. These changes are highly uncertain, but climate change is expected to lead (and perhaps already has led) to larger and more frequent extreme precipitation events. One of the first studies in this area concluded that the discharge of the 50-year flood on the River Severn, in the United Kingdom, may increase by around 20% by 2050. There is concern whether existing spillways can evacuate such floods in future."

From Dams and Development, the report of the World Commission on Dams

Contributors: Peter Bosshard and Glenn Switkes

Ministers and senior energy officials from 154 countries have vowed to “substantially increase with a sense of urgency” the share of renewable sources in global energy supply.

The pledge was made in the “Political Declaration” negotiated at Renewables 2004, a conference hosted by the German government in Bonn. The June meeting was the largest-ever gathering of governments, businesses, activists and researchers to discuss renewables.

The officials agreed that “renewable energies combined with enhanced energy efficiency can significantly contribute to sustainable development, to providing access to energy, especially for the poor, to mitigating greenhouse gas emissions, reducing harmful air pollutants ... and enhancing energy security.”

They also called for international financial institutions, including the World Bank and regional development banks, to “significantly expand their investments in renewables and energy efficiency” and “establish objectives for renewable energies in their portfolios.”

Reaction from NGOs to the conference outcomes was mixed. Jennifer Morgan, Director of WWF’s climate change program, described Renewables 2004 as a “turning point for a clean, safe energy future, and a milestone in the fight against climate change ... Instead of being an odd technology in the corner, it is now recognized as playing a major part of the world’s energy future.”

Friends of the Earth International, however, said in a statement that “the positive outcomes were too weak to prove the turning point toward a sustainable energy future.”

Friends of the Earth also criticized the failure of the Bonn political declaration to recognize the problems associated with big

Green Energy Gets a Boost at Bonn Conference

Governments Vow to Increase Renewables, But Dam Industry Fights for a Share of the Pie

by Patrick McCully

hydro dams. The inclusion of large hydropower within efforts to promote renewables was one of the most contentious issues at the conference. The German organizers decided to include large hydropower within the technologies to be discussed at the conference, although they gave it little attention in background documents or in the conference agenda.

Industry Backlash

The International Hydropower Association reacted strongly to what they saw as a marginalization of hydropower by the conference hosts. The IHA already had a strained relationship with the German government, given Germany’s long-running support for the World Commission on Dams (WCD). A March email circulated to IHA members by the organization’s central office in London said, “The German Government proposes to constrain

hydropower according to the ‘Recommendations of the World Commission on Dams.’” The IHA was angry at wording in the “Conference Issue Paper” that the WCD “have addressed issues concerning the sustainable use of large hydropower systems” – wording that might seem

innocuous or even evasive to the independent observer.

The IHA’s combative email goes on: “After three years of post-WCD debate, there is clear agreement that few, if any, hydropower projects would be developed if the WCD blueprint were to be implemented. It is therefore essential that the hydropower sector be well represented at this conference, so that a strong message can be sent about the benefits of hydro, the commitment of the sector towards continuous improvement, and the existence of hydro-specific recommendations, documented in the IHA Sustainability Guidelines.” (See *WRR*, Feb 2004, for more on these guidelines.)

The German hosts had hoped to avoid controversies over large hydro by avoiding any wording on specific technologies in the conference declaration. But pro-hydro governments (several government delegations – including those of Canada and Nepal – included senior IHA members) lobbied strenuously for hydropower to be explicitly mentioned in the declaration. In the final negotiating round a compromise was reached with the addition of a footnote to the declaration which states that in “the context of Renewables 2004 renewable energy sources and technologies include solar energy, wind energy, hydropower, biomass energy including biofuels and geothermal energy.”

Most vigorous in lobbying for big hydro at Bonn were the energy ministers from Uganda and Brazil (the Ugandan deputy energy minister, Daudi Migereko, is an IHA Vice-President). These ministers’ influence was greater than would normally be the case as their countries had been selected as the spokespersons for their respective conti-

What Is IRN Doing?

IRN is working to ensure that large hydro projects do not benefit from subsidies and other initiatives aimed at promoting renewable energies, and that small hydro projects (<10 MW) that benefit from renewables programs should comply with the WCD’s recommendations. IRN, together with 12 other social justice, environment and development organizations and networks, has co-published a report, “12 Reasons to Exclude Large Hydro from Renewables Initiatives.” A condensed version of the report endorsed by 247 groups and networks in 61 countries was released in Bonn. The report can be downloaded from www.irn.org/programs/greenhouse/. (The IHA has responded with its own “Top ten reasons to include hydropower in all renewable energy initiatives” downloadable from www.hydropower.org/l_8.htm).



Photo: Bill Pottinger



nents. Brazil's Energy Minister, Dilma Roussef, made clear that she would refuse to endorse any declaration that did not make reference to large hydropower as renewable.

The effect on the discussions in Bonn of IHA lobbying against the World Commission on Dams was illustrated by the comments of George Mpombo, Zambia's Minister of Energy and Water Development. Mpombo told an event sponsored by the UN Environment Programme's Dams and Development Project (DDP) that accepting the WCD's report was "in extremely bad taste" and that accepting it would be a "major political blunder" and would "hampers our road out of poverty." Mpombo's chief advisor privately told panelists at the DDP event that neither he or his minister had read, nor even seen, the WCD's report.

International Action Programme

Despite industry pressure, however, large dams received little support in the final list of actions to promote renewables that emerged from the conference. The "International Action Programme," a list of 194 actions and commitments to promote renewables from governments, international agencies, companies and NGOs, was the main substantive outcome from Bonn. The promotion of new large hydros is mentioned in 10 of these proposals.

"Up to a billion people can be given access to energy services from renewable sources," the conference declaration states, if the types

of measures included in the conference's International Action Programme are implemented.

NGOs praised some parts of the Programme, while expressing skepticism over the value of most of the proposed actions. Citizens United for Renewable Energy and Sustainability (CURES), a broad coalition representing many of the NGOs at Bonn, said that the majority of the actions were "existing projects, vague programs or proposals seeking funding."

WWF said it found only around 20 of the almost 200 proposals in the Action Programme to be new and praiseworthy, including those from the Philippines, Dominican Republic, Egypt, Germany, Spain, Denmark and New Zealand. China's commitments – to formulate a new Renewable Energy Act, based on Germany's successful renewables legislation, and to install 60,000 MW (10% of total capacity) of small hydro, wind, solar and biomass by 2010 – earned the greatest praise. One of the most significant non-governmental initiatives is that of a coalition of Latin American NGOs and parliamentarians committed to introducing legislation in their countries to increase the share of renewables to 10% of energy supply by 2010 (excluding hydro projects over 30 MW).

However, even some of the few actions that NGOs singled out for praise are problematic. The Philippines announced a target

of doubling its renewable capacity by 2013 and of becoming the largest geothermal producer in the world and leading wind energy producer in Southeast Asia. Yet the proposal also entails doubling the country's hydropower capacity, a measure that would likely be strongly resisted by Filipino indigenous communities and environmentalists.

The World Bank arrived in Bonn under pressure to announce an ambitious increase in lending for renewables. The conference came as the Bank's management and Board were in the midst of agreeing on their response to a Bank-commissioned review of their involvement in mining, coal, oil and gas projects. The review recommended switching all Bank energy lending over to renewables by 2008.

Peter Woicke, head of the Bank's private-investment arm, the IFC, announced to the conference that the World Bank Group would increase renewables lending by at least 20% annually over the next five years. Support for renewables would thus double by 2009. While the target may have sounded ambitious to the assembled delegates, an analysis by Washington, DC-based Sustainable Energy & Economy Network (SEEN) shows that because the Bank's renewable lending has been declining in

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For More Information

You can download the conference outcomes: <http://www.renewables2004.de/en/2004/outcome.asp>

Visit the CURES website: <http://www.cures-network.org/>

Proposed Dam on Okavango River Has “Fatal Flaw,” Project Assessment Reveals

by Terri Hathaway

The Popa Falls Dam proposed for the Okavango River in Namibia has a “potential fatal flaw,” according to the project’s preliminary environmental assessment. The report, which was released in June, warns that the dam would pose “significant ecological risks” to the Okavango Delta by trapping the river’s vital sediment, which serves a variety of key functions in the complex ecosystem. Twenty-six additional environmental impacts are listed that would require effective mitigation if the project is to move forward.

If built, the dam would stand between 28 and 32 feet high on the Okavango River, just above Popa Falls. Popa Falls is a key feature of the Caprivi Game Park, which provides habitat to some 35 game species, including hippos, elephants, and hundreds of bird species. While the dam is considered a “run of river” project, its reservoir would displace between 80 and 260 households, depending on the specific dam site chosen. Thousands more living upstream and downstream from Popa Falls could also see their lives and livelihoods harmed by the project.

The project’s environmental assessment states that the US\$45 million dam would produce just 20 megawatts of electricity. The project’s mitigation costs for environmental and social impacts remain unknown.

The Importance of Silt

The Okavango River concludes its journey at the Okavango Delta in Botswana, one of the world’s largest inland waterways and an internationally important wetland. The delta supports one of the greatest concentrations of species on earth, including rare species that could not flourish in the otherwise arid environment. During the dry season, delta waterways shrink to narrow channels. Floodwaters immerse the delta floodplain during the wet season, carrying approximately 100,000 cubic meters of nourishing sand and sediment that renews the delta ecosystem. The river’s annual cycle provides constant change to the structure of the delta’s channels, and supports biodiversity.

The proposed dam would halt the flow of most sediment downstream to the Okavango Delta. The environmental assessment notes that this “‘sediment hungry’ water will be highly erosive for some distance downstream,” causing significant degradation to



Popa Falls in flood season earlier this year.

the delta that could last for hundreds of years. The report notes that this impact could be mitigated using one of two options: sluicing or bypass pumping. Annual sluicing would have vast impacts on the river as well as on power generation, and would increase the river’s water level up to 10 times faster than the natural rate. “Sluicing is therefore not recommended,” the report states. Bypass pumping, in which the sediment is continuously pumped through the dam, is considered more viable, but it, too, is flawed. While this option would allow more sediment to flow downstream, the method is exposed to greater human error, and would require a back-up system and continuous pumping indefinitely, even if the dam was no longer used for hydropower.

Other Impacts

The report notes that the dam could have additional significant impacts on fish, tourism, and public health. Methods for assisting fish species that migrate upriver past the dam will need to be analyzed properly. Past projects have often failed to consider specific behavior of fish species, leading to mitigation activities that don’t work. Thousands of tourists visit Popa Falls each year and support several lodges in the area, including one run by a community of indigenous Barakwena people, bringing scarce income to this undeveloped corner of the country. Downstream, the Delta supports a booming tourism industry worth \$350 million annually. The

project could also have devastating impacts on public health, including increased incidence of malaria near the reservoir.

The Okavango Delta already loses approximately 98% of its water to evapotranspiration. The proposed reservoir would increase this evaporation rate by as much as 6.3 million cubic meters annually. In addition, according to the report, the Namibian Ministry of Agriculture is expected to develop irrigation projects in the area, which could divert additional water from the downstream ecosystem.

The Chief Technical Advisor for the project has clearly stated that the dam will not proceed if the environmental impacts cannot be mitigated. If the project is studied further, a final decision on whether to build the hydropower station may only happen after up to two more years of study. But because the national utility, NamPower, signed an agreement to build the Kudu natural gas plant in July, local groups expect the utility to deem the Popa Falls project to be unnecessary and too costly. The Kudu project, considered by NamPower as an alternative to the Popa Falls Dam, will quadruple Namibia’s power supply, allowing exports to South Africa. Namibia’s Ministry of Environment and Tourism is expected to make a record of decision by August on whether to proceed with the project. ■

Read IRN’s comments on the project, submitted to NamPower:
<http://www.irn.org/programs/okavango/>

Photo: Elizabeth Soderstrom

Mass Protests Greet Plan to Raise Yacyretá

IDB Investigation Blasts Bank's Handling of Problematic Project

by Glenn Switkes

The already steaming debate over whether or not to raise the reservoir at Yacyretá dam to its design level boiled over as 20,000 people – one-third of the entire population of Encarnación, Paraguay – took to the streets in May. The protestors, armed with yerba maté tea and carrying banners demanding compensation for hardships they have suffered because of the dam, were protesting plans by the governments of Paraguay and Argentina to raise the reservoir level without resolving ongoing problems. Paraguayan affected peoples' organizations also obtained a restraining order by a district judge, prohibiting the two countries to raise the reservoir level.

Meanwhile, the Inter-American Development Bank's Independent Investigation Mechanism, the IDB's equivalent of the World Bank Inspection Panel, released a report strongly critical of the IDB's handling of a 1994 loan which was to have financed environmental and social mitigation measures. To date, only US\$40 million of the \$130 million loan has been spent, and problems remain unresolved. In total, the IDB has extended \$977 million in loans for the project.

The Panel reported that "the IDB has borne witness to the failure of the project to meet its social and environmental objectives." Like the Panel's prior report on Yacyretá in 1997, investigators recommended that all outstanding environmental and social problems be solved as soon as possible, before considering raising the operating level of the reservoir. The Panel also recommended the formation of an Independent Commission to arbitrate conflicts identified in the report.



In May marchers in Paraguay protested plans by the governments of Paraguay and Argentina to raise the reservoir level of Yacyretá Dam without resolving the dam's ongoing problems.

The IDB panel went even farther than the World Bank Inspection Panel in its recent investigation report, by linking Yacyretá to negative impacts such as creek and groundwater pollution, coastal flooding, health problems and loss of employment.

The panel found that homes along urban creeks flooded every time it rained, and said the problem stems from the lack of planning for migration from the reservoir area to the city of Encarnación, where the storm sewer system is inadequate to handle the growing population. The flooded-out homeowners have received no compensation from the Yacyretá Binational Entity (EBY). It found many resettlement areas lacking medical facilities, drinking water, adequate plumbing, schools, social assistance, and land for food gardens. It also found many homes to be undersized, considering the size of resettled families.

The panel also found many families who were not included in EBY's census who should be eligible for compensation, and others deemed eligible by EBY who had never received indemnification. The distance from the resettlement areas to Encarnación made it difficult for many resettlers to find work, having to walk as much as four hours to reach town. EBY denied it has responsibility for the fate of the resettled population once they have been resettled. The commission also cited cases of teenaged girls from the resettlements working as prostitutes in Encarnación to support their families.

Dammed Unhealthy

Investigators also found that an increase in cases of diarrheas, parasites, anemia, and skin rashes in Encarnación residents were because of the reservoir. Public health workers told investigators they expect incidence of waterborne diseases, like schistosomiasis, to rise if and when the reservoir is filled, but that no epidemics had occurred to date. The panel also found there was no plan as to how homes will be linked to the planned sewage treatment center in Encarnación.

It also found that the IDB had violated various bank policies, principally the Bank's involuntary resettlement policy,

in terms of analyzing risk of poverty, community participation, data gathering, indigenous communities, difficulties in transition, compensation packages, follow-up and evaluation, establishing legal and constitutional framework and conflict resolution; and the IDB's environment policy, in terms of not adequately addressing urban creek and groundwater pollution.

Angela Vergara, Coordinator of Fedayim, which brought the complaint before the panel, welcomed the IDB report, saying, "We are very satisfied with the results of the investigation. It was a lot more thorough and complete in verifying the problems we are facing than the recent World Bank investigation was, especially in terms of the problem with the flooding of our homes every time it rains. Now we will need the Panel or an independent commission to permanently monitor the measures taken to improve conditions here."

The IDB's staff will now officially make its comments to the bank's Board of Directors on the panel's findings, as part of what affected people hope will be an intensified effort to improve conditions at Yacyretá. IDB and World Bank officials have called high-level Argentine and Paraguayan government officials to Washington for a meeting to analyze plans to raise the reservoir level and to resolve more than a quarter-century of problems surrounding the project.

Omar Arach, Campaigns Director of Sobrevivencia-Friends of the Earth Paraguay, notes the panel's report leaves some serious issues unaddressed: "Given that the report could only look at issues raised in the complaint, other very serious problems associated with the dam were not explored, including seepage to the Iberá wetlands, and the collapse of fish stocks in the reservoir, among others. Still, it is sufficient in transmitting an image of the destructive effect this project has had."

Arach continued, "Those responsible for the project – the banks and especially the governments – have an obligation to not continue to make the same mistakes. Above all, they now have the chance to turn back a page in Yacyretá history, by making a decisive and wise decision: to abandon their plan to raise the reservoir to its design level and to initiate a process of reparations for the damages suffered by communities and ecosystems." ■



UPDATES

US: Federal officials fear that \$100 million worth of hydropower generated annually by the Glen Canyon Dam on the Colorado River could dry up completely by 2009 if dam managers continue releasing water at pre-drought rates.

A five-year drought has already drained the reservoir (called Lake Powell) to 43% of capacity, reducing the pressure of water entering Glen Canyon's turbines. That lost pressure, or "hydraulic head," has slashed the dam's generating capacity by some 30%, leading to higher costs for Colorado's electric utilities served by the Western Area Power Administration.

Water levels in the reservoir have fallen so low that Colorado and neighboring states are considering asking the federal government to preserve the lake's water for drinking supplies, which would cut hydropower production even further.

A repeat of the disastrous 2002 drought year – or even two more marginally better years like 2004 – could interrupt electric generation even sooner. If the drought worsens, falling hydropower revenues also will shrink the revolving fund that contributes \$50 million each year to environmental programs, including the state's endangered-fish recovery efforts. Federal hydrologists estimate there is a 20% chance that ongoing drought could eliminate the dam's ability to produce hydropower within five years.

(See *WRR*, June 2004 for a longer piece about the troubled Colorado River.)

CHINA: US defense analysts have set off a war of words by implying that Taiwan might go on the offensive with China by bombing the Three Gorges Dam. *Newsweek's* Beijing office reports: "US defense planners speculated that, in the event of a war across the strait, Taiwan might seek to hit 'high-value targets' like the Three Gorges Dam as a way of deterring a Chinese invasion. In response, Chinese Lt. Gen. Liu Yuan warned in the state-run *China Youth Daily* that Beijing's retaliation would 'blot out the sky.'" The general also called the Pentagon "a bunch of provocateurs, inciting nationalism and purposely and shamelessly provoking revenge without regard to consequences." China's

leaders are especially incensed by Washington's continued weapons sales to Taiwan.

For their part, Taiwanese military strategist told *Defense Weekly* (Washington) that the suggestion was "provocative" and "irresponsible." They also noted that Taiwan does not have the kind of advanced weaponry for such an attack. Shuai Hua-ming, Research Fellow at Taiwan's National Policy Foundation, said: "While our F-16s are capable of carrying out attacks in the air or near the surface, they are tactical fighter jets with very limited firepower. The suggestion is not feasible at all." China's Lt. General Liu agreed, saying Taiwan would need to possess nuclear weapons to succeed in blowing up the dam.

Another Taiwanese strategist noted that "we can kill probably up to 100 million people downstream, if we bomb the Three Gorges Dam. But the suggestion will make Beijing even more angry and determined to invade and destroy Taiwan."

MALAYSIA: The government said in July that it would go ahead with its controversial \$2.4 billion Bakun hydroelectric dam in Borneo but said the project, under review for its economic viability, needs restructuring. "It is on, except we will look at how we want to restructure it. It is on, it is not off," Deputy Prime Minister Najib Razak told a conference in the Malaysian capital, Kuala Lumpur. The 2,400MW dam, being built in the East Malaysian state of Sarawak, is the brainchild of former prime minister Mahathir Mohamad who favored mega-projects.

The project has been widely criticized for its economic viability. Critics say the dam, which would flood an area of rainforest the size of nearby Singapore and displace thousands, would generate far more electricity than the rural state would need when completed, and that the impacts far outweigh the benefits.

In January, a local business weekly said Malaysia was looking at potentially halving power output from the dam because of uncertainty over demand. Apart from a proposed aluminum smelter that might take 1,000 MW of power from the dam, there are no firm takers for the remaining power, the weekly said, quoting unnamed sources.

Prime Minister Abdullah Ahmad Badawi, who took over from Mahathir last October,

approved the project – Southeast Asia's biggest hydroelectric dam – early this year, but the government aborted a deal to sell a controlling stake in the project to tycoon Syed Mokhtar Albukhary. Syed Mokhtar has plans for a \$2 billion, 500,000-ton-a-year aluminium smelter in Sarawak, due for completion in 2007.

Source: *Reuters*

RIVER REVIVAL

US: New Hampshire's obsolete West Henniker Dam came tumbling down on June 29. Anglers, paddlers, environmentalists and community members swarmed the dam site as a huge jackhammer mounted on mobile heavy equipment banged away at one end of the 10-foot high, 130-foot-long concrete structure across the Contoocook River.

The dam was rebuilt in 1936 on the site of dams dating back to the 1700s, according to the Henniker Historical Society. The dam removal will reconnect a 15-mile stretch of the Contoocook River for the first time in at least a century. The dam was one of more than 4,800 in New Hampshire. Many were built during the Industrial Revolution and have become obsolete and unsafe. The state has opted for a selective removal policy.

The estimated cost of removing the dam is \$160,000. It would have cost the town nearly \$200,000 to repair the dam to meet state safety guidelines. This is the fourth dam that has been taken down by the state Department of Environmental Services River Restoration Program, led by Coordinator Stephanie Lindloff. The Department is now eyeing the foundation of an old paper mill farther down on the Contoocook, aiming to remove it by the end of the year.

SWITZERLAND: A century-old strategy of taming Switzerland's rivers, which has caused serious ecological damage and increased the likelihood of flooding, is being deconstructed. SwissInfo.com reports that today, some 100 projects are underway to reverse the mistakes of the past by removing concrete and restoring waterways to their normal meandering routes.

Between 1870 and 1940, Swiss rivers and lakes were subjected to major dam-building and canalisation works. "In those days, most of the population still worked the land and water courses were rerouted and canalised to combat the danger of flooding," said Ueli Schälchli, who is helping to restore a stretch of the Limmat near Zurich. But the country has been paying the price for putting its rivers into straitjackets in recent years. In 1999 and

2000, devastating floods killed 20 people and caused over a billion dollars in damage.

"When there's a storm, the water flows much more quickly downhill in concreted beds," explains Andreas Knutti, who is in charge of water projects for the Swiss section of the WWF. "In recent years floods have become much more frequent. And, with the expected climatic changes, the situation could deteriorate further over the next few decades." According to the Federal Environment Office, more than 100 revitalization projects have been launched throughout Switzerland over the past five years at a cost of \$157 million. Some have already been completed. Most involve "correcting the corrections" of riverbeds.

Experts say adding back the meanders, islands, sandbanks and pools will allow nature to regenerate itself and recreate an ecosystem similar to that of a century ago.

A BETTER WAY

CHINA: *The China Daily* reports that energy conservation has been given top priority in the government's new long-term energy policy. The new philosophy represents a distinct shift from a previous focus solely on growth of energy supply. The newspaper states, "The transformation will be a decade-long and challenging campaign which requires an overhaul of the whole economic structure, huge investment in upgrading oil refineries and power plants, and cultivation of energy-saving habits."

The new energy development program for 2004-2020 is China's first long-term energy policy in almost half of a century. It lists energy conservation as its first concern, along with other principles such as promotion of environmental protection and protection of energy security.

The Development Research Centre reports that China could decrease its energy consumption from 3.2 billion tons of coal-equivalent to 2.4 billion tons in 2020, should effective energy-saving approaches be taken. The challenge, however, is that there is a lack of economic incentives and legal systems to make energy conservation efforts rewarding, experts said. The new energy policy will, it is hoped, change that.

China at present is suffering from the most serious energy crunch since the late 1980s. Two-thirds of the nation has been afflicted with regular brownouts and blackouts since last year. Supply failure is in part because of the increase in energy-intensive industries such as steel, aluminum, cement and chemicals.

Experts said China has great potential to improve the efficiency of energy consumption to alleviate the impact of the energy supply shortfall. According to a report by the State Council's Development and Research Centre, China spends 13% of its GDP on energy consumption, almost double the level in the United States.

As an important move for energy conservation, Ni Weidou, a thermal engineering professor with the Chinese Academy of Engineering, said China should rely less on energy-intensive industries such as steel and aluminium. "There should be a balance between industrialization and energy consumption," said Ni.

Meanwhile, new efforts will be needed to improve efficiency in power generation, transportation and housing. In the housing sector, for instance, less than 5% of new housing meets energy conservation standards.

US: Western governors agreed in June to a long-term goal of increasing the region's production of renewable energy, ranging from solar and wind power to biomass and geothermal projects. The governors, wrapping up a three-day meeting of the Western Governors' Association approved a resolution that establishes a goal in the West of producing 30,000 megawatts of clean energy by 2015 and improving the efficiency of energy usage by 20% by 2020, the *Salt Lake Tribune* reports.

Colorado Gov. Bill Owens, who was elected as the association's chairman for the next year, said it will be left to individual states and governors to implement policies and projects to meet the energy production goals.

Many Western states are already aggressively moving toward more renewable energy resources. In the past two years, California and New Mexico have joined the growing ranks of states that offer legislative and financial incentives to develop renewable energy and energy efficiency resources, bringing the national total to 18 states, according to *Greenwatch Today*. This fall, voters will be asked to pass a renewable energy standard in Colorado; nascent efforts to pass clean energy laws are gathering steam in Washington and Utah. Montana – whose residents have been hit with a massive bailout of their gas utility due to Enron-style business practices – is beginning to eye its own considerable wind energy.

Two recent studies by the US Energy Information Administration (EIA) found that America's consumers would save as much as \$13 billion between now and 2020 if Congress passed a 10% renewable energy standard.

Putting a bit of a damper on the meeting was Interior Secretary Gale Norton, who said that alternative energy "is not the silver bullet" for the nation's future energy security, and told the governors that the nation also must increase domestic production of natural gas along with other traditional sources of energy, especially on federal lands.

WIND: In the drought-stricken farm belt of southeastern Colorado, farmers and environmentalists are looking forward to the day when many more Americans derive their electricity from the wind. The state-funded Colorado Green Project has helped put wind turbines across 12,000 agricultural acres in Colorado's Prowers County, an area hard hit by the double whammy of a five-year drought and economic recession. Farmers get a fee for each turbine placed on their land.

The area's turbines are generating enough power to run 52,000 homes per year, and planners estimate that wind development will bring a wide range of non-agricultural jobs into the area while bolstering the county tax base by more than \$2 million a year. Talks are underway to double the capacity of the area's wind energy reserves by developing another phase of the project on nearby lands.

According to the American Wind Energy Association (AWEA), the nation gets just three-tenths of 1% of its electricity from wind. The group predicts no more than 6% from wind by 2020, despite the fact that the US Department of Energy reports that the US's windiest sites have the potential to supply more than one and a half times the current electricity consumption of the United States.

The major impetus behind Colorado's largest wind farm was state regulators' order in 2001 that the private company that supplies energy to most of the state use more renewable energy. Colorado is ranked 11th by AWEA among states with the most wind power potential.

INDIA: Rainwater harvesting has been shown to recharge declining groundwater levels in India's cities. A two-year survey of 11 rainwater harvesting projects spread across Delhi shows an increase of 5 to 10 metres in the groundwater levels over two years. The survey was carried out by the Centre for Science and Environment (CSE). CSE says that the following measures are needed to continue this positive trend: increase rainwater harvesting at the city level; ensure by law that all commercial users are required to harvest; treat Delhi's sewage and recycle the water to reduce water pollution.

Brazil Aluminum Plants Score Cheap Hydro Contracts

by Glenn Switkes

With 20-year contracts for subsidized electrical energy expiring, Brazil signed new long-term contracts with the aluminum manufacturers Alumar and Albrás-Alunorte, guaranteeing cheap energy for the multinational plants for the next two decades. The companies had threatened to close their plants and leave Brazil if the government did not provide guarantees for long-term, inexpensive energy. The new contracts could bring in as much as US\$7.4 billion to the coffers of state electric company Eletronorte, depending on the cost of aluminum over time.

The subsidy on the two aluminum foundries' electricity from Tucuruí Dam in the Brazilian Amazon was calculated by the World Commission on Dams to be worth between \$193 million and \$411 million annually. The new rates, while somewhat higher, are still extremely low compared to international energy prices. For Eletronorte to pay the enormous debt it contracted to construct Tucuruí, it would have to charge an estimated \$70 per megawatt-hour to consumers – more than three times what the aluminum companies will now pay.

The Popular Movements Forum denounced the new contracts, saying “Residential and commercial consumers will have

to pay more to subsidize the aluminum companies, who will increase the export of our natural resources to fatten their profits.”

According to Astrogildo Fraguglia, Financial Director of Eletronorte, the new contracts, which will be tied to the international price of aluminum, should have an average base price of around \$18/MWh (in the case of the Albrás/Alunorte smelter) and \$20/MWh (in the case of Alumar). According to Fraguglia, Albrás' old contract guaranteed energy at between \$10.50-\$13/MWh, while Alumar's was for \$20-\$23/MWh, meaning that if aluminum prices fall, Alumar's energy costs will be cheaper than in their prior contract.

Under the new agreement with Albrás, a partnership between the Brazilian Companhia Vale do Rio Doce (CVRD) and a consortium of Japanese industries, the plant will pay \$1.2 billion up front, which will be applied to the installation of new turbines that will increase Tucuruí's generating capacity to 8,370 MW. The increase in the dam's power necessitates raising the reservoir level by two meters, displacing hundreds of additional families. Eletronorte has offered them compensation. Since the dam predates Brazil's environmental laws, no comprehensive environmental impact assessment has ever been carried out on the project. Each of the two aluminum

plants will use more than 800 MW of electricity from Tucuruí, consuming more than 3% of all electricity produced in Brazil. Last year, during the low water season, Tucuruí's energy generation was totally dedicated to fueling the Albrás and Alumar plants.

The contract with Alumar also provides for up-front money whose purpose is still undefined, although there is speculation it could be used to help finance construction of Belo Monte Dam on the Xingu River. Alcoa, majority owner of Alumar, has its sights on starting up a new bauxite mine and alumina refinery in the Amazon, which could use electricity generated by Belo Monte.

The new energy contracts triggered announcement of a series of plans for expansion of existing Amazon smelters, and the possibility to develop new facilities. Alumar will increase its primary aluminum smelting capacity by 60,000 tons to 440,000 tons/year, and will more than double its alumina refining capacity from 1.3 million to 3.3 million tons per year. Alcoa said it plans to mine bauxite at Juriti, in the Amazon state of Pará, and possibly build an adjacent alumina refinery. The Companhia Vale do Rio Doce signed a letter of intent with the Chinese company Chalco to open a 1.8 million ton alumina refining facility near the Albrás/Alumar plant. ■

Letter from Iceland

by Arni Finnsson

Icelandic conservationists are pondering what will happen in the wake of the Karahnukar Hydropower Project, now being built in an area of splendid natural beauty and biological richness. This very destructive project will first and foremost benefit the multinational aluminum giant, Alcoa, which is to buy the energy from the dam, expected to become operational in 2007. Alcoa is building a new \$1.1 billion smelter in Iceland to take advantage of low-cost electricity from the new dam; the low rates are subsidized by other ratepayers.

There have been positive developments from the campaign to stop this dam. First, a parliamentary decision on a new national park in the region where the dam is being built is under way. A parliamentary committee, which consists of representatives from four political parties and is chaired by the Secretary General of the Environment Ministry, delivered a proposal for the park to Ice-

land's environment minister in May, and the Parliament is likely to adopt a resolution calling for a new 10,600 square kilometre park north of Vatnajökull Glacier this fall. The new national park would protect the Joekulsa a Fjoellum, one of three glacial rivers running north from the Vatnajökull Glacier. Two other major glacial rivers, Joekulsa a Dal and Joekulsa i Fljotsdal, have been sacrificed to the Karahnukar project in order to supply hydropower to the new Alcoa aluminum smelter.

Amid huge controversy over the Karahnukar Hydropower Project, the special committee started its work in fall 2002 and its conclusions now enjoy support from Alcoa, which is keen to promote solutions rather than prolonged conflict.

Growing support for NGOs in Iceland
Support for environmental NGOs is also on the increase in Iceland. According to a

recent Gallup poll for Iceland Nature Conservation Association (INCA), 25% of the population is willing to pay \$US30 in extra tax for nature conservation. Furthermore, 71.5% of the Icelandic nation are in support of governmental support to environmental groups.

The challenge now facing Icelandic conservationists is that incumbent authorities in Iceland are keen on exporting the nation's energy in the form of aluminum. Our country is too far away from Europe or America to sell its hydro or geothermal energy via cable, so instead it intends to export it “virtually” in the form of aluminum. Already there are two aluminum smelters in Iceland. The downside of this vision is that the associated large dams will in many instances destroy unique and valuable natural areas. ■

The author is the head of INCA.

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Acres' work on the LHWP are no longer in positions of responsibility in the company."

Acres said in reaction that it was "deeply disappointed" at the World Bank's decision, and implied it was ancient history: "The events in Lesotho occurred 10 to 15 years ago," it noted in a statement, and said it has responded to the allegations "by implementing corporate compliance measures that include strict guidelines about those with whom Acres will work and how Acres engages and supervises contractors, employees and representatives."

Pressure's On

A development earlier this year has increased pressure on the World Bank to do more to stamp out graft. The Senate Foreign Relations Committee, headed by Senator Richard Lugar, has held public hearings on corruption on World Bank projects, featuring both the LHWP and Yacyretá in Latin America. The senator also wrote to Wolfensohn in April asking why none of the three multinationals found guilty of bribery on the Lesotho project had been blacklisted or reprimanded by the Bank (see *WRR*, June 2004 for more on these hearings). Senator Lugar asked Guido Penzhorn, the prosecutor in the Lesotho case, to testify in July.

Penzhorn testified to the Senate committee that the World Bank had early on offered to help pay for the trials in Lesotho, but "unfortunately none of this help has been forthcoming." The costly trials have strained Lesotho's budget, but have bolstered its reputation that corrupt companies are not welcome to do business there. The Lesotho courts have fined each of the convicted companies according to their role in the corruption. Acres was fined US\$2 million, but has reportedly paid only half of the fine. Penzhorn in July told *The Globe and Mail* (Canada), "Lesotho considers Acres delinquent on its fine and will seek to recover the outstanding R9 million through the Canadian courts. We have no alternative."

Other major companies convicted in the trials include Lahmeyer International, the largest engineering consulting group in Germany (the company's fine was increased on appeal in April this year); and Schneider Electric, a French company which pleaded guilty to 16 counts of bribery in February and was fined \$1.6 million. Impregilo, an Italian construction company which led the consortium building one of the dams, is under investigation. Sir Alexander Gibb & partners of the UK and ABB, the Swiss-Swedish group, may also face prosecution,

according to South African media reports.

The LHWP left tens of thousands of poor farming families even poorer, and has sold the nation's precious water to the highest bidder, leaving the nation vulnerable to drought. An ongoing drought has necessitated emergency food assistance to a large part of Lesotho's population this year, according to the UN Food and Agriculture Programme.

Says Korinna Horta of the US-based Environmental Defense, "The World Bank still needs to fully address the project's failure to live up to its environmental and social commitments. With most of Lesotho's river water being diverted, there are serious impacts on people and ecosystems downstream. There are clear signs that Lesotho and South Africa are failing to fulfill their treaty obligations with respect to the impoverished people of the Lesotho Highlands." ■

For More Information

IRN's Lesotho page:

<http://www.irn.org/programs/lesotho/>
Senate Foreign Relations Committee testimony: <http://www.foreign.senate.gov/hearings/2004/hrg040721a.html>

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recent years, a doubling of current lending will only take the Bank back to its previous high of renewables support, achieved in 1996.

"The only consolation for NGOs in the World Bank's pathetically weak target," says Steve Kretzmann of SEEN, "is that they have made it clear that they will not include hydropower projects over 10 MW in their future definition of renewables." The Bank counts several controversial large dams in their tally of past "renewables" lending.

The European Investment Bank, the European Union's main funder of large development projects, greatly surprised observers of

the normally conservative institution with an announcement in Bonn that they would direct half of all energy lending to renewables by 2010. The impact of the announcement was later tempered by the clarification that the EIB would include large hydro within their renewables portfolio with only the caveats that these projects would have to comply with the institution's (notoriously weak) environmental policies, and would be assessed "in the light of the recommendations" of the WCD and the Camdessus Report, a report produced last year for the Third World Water Forum in Japan. The

Camdessus Report only tangentially addressed hydropower, mainly to recommend that it receive more public funding. It is not yet known whether this new renewables target will lead to an upswing in EIB support for large hydro.

Governments agreed in the Political Declaration that they would report to the UN's Commission on Sustainable Development (CSD) on progress toward meeting their commitments in the International Action Programme and would discuss "substantive follow-up" at meetings of the CSD in 2006 and 2007. ■

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ects will drastically change the Mekong River's natural flood-drought cycle and block the transport of the river's sediment. These environmental changes will affect the livelihoods of millions of people living downstream in Burma, Laos, Cambodia and Vietnam.

In order to document the changes to the river ecosystem as a result of the dams and rapids blasting, SEARIN has been working with local villagers to conduct "Wijai Thai

Bahn" or "Thai Villager Research" to document the number and types of fish species in the river, and the river's natural ecosystems. Using a unique methodology based on local knowledge, villagers have identified 102 fish species in their section of the river, eleven of which have not been found in the past five years. Villagers use 70 different types of fishing gear to catch these fish. The full results of the research will be released later this year and will be used to document the impacts of

the Chinese projects on fish populations in the river.

Villagers in Thailand are afraid of what's to come in the future. Many of Por Sri's friends have stopped fishing altogether and now practice farming as their main source of income. Asked whether he too will stop fishing one day, Por Sri says no. "What am I to do? I am a fisherman, I have always been a fisherman." But one day, perhaps there will be too few fish left for Por Sri and his family to catch. ■