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Dam Threatens Ancient Chinese Waterworks

by Doris Shen

Nestled in the mountains of central Sichuan – the birthplace of Taoism – the Dujiangyan waterworks have tamed floods and distributed Min River waters for over 2,200 years and helped the area gain its reputation as China's granary.

Now, nine kilometers upstream of the venerated waterworks, plans for a 156-meter-high dam on the Min River could end the working life of Dujiangyan. Zipingpu Dam is becoming one of the most controversial projects in China since the Three Gorges Dam on the Yangtze, not only because of its impact on the waterworks but also its social and environmental impacts and location in an active earthquake zone.

The Dujiangyan waterwork's designer, Li Bing, showed a sophisticated understanding of hydrology when he chose the site for the waterworks in 256 BC. He used an existing islet to split the river into an inner and an outer channel. The diverted water goes into a series of spillways and channels that can be opened to irrigate during droughts and closed in times of flooding.

Because of the resiliency of the Dujiangyan water system, the plains of eastern Sichuan have been an affluent agricultural center of China for centuries. The Sichuanese have erected temples to honor Li Bing and his son, Er Lang, who later completed the project. Ceremonies are held every year to commemorate their achievements and wisdom.

Going West

The Zipingpu Dam is a component of China's western development strategy. Backers of Zipingpu, including the Sichuan provincial governor, claim it will expand the lifespan of the Dujiangyan project, increase agricultural irrigation, urban water supply, flood control, environmental protection and tourism. Critics are crying foul and lamenting that the dam is a political project that aims to sequester waters to serve industrial needs.

China's "Go West Campaign," announced in 2000, is an economic scheme to drive foreign investment for infrastructure projects to facilitate resource extraction in western areas. Critics contend the strategy is more about nationalism rather than effective economic development. Tibetans and their supporters fear that the Chinese government is using the development scheme to solidify its grip on its restive western regions, including Tibet.

The Japan Bank for International Cooperation (JBIC), a publicly funded agency whose purpose is to promote Japanese exports, imports and Japanese economic activities overseas, is providing about one-third of the project's funding.

JBIC seems intent on stonewalling critics to avoid getting embroiled in the controversy. JBIC refused to release a copy of the environmental impact assessment to NGOs. Although the agency had received and reviewed the impact assessment, JBIC explained it had been ordered by the Chinese authorities to not release the contents to any third party.

Upstream Costs and Risks

The dam's impact on Dujiangyan isn't the only controversy. Zipingpu will force the resettlement of at least 40,000 people to make way for its 18-square-kilometer reservoir.

Part of the impacted area falls within the Aba Tibetan and Jiang Autonomous County, signaling that ethnic Tibetans may be among those forcibly displaced. Han Chinese from other parts of the area could be resettled in higher Tibetan lands.

Resettlement in minority areas is highly controversial. In 2000, the World Bank proposed providing funds for the settlement of ethnic Han Chinese in Tibetan areas in Qinghai province, north of Sichuan. Global protest quickly followed, forcing the Bank to abandon its support for the project.



Photo: Yu Chiu-Yu

A statue in Sichuan honors the waterworks' designers.

Recent field reports from the area indicate that farmers are disgruntled about being resettled and have no legal recourse to file grievances.

Behind Closed Doors

Information and media coverage about the project has been strictly controlled by the state. However, recently obtained transcripts from an internal meeting held in September 2000 reveal disagreement over the dam at high levels of government and academia.

The transcripts show that project critics at the meeting stated that the benefits of Zipingpu Dam are exaggerated. They noted that dam proponents' claims that the project will irrigate 11.34 million acres of land are misleading, as 11 million of those acres are already irrigated by Dujiangyan. Added to that, the flood prevention capability is low. Zipingpu's reservoir will be 1.1 billion cubic meters, yet hydrologists argue that the annu-

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How Corrupt is the Dam Industry?

Corruption in corporate boardrooms has made headlines on an almost daily basis lately. Chief executives have used insider knowledge to sell shares at a good price before their companies went bust. And the Attorney General of New York has shown that large banks have routinely given fraudulent advice to investors. Financial analysts have recommended investments in companies which they internally rated as “junk” because their banks were interested in follow-up deals with these companies. “How corrupt is Wall Street?” *Business Week* asked pointedly in May of this year.

The dam industry deserves more scrutiny by prosecutors and the media too. According to a survey done by Transparency International, public works and the power industry are perceived to be the most and the third-most corrupt industrial sectors by business executives around the world. As reported in this issue of *WRR*, a number of large dam-building companies are presently being prosecuted for corruption in the Lesotho Highland Water Project. And plans for the Bujagali dam in Uganda were recently stalled when the country's former energy minister admitted to having accepted a \$10,000 payment from a construction company involved in Bujagali (see page 4).

We may assume that the Lesotho Highlands and Bujagali cases are only the tip of the iceberg when it comes to corruption in large dam projects. Uganda's former and current energy ministers are rumored to have accepted much larger bribes from the developers of Bujagali, and the project is presently being investigated for bribery in several countries and by the World Bank.

Corruption in the dam industry is also more deep-rooted than some occasional bribes ending up on ministerial bank accounts. Like the financial analysts on Wall Street, the engineering companies which evaluate potential water and energy projects are supposed to give independent advice. Yet like in the case of Wall Street banks, their advice is often biased by vested interests: Engineering companies know that they please government bureaucracies and funders if they propose a new dam, rather than alternatives such as energy or water conservation, and that such advice will trigger lucrative follow-up contracts. When the Bujagali Dam was first being considered, the World Bank asked a dam engineering company to evaluate Uganda's power supply options – and not just any dam engineering company, but one which had first proposed to build a dam at the Bujagali site, and had already helped design another dam a few kilometers upstream. No wonder that this company suggested to build the expensive Bujagali Dam, and gave short shrift to the promising potential of cheap geothermal power in Uganda. Engineering firms which propose new dams over more suitable alternatives are no less culpable than Wall Street banks which give fraudulent advice to investors.

As *WRR* reports, the World Bank and export credit agencies have slowly started to grapple with “the cancer of corruption” in their projects. But more concrete steps are needed. The following measures need to be taken to root out corruption in the dam building industry:

- Sunlight is the best disinfectant. This is particularly true when corruption is in the air. Planning and decision-making processes in the power and water sectors must become transparent and fully accountable to civil society.
- Rather than only punishing the small fry, the World Bank and export credit agencies must be prepared to blacklist large companies when they get caught in acts of corruption.
- Affected communities and non-governmental organizations must be able to bring engineering companies to court and make them legally accountable for the advice which they give to governments and funding agencies.

Again and again, the poor and the environment suffer when corruption reigns. International Rivers Network, in cooperation with NGOs and movements around the world, will continue to hold the dam industry accountable, and to make decision-making processes on water and energy issues more democratic and accountable.

Peter Bosshard

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Electricity Sector Reform Means More Dams for Costa Rica

by Elizabeth Anderson

The number of dams is on the rise in the Central American country of Costa Rica. In a little over a decade, more than 30 small to medium sized hydropower dams have been built on the nation's rivers and more dams are currently being planned. What do these new dams have in common? All are owned and operated by private companies.

The longitudinal orientation of Costa Rica's rugged mountain chains, coupled with large amounts of rainfall (approximately 5000 mm annually in some areas), has resulted in a large number of high gradient streams with sufficient discharge for hydroelectricity generation. Costa Rica is currently very dependent on hydropower, which accounts for roughly 85% of the nation's electricity.

Before 1990, the Costa Rican Institute of Electricity (ICE), a government-run institution, was responsible for generating all of the country's electricity. Restructuring of Costa Rica's electricity sector began with legislation passed in 1990 that partially privatized electricity generation. The motivation behind this legislation was to decrease pressures on ICE by allowing private companies to build and operate new electricity supply plants. Thus, the country could better distribute costs and responsibilities of electricity generation across several sources and meet increasing demands for electricity.

Electricity privatization is an international trend that has been sweeping developing countries over the past two decades, in many cases as a response to increasing demands for electricity, as in Costa Rica. Privatization refers to the transfer or sale of government assets and responsibilities to private companies, and can take many forms. While some countries have restricted involvement of private companies to electricity generation, transmission, and/or distribution, other countries have gone so far as to sell state-run dams and other types of generation facilities, completely absolving the government of any responsibilities related to the electricity sector. Costa Rica's steps toward electricity sector restructuring have been more gradual than those of many other developing countries, as its legislation places many limits on private participation.

Costa Rican legislation permits private companies to generate electricity, but the state-owned ICE retains authority over transmission and distribution and continues to build and operate government generation facilities. Private companies must establish

contracts with the government to sell all electricity generated to ICE and are required to complete an environmental impact assessment report in order to receive these contracts. Costa Rican law limits the maximum installed generation capacity of these plants to 20 megawatts. In addition, the law limits foreign capital in private generation companies to 65% of total investments. Furthermore, the total amount of electricity generated by private companies is restricted to 15% of total domestic electricity production.

Despite these restrictions, the results of private participation in electricity generation in Costa Rica can be seen on watersheds throughout the country. Between 1990 and 2001, 50% of the country's 34 major watersheds have been targeted by private hydropower development, with projects planned or under construction. Although in many other developing countries privatization has led to an increase in thermoelectric generation plants, Costa Rica's abundant freshwater resources and rugged topography has led to more dams.

There are both costs and benefits to private participation in electricity generation and the resulting hydropower development in Costa Rica. Although the combined electricity produced by all private generation facilities (including more than 30 dams) accounts for just 15% of total domestic electricity, private power plays a crucial role in supplying the country's electricity during peak demand periods that occur twice daily. As for environmental mitigation, multiple private hydropower plants have entered into programs of environmental services payments for forest protection with a local non-governmental organization, and others have started reforestation projects in their surrounding watersheds.

But these benefits do not come for free: the rapid increase in the number of dams that electricity sector restructuring has caused could lead to serious irreversible impacts to many watersheds and the biota that inhabit them. Most private hydropower plants in Costa Rica operate as diversion dams, causing sections of the river to have significantly reduced flows. Depending on the size and operations of the dam, these "de-watered" reaches may be several kilometers long and the resulting decreases in aquatic habitat may present serious challenges to aquatic biota. Additionally, most private hydropower plants operate on peaking power regimes that disrupt the hydrology of the river downstream

of the dam and could affect biological cues of aquatic fauna whose life histories have evolved with the natural flow regime of the river. Peak releases of large quantities of water could also be dangerous to people using the river downstream.

Furthermore, electricity sector reform has resulted in the construction and operation of multiple private dams on individual watersheds, as Costa Rican law does not limit the number of dams per watershed. One watershed on the country's northern Caribbean slope presently has six private dams in operation (in addition to two dams owned by ICE) and many more private dams currently being planned. The installed capacity of these private dams ranges from 1 to 17 megawatts. A recent state of the nation report for Costa Rica stated that the cumulative impacts of multiple dams on single watersheds was one aspect of private hydropower development that has not yet been adequately addressed and needs evaluation. Rapid hydropower development on watersheds draining the northern Caribbean slope has also caused concern among local residents and environmentalists who are currently working to develop management plans to minimize unsustainable development of their watersheds.

Getting 85% of its power from its rivers is a risky approach for Costa Rica, making its economy vulnerable to climate change and drought. It could do more to reduce its dependency on hydropower by tapping into its significant renewable energy resources. Although Costa Rica is already Latin America's leading source of windpower, most of its wind potential remains untapped. According to *New Energy* magazine (June 2000), in 1999 wind power accounted for just 2% of the country's electricity consumption. The World Bank has even identified Costa Rica's "reliance on hydroelectric and thermal power despite high potential for wind power generation" as an environmental problem, and has funded some small windpower projects. According to the American Wind Energy Association, wind farms in Guanacaste, Costa Rica, have one the best performance records in the hemisphere, and are cheaper than fossil fuels. Costa Rica also has strong potential for solar and geothermal energy. ■

The author is with the Institute of Ecology, University of Georgia. Her dissertation work is focused on the cumulative impacts of dams on Costa Rica's watersheds.

World Bank's "Cancer of Corruption" Spreads

by Lori Pottinger

Corruption on high-profile World Bank dam projects has recently proved embarrassing for the institution. Why isn't the Bank doing better at fighting fraudulent practices?

World Bank president James Wolfensohn put his staff on alert in 1996 by saying the Bank needed to do more to fight "a cancer of corruption" that was slowing efforts to reduce poverty around the world. It was a shift for the institution, which had previously worked quietly behind the scenes when corruption arose, and often even turned a blind eye to it. Bank watchers have since been looking for indicators that the institution is taking a more strenuous approach to the problem. But despite Wolfensohn's tough words, the Bank's record on preventing corruption on its own projects indicates a disconnect between rhetoric and reality.

The Bank will be the first to point out the positive steps it has taken since Wolfensohn first uttered the "C-word" so publicly. In the past few years, it has established an anti-corruption unit, and set up a hotline for calling in corruption on Bank projects. Procurement guidelines have been strengthened. An oversight committee was established to monitor the Bank's efforts on fraud and corruption and to develop and implement anti-corruption strategies. The Bank has made efforts to help governments improve their transparency and make it harder for corrupt practices to take place. Perhaps most significantly, a mechanism to "debar" companies from further Bank contracts was established. With this action, the Bank pledged to "declare a firm ineligible, either indefinitely or for a stated period of time, to be awarded a bank-financed contract" if the firm is found to have "engaged in corrupt or fraudulent practices in competing for, or in executing, a bank-financed contract."

But at the same time, corrupt practices have seriously tainted two large dam projects and other large construction projects. Massive construction projects are fertile ground for bribery (see box, opposite page), and the Bank continues to be drawn to such projects. Two recent cases highlight some problems with the current approach to corruption at the World Bank.

Lesotho: Bribery on a Massive Scale

In June, a judge in Lesotho convicted the former chief executive of the Lesotho Highlands Water Project (LHWP) in southern Africa of taking bribes from more than a dozen of the world's largest engineering and construction firms. The former chief executive, Masupha Sole, was sent to jail for 18 years for accepting over US\$2 million in bribes in exchange for favorable contracts for the companies on the huge multi-dam scheme. Some of the companies accused of bribing are now standing trial; the Canadian firm Acres International is currently in the dock (the trial was expected to be over at press time). Company trials are expected to be completed by mid-2003.

The World Bank was a key funder of the multi-billion-dollar LHWP; indeed, the project would not have broken ground without the Bank's assistance in brokering the deals. But the Bank's actual financial contribution was not for project construction, a detail that has had major ramifications in the corruption saga. The Bank has thus far interpreted its own policies narrowly, claiming that it cannot blacklist companies that bribe on Bank-sponsored projects unless the companies misused World Bank funds directly.

When the Bank first indicated in 1999 that it might not debar the companies found guilty in this scandal, Jeremy Pope, executive director of Transparency International, an organization dedicating to fighting corruption, voiced incredulity in an article in the *Washington Post*: "It's a project the World Bank was involved in, and logic says – if you're bribing, you're bribing; and if you're unfit to be bidding for business, you're unfit."

Putting logic aside, however, the Bank last year declared, after an internal investigation, that there was "insufficient evidence" to debar the three firms it investigated (presumably, only three of the dozen firms had direct contracts with the Bank).

The Bank has not released any information about the probe. Many who have been following the case were outraged, both by the Bank's refusal to act on its own policies, and because it chose to announce its findings before the Lesotho court case was finished.

The companies have argued that their intermediaries chose to bribe Sole, the LHWP executive, on their own initiative, without the companies' knowledge. But the 200-page judgment against Sole lists the accused companies as having paid Sole, not the involved intermediaries. This seems to indicate that these middlemen transferred money to Sole at the accused companies'



The Uganda Debt Network building highlights the problem of corruption through murals.

Photo: Patrick McCully

instruction. "What need was there for banking facilities which were nothing less than covert? None of the contractors were based in or operated out of Switzerland," the judge wrote.

Korinna Horta of the US-based Environmental Defense says, "Mr. Wolfensohn has stated that the fight against corruption is absolutely critical in making development aid more effective. But the results of the Bank's internal investigation into the Lesotho case show that the Bank is in fact abetting corrupt practices. How else can one interpret the fact that the Bank chose to disbar the middleman in the Lesotho case, but continues to do business with the companies which hired and channeled funds through the middleman? Unless the Bank turns around on this issue, the institution's credibility is seriously undermined."

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A Bank press person indicated to journalists that the Bank might reconsider its stance on debarment if the companies are found guilty, but behind the scenes, management seems to be trying to keep its distance. According to Pamela Cox, Operations Director in the Bank's Africa department, "We're not a court of law, not investigators. There is some misunderstanding on how far the Bank can go. We're not the world's policemen." She also noted that the Board of executive directors has very mixed views on the Bank's role in policing corruption. The Bank also does not have a "huge apparatus" for fighting corruption, she noted.

Of course, poor countries like Lesotho have even fewer resources than the world's largest bank to track down corruption. Lesotho, which has shown great strength of character to take on this big case, has had strong legal backing from South Africa (the beneficiary of the project's water). The prosecutor and judge on the case are both South African, and there has been official support in tracking down evidence. The World Bank had originally said it would offer financial support to the Lesotho government for the case, but has since retracted. It reportedly did share information from its own internal investigation with the government.

At least one other funder has indicated it will take a stronger stance than the World Bank. According to the UK *Guardian*, Britain's export credit guarantee department, which underwrote £60m worth of guarantees to the UK firms on the LHWP, has said it is "monitoring the situation" and that a corruption conviction would be sufficient grounds for refusing a company future backing.

NGOs watching the Lesotho trial believe there is no better case to test the validity of the Bank's approach to corruption, and have been disappointed in the tepid response thus far.

Says Patricia Adams of the Canadian group Probe International, "It seems wrong to me that the World Bank should have a policy that says, by analogy, 'it's OK to hire a company convicted of robbing a bank, as long as it didn't rob the World Bank.' Unless the Bank and other public funders are prepared to blacklist companies convicted of bribery, these companies will get the message that it is OK to bribe. It will be a crime without serious punishment."

Bujagali: Corruption Swamps Project

The proposed \$550 million Bujagali Hydropower Dam on the Nile River in Uganda would be the largest private investment in East African history and, in the

Large Dams Are Prone to Corruption

Transparency International's Michael Wiehen wrote an excellent report on corruption and large dam projects for the World Commission on Dams (available from www.dams.org/kbase/thematic/tr54.htm). In addition to defining how corruption takes place, the paper elaborates a step-by-step process for planning large dams that minimizes opportunities for corruption. This excerpt describes why large dams are prone to corruption.

Wherever large financial commitments are called for, and especially where there is a high degree of technical complexity and a large number of contracts and parties involved – all characteristics of large dam projects – then frequently firms will try to influence the decision-making in their favor by bribing officials, or by colluding with their competitors, or both. Equally, officials in the decision-making structure of the host country may be ready to abuse their position of power and seek to obtain personal gain by simply accepting bribes offered by firms or their agents, or by actively extorting bribes from the bidders. The complexity of large dam projects means that on the host country side, several ministries and departments will be involved... The management of such a project offers numerous opportunities for disconnect, inadequate cooperation and collaboration, confusion, and thus for a serious lack of transparency. There is a similar complexity of the contracting structures as well as of the financing structures, especially when several outside financiers, including international financial institutions, are involved, each with its own procurement guidelines and preferences.

Another reason why large dam projects so often are targets for corruption is the fact that so many economic and social players may benefit, or suffer, from the way the project is carried out, or indeed from the decision whether it is carried out at all or not – such as the people living, or otherwise benefiting from activities going on in the project area, the beneficiaries of irrigation water or electric power, and many others. A large dam project affects many financial and social interests, and there will be significant efforts to influence the decision making. Some of these efforts are entirely legitimate, but much is corruption, and illegal.

coming decades, would commit the already indebted country to pay billions of dollars for the resulting electricity, whether it can sell the power or not. The World Bank Group approved support for the project in December 2001, and is proposing still more support to help the project overcome new financial difficulties.

Corruption allegations first surfaced in February 1999, when a Ugandan political weekly, the *Uganda Confidential*, alleged that AES Corporation, the US company that wants to build the dam, had bribed the country's energy minister, Richard Kaijuka. Kaijuka has denied the allegations.

After the *Uganda Confidential* article appeared, three members of Uganda's parliament sent a letter to Kaijuka, asking for his resignation. He was dismissed in April 1999. "I am not sure whether the man was dropped simply to be saved from a possible investigation," commented Wafalu Ogutu, the director of the Ugandan chapter of Transparency International. Kaijuka is now an alternate Executive Director for the World Bank.

According to a December 2001 World Bank press release, the Bank's anti-corruption

team investigated allegations of corruption on Bujagali "as fully as possible within its power," but it found "no corroborated evidence of corruption that directly affects the merits of the project." Details of what was discovered have not been made public. President Wolfensohn said, "We take corruption very seriously. Should corruption be discovered, IFC has the right to stop disbursements, and to demand repayment of the loan."

In July, the *Wall Street Journal* reported that a subsidiary of the Norwegian firm Veidekke, the main civil-engineering contractor on the project, bribed Ugandan government officials over another dam project in Uganda. (It has since been reported that the bribe allegedly went to Richard Kaijuka.) While seemingly only peripherally related to Bujagali, the scandal has stopped the project in its tracks. Well-positioned observers believe that the \$10,000 bribe may not be the only case of corruption associated with Bujagali, and that the World Bank may currently be investigating more serious allegations more directly tied to the project.

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Secret agreements are also creating an atmosphere in which corruption can thrive. Critics note that the Bujagali consortium was not selected in a fully transparent way: a World Bank report states there was only “limited international bidding” in choosing contractors. The sponsors of a competing dam on the Nile (called Karuma), including Veidekke, were absorbed into the Bujagali consortium after it became clear that the Karuma project had been stalled because of government favoritism for Bujagali.

An important component in the Bujagali project has been the secrecy of key documents that would reveal the economic risks Uganda is taking. Concerned citizens and civil society organizations in Uganda have long struggled to gain access to information about the dam’s economic consequences, and the release of the project’s Power Purchase Agreement (PPA), which outlines the financial arrangements between the Government of Uganda and AES. While not publicly released, it is known that the government has committed to paying AES up to US\$110 million a year for 30 years, whether or not it can sell the project’s power.

Ugandan organizations finally appealed to two independent investigation units within the World Bank Group to get the PPA publicly released. The World Bank’s Inspection Panel stated that “the full disclosure of the PPA is vital if the intent is to place the public in a position to analyze, understand, and participate in informed discussion about the viability of the Project and its impact on the economy and well-being of Ugandans.” The Bank has steadfastly refused to require the full release of the PPA as a condition of its lending.

Failure to release the PPA is part of a broader pattern of behind-the-scenes dealing that has characterized the project. The absence of competitive bidding is a case in point. Michael Wiehen of Transparency International, in a paper on corruption commissioned by the World Commission on Dams, noted that, “The most effective barrier against corruption in contracting is the use of open competition. Governments should insist on open competition, prescribe the acceptable grounds for exceptions very narrowly, and require a written explanation every time the rule is broken.”

The Bujagali project broke this rule in many ways: there was no competitive process to determine which energy option Uganda should develop first; there was no competitive bidding to grant the Bujagali site to AES for development, and there was only “limited” competition to choose contractors to build the dam.

“As far as our institution is concerned, there is nothing more important than the issue of corruption... It [is] the single-most significant factor in the issue of development, of equity and of social justice.”

James Wolfensohn, 1999

Says IRN advisor Peter Bosshard, “The secretiveness in which the Bujagali project has so far been developed fosters corrupt practices, undermines good governance in Uganda, and is at odds with good business principles in the post-Enron world. In order to create the transparency and accountability which is needed to fight corruption, the World Bank should insist that AES and Uganda’s Government agree to release the Power Purchase Agreement and other key documents.”

The Way Forward

These two cases highlight some specific problems with the Bank’s approach to corruption – for example, that the Bank is using a very narrow definition of punishable corrupt practices, which in effect lets corrupt companies off the hook. It is also not clear how decisions are made to pursue corruption allegations, and how decisions are made about debarment of companies. The Bujagali case also makes clear that the Bank’s own policies which could help prevent corruption, such as Bank guidelines on competitive bidding, are either not strong enough or are not being followed. These cases also reveal that the Bank is often unaware about corruption taking place on its projects, perhaps indicating that not enough staff time and resources are being devoted to the problem.

“Unless the world’s leading development agency takes a firm stance on corruption by publicly disbarring the companies found to pay bribes through whatever disingenuous schemes they may employ, corruption will continue to be an integral part of ‘doing business,’” says Korinna Horta. “The poor and politically voiceless and the natural environment will continue to pay the not-so-hidden costs.”

Another issue lies within the countries the Bank chooses to do business with. An April

2000 report by the US Government General Accounting Office on the World Bank’s efforts to fight corruption notes that change will be difficult: “...Problems of corruption and weak management are often endemic to the economic development environment in which the Bank operates.” Such is the case with Uganda, for example, which has been rated in the top five most corrupt countries by Transparency International for a number of years. Says Antonio Tricarico of the Italian group Reform the World Bank Campaign, “If the bank chooses to do business in corrupt environments, then it must ensure that its anti-corruption policies and programs are strong and unshakeable. Unfortunately, this is not the case today.”

In August 2000, Transparency International (TI) called for the World Bank to strengthen its anti-corruption initiatives in developing countries, and urged it to adopt a 10-point program to achieve that goal. TI’s program for the Bank called for enhancing efforts by the Bank to partner with other organizations, reviewing lending levels to countries that are not pursuing anti-corruption strategies, creating new anti-bribery tools to determine whether public services actually reach the intended beneficiaries before additional loans are considered, promoting decent pay for civil servants to discourage bribery, increasing the Bank’s budget for fighting corruption, and other initiatives. More recently, TI has developed an elaborate model process for planning large dams that eliminates opportunities for corruption. The Bank does not appear to be making a serious effort to adopt TI’s initiatives.

Nor has it taken any serious steps to adopt the guidelines of the World Commission on Dams. “The type of transparent, democratic decision-making process promoted by the WCD would help to minimize the risk of corruption in large dam projects,” notes Patrick McCully of IRN.

“Corruption is now clearly on the World Bank’s agenda, and the Bank has begun to blacklist bribers, but the whole donor community has a long way to go,” said TI Chairman Dr Peter Eigen. “What is vital is continued support from the top, which means not only James Wolfensohn but also the political will from donor countries’ governments. The World Bank has a critical role to play, but the success of both financial institutions and donor government initiatives hinges on their willingness to actively work with civil society organizations in countering corruption, for it is these groups that can monitor the flow of funds on the ground and expose kickbacks and looting by local elites.” ■

The Sad Truth of a Model Resettlement Site

by Patrick McCully

At first sight, Naminya resettlement site in Uganda appears a pleasant spot. Dozens of small concrete houses with tin roofs and wooden shutters are scattered across a gently sloping green hillside. The occupants have sweeping views over the wide valley of the Victoria Nile. Cool breezes bring some relief from the tropical heat.

This is the place where AES Nile Power, a subsidiary of US energy giant AES Corp., has shifted 30 families from their riverside

We arrived at Naminya unannounced. Our driver slowed down by a group holding a meeting by the side of the road. As our driver turned the van to park, one of them started shouting at us and waving his hands and the others stared with what seemed like menace. But once our van had come to a halt they stopped shouting they made it clear that we were welcome – they had been angry not because we were from NGOs, but because they'd thought we were not going to stop and hear their grievances.

We'd come upon the group as they'd been meeting to discuss how to get the authorities to address their many grievances. These people were clearly frustrated and angry, and glad to have some outsiders to whom they could explain their plight.

"We were better off near the river," said Alex Wanyana, General-Secretary of the local council. "We lived better there. Now we have no water,

the ground is poor and stony, there is no market place nearby, the common land is guarded and we are not allowed to use it. We used to be near the river and a road and markets." Others shouted their agreement.

Wanyana told us that AESNP had provided compensation of 700,000 Ugandan shillings to each resettled family (around \$390) – but had deducted 200,000 shillings for the cost of transporting the family and their belongings to Naminya.

The women had their own issues to raise. "There are no kitchens in our houses and we cannot cook inside," one woman said while her companions nodded vigorously. "We used to have kitchens separate from our houses but now we have nothing and have to cook outside, even if it rains."

The other women chimed in with more complaints: they had to walk several kilometers to get firewood; there was only one bore-

hole for the entire resettlement site to get water, and the water from it was orange; metal rainwater tanks built for each house were too small and leaked; latrines overflowed when it rained, leading to fears of cholera.

Wilson Epwat explained a problem caused by AESNP's failure to consider the polygamous culture of the Basoga and Buganda people moved to Naminya. Epwat has two wives and previously had a separate hut and kitchen for each wife and her children. But no allowance for multiple wives had been made at Naminya. Epwat now has to live with both wives and their children in a single small house, with one wife having to sleep in the living room.

AESNP had, they said, made many promises to the families before they moved. The company had told them they would build clinics and schools, drill wells and provide them with electricity. Power lines from the Owen Falls Dam pass only a few hundred feet from some of the houses at Naminya – yet no electricity has been provided to the resettled families. The people interviewed by the NGO team, disillusioned by their experiences since they had moved, were doubtful that they would ever see the amenities promised by AESNP.

Most worrying for the resettled families over the longer term is the poor quality and inadequate replacement land they have been provided. The group interviewed by the NGO team angrily explained how the land at the hilltop resettlement site is stony and much less fertile than their expropriated riverside plots. Some complained that the one acre of replacement land they had received was less than they had previously farmed. Despite promises made by AESNP, the resettlers said that they have not received legal titles to their new land.

The women protested that they had previously had their own plots but these had not been recognized by AESNP. This meant that a family comprising of two wives and a husband which previously had access to three different parcels of land now has to share a single one-acre plot.

Some of the displaced families had originally owned cattle. But no grazing land was made available at Naminya. Signs are posted on nearby common land declaring any use of the land to be illegal.

The resettled people were especially upset about a letter received from AESNP in May. The letter states that "cultivating our

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Photo: Patrick McCully

These women, resettled for Bujagali Dam, are unhappy with the conditions in the resettlement camp.

homes near the site of the proposed Bujagali Dam (now on hold because of corruption allegations, see p. 4). AESNP boasts that Naminya illustrates their commitment to improving the welfare of those moved to make way for the dam. The so-called Panel of Experts appointed by AES to review the environmental and social aspects of the dam has called Bujagali's resettlement program "outstanding in the global context."

In July 2002 an NGO team from the Ugandan National Association of Professional Environmentalists (NAPE), International Rivers Network, Berne Declaration (Switzerland) and the Environmental Monitoring Group (South Africa) visited Naminya. We expected to find a prosperous new community. We even had some trepidation about visiting the site, having been warned by AESNP that the resettled families were angry with NGOs who'd been critical of the dam.

Brazil Weighs Potential for an Energy Evolution

Experts Say a New Energy Direction is Possible for Hydro-Heavy Brazil

by Glenn Switkes

Brazil, South America's leading energy consumer and a country heavily dependent on large dams for its electricity, has a significant opportunity to open the floodgates to a sustainable energy future. Following its worst energy crisis ever, Brazil faces ongoing difficulties in the energy sector unless it begins to embrace its significant renewable energy resources. With official estimates of Brazil's wind energy potential at 143,000 megawatts (twice the country's current installed electrical generating capacity), enormous biomass potential, and a huge unrequited demand for off-grid solar systems in Brazil's outback, the country could be on the brink of a sustainable energy revolution (or perhaps "evolution" is more realistic). The government's intentions are good: new laws require Brazil to get 10% of its energy from renewables by 2019. But bureaucratic inertia, legal uncertainties, and an official penchant for hydropower have so far conspired to keep these clean options on the back burner.

A conference held in Brasília in June, called "Alternative Energy Sources and Energy Efficiency – Options for a Sustainable Energy Policy in Brazil," was aimed at creating momentum and public awareness to spur this transition. The event, organized by the Rios Vivos Coalition and the Heinrich Böll Foundation, benefitted from the participation of some of Brazil's leading specialists on alternative energy, including government officials. Also attending was Germany's Vice-Minister for Energy, who explained how Germany has changed its policies to spur the conversion from a coal- and nuclear-based economy to one where energy alternatives are gaining ground more decisively than in any other country in the world.

There is much room for improvement in Brazil's energy mix. More than 80% of Brazil's installed electricity generating capacity of 77,200 MW is hydroelectricity, generated by the nation's 450 dams. Such hydro-

dependency is not only massively destructive to Brazil's rivers and river-based communities, but also makes Brazil especially vulnerable to energy shortages from drought and climate change. The rest of Brazil's energy mix comes from oil and natural gas (12%), nuclear (2.8%), coal (2%), and renewables (combined, less than 2%). Official estimates are that Brazil's electrical energy demand will grow by more than 5% a year for the foreseeable future, meaning that the country will need to double its existing capacity by 2015.

These estimates are based on a continuation of the current pattern of energy use in Brazil, where energy-intensive industries, principally companies that process aluminum, metal alloys and cement, consume enormous quantities of electricity.

Brazil's privatization of its electric sector has resulted in a shifting set of rules and policies that emphasize concessions for new large dams and gas-fired power plants, and which fall well short of providing adequate incentives for energy alternatives and efficiency measures. At this time, 46 new large dams are under construction or have been approved for construction – projects that are expected to add an additional 10,170 MW to the national electrical grid.

While consortia of energy-intensive industries are invited to bid for concessions to construct new dams, the market rules for alternative energy sources are far more uncertain. Most alternative energy producers aim to sell their electricity to the centralized energy grid. This poses a major problem, since the base value paid for energy has fluctuated greatly, as energy regulatory bodies seek to control inflation by decreeing low energy prices. This has also worked against new investments in hydropower, aside from Brazil's most inefficient and largest-scale energy consumers.

Still, new legislation aimed at promoting energy alternatives could spur the transition if obstacles and loopholes in the laws were

fixed. New laws oblige the government to guarantee a 15% annual growth in use of renewable energy sources, principally wind, biomass, and small hydro, with a goal that renewables will provide 10% of the country's electrical energy by the year 2019. However, these laws still await supplemental legislation that would define the rules under which their incentives would operate. With a national election set for October, there is little chance these rules will be established before the new Congress meets in 2003.

Another factor is there are no guarantees, as there are in Germany for example, that those running the national grid will buy the energy generated by independent producers. This creates uncertainty and also slows investments in renewables.

Biomass Could Boom

Brazil's tropical climate makes the use of biomass for fuels and electricity generation an attractive option, as plant growth is fast and lush. Brazil has been a world leader in production of alcohol fuels from biomass since the 1980s, and today, 24% of the vehicle fuel sold in service stations is ethanol. Brazil has much greater energy potential from biomass, but the rise of sugar prices on the international market has dissuaded sugar cane growers from producing greater quantities of alcohol-based fuels because processing costs mean the growers get less profit.

Sugar cane production is also not without social and environmental impacts: it has resulted in a concentration of land use, and a high use of pesticides. Even though ethanol does emit greenhouse gases, the alcohol fuels are considered a net consumer of CO₂, rather than a producer, since the sugar cane plants absorb CO₂ during their growth period.

Brazil's biomass potential is not just from sugar cane, but from wastes from rice, food-oil production, and sawmills. Maurício Tolmasquim, of the University of Rio de Janeiro's Engineering Research Institute (COPPE), stated that the nation's sugar cane waste alone could generate 10,000-18,000 MW of electrical energy, and generate up to 800,000 jobs. Brazil is one of the world's largest producers of soybean oil – another large potential source of energy. Pilot projects have also demonstrated the potential of palm oils for use in diesel engines, with greater efficiency than current diesel fuels.

One of the revelations at the renewables seminar was the fact that Brazilian government planners have now raised the estimates of the nation's wind generating capacity to 143,000 MW – five times previously estimated, and double the country's current installed electrical generating capaci-

ty. Most of this potential is in the northeast, along the Atlantic Coast and in the São Francisco River valley. Francisco Antônio Aidar, of Wobben Windpower, said that although only 22 MW has so far been installed in Brazil, more than 4,000 MW of wind farms have already been approved by federal regulatory agencies.

However, according to Aidar, the reduction in the price paid by the government to independent energy producers for energy uploaded to the national grid has put the brakes on new investment in wind generation. The "base price" paid by the Brazilian government to independent producers is currently US\$30/mWh, while the wind generating companies are saying they would need approximately \$65/mWh to make their investments feasible. Still, wind power is expected to be Brazil's fastest growing renewable-energy supply in coming years. Brazilian energy specialists also said they envision a future where solar and wind technology can be "nationalized," with all components of these units being manufactured by nationally owned and operated companies. Currently, most of the manu-

facturers of these systems are European, North American and Japanese, and key components are imported, making these options highly susceptible to currency devaluations.

Equatorial Sun Power

Brazil's intense solar radiation in the equatorial region gives it huge potential for solar power. Some 20 million Brazilians currently lack electricity in their homes, and solar power is a very effective way to electrify remote communities in rural areas. About 12 MW of peak power have been installed in rural areas, principally in hospitals and schools, and for telecommunications and water pumps. Presently, the cost of photovoltaic installation is quite high, about \$7,000/kw, and even higher considering the need for periodic battery changes. Still, given the prohibitively high cost of extending the grid to rural communities, solar energy can play an important role in promoting rural development.

The government has a goal of installing one million solar units in rural areas, but so far only 106,000 have gone up in three years

of operation. One problem has been that solar units have been imported, principally from Japan, and Brazil lacks qualified installers and service workers to maintain these units, resulting in many solar systems faltering after several months or years of use.

Solar hot water systems are another good option for reducing Brazil's energy footprint. Last year's energy crisis resulted in a 40% increase in installation of new thermal solar systems, but as the crisis abates, the advance of this technology could slow. Brazilians have widely adopted energy-intensive electric shower heads, which consume 6% of the country's electrical energy, and create problems principally in peak periods of late afternoon and early evening. Brazil's Mines and Energy Ministry has set as a goal the installation of nearly 400,000 solar hot water systems in the next two years to replace these shower heads, a goal it admits will be difficult to attain. Electric shower heads are in themselves extremely cheap, costing \$10 or less. However, according to official data, each shower head requires an investment of more than \$1,000 in new electrical-generat-

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South Africa's Largest Utility Unveils Energy Conservation Plan

by Ryan Hoover

Another major, energy-intensive economy in the global South is also looking to revolutionize its energy supply system. Africa's largest electric utility, the South African-based Eskom, recently announced that demand-side management (DSM) could reduce South Africa's power demand by up to 11,000 megawatts. These huge energy savings could significantly postpone socially and environmentally destructive power projects like Mozambique's Mepanda Uncua Dam (which Eskom has expressed interest in), and they would come at a mere fraction of the cost. It is yet to be seen, however, whether the political will exists to allow DSM to realize its potential.

DSM influences the amount or timing of energy demands to use scarce energy resources most efficiently. Through incentives and regulations, it conserves power that is already being produced, thereby postponing or even preventing costly investment in large-scale projects.

DSM has numerous advantages over the construction of new power plants:

- Because it uses existing supply, DSM does not have any significant additional impacts on people or the environment;
- It is far less risky economically than building a large dam or power plant;
- It is much cheaper than constructing new power plants. DSM measures typically cost less than US\$0.02 per kilowatt-hour (kWh) while power from existing plants costs more than \$0.05 per kWh;

■ It creates more jobs than new power plants. It takes many more auditors to inspect one million buildings, make recommendations, add insulation, and install efficient lighting, than it takes construction workers to build the power plants necessary to provide energy to the same one million buildings.

Eskom has had a large energy surplus for years. It currently only uses 80% of its 40,000MW generating capacity. More South Africans are enjoying the benefits of electricity than ever before, however, and demand is increasing. Residential energy consumption is expected to grow at an annual rate of 15% over the next decade.

This rapid growth creates a dilemma for Eskom. Residential electricity customers use the most electricity during the evening and early morning. As a result, Eskom's capacity to cover these peak periods is shrinking rapidly, while off-peak surpluses remain high. Eskom projects that daily peaks will outstrip the surplus by 2007. The challenge is to find ways of meeting these peak needs in a cost-efficient manner.

When Eskom unveiled its DSM program in April, it announced that it could achieve a savings of 7,300MW by 2015 through a combination of DSM programs (equivalent to five Mepanda Uncua-size power plants). Moreover, Eskom noted that this was conservative, and that a savings of 11,000MW is feasible.

This year Eskom aims to save 180 MW through DSM. Unfortunately, because of a late start and internal politics, Eskom will probably only realize 30% of this year's targets. The first projects began in July.

Tens of Thousands May Lose Livelihoods Due to Nam Theun 2

by Susanne Wong

A new survey reveals that at least 120,000 to 130,000 Laotians rely on the Xe Bang Fai River for their livelihoods. These people are at risk of losing their livelihoods if the Nam Theun 2 Hydropower Project in Laos is built.

The stalled Nam Theun 2 Dam will flood a 450-square-kilometer area of the Nakai Plateau, displacing 4,500 people. It will also divert water from the Theun River to the Xe Bang Fai River, seriously disrupting riverine ecosystems that people depend on. Water flow on the Theun River would be greatly diminished below the dam, while flow would be increased on the Xe Bang Fai.

The new study's estimate of people who use the Xe Bang Fai River is up to two and a half times higher than that of the World Bank, which is considering funding the project. In 2001, the World Bank's Panel of Experts on Nam Theun 2 stated that over 50,000 people live in the Xe Bang Fai Basin.

"This survey should be a red flag to the World Bank," says Grainne Ryder, of the Canadian group Probe International. "Despite millions spent on a decade of planning the Nam Theun 2 Dam, the Bank has grossly underestimated the number of people whose livelihoods are at risk for this project. This survey shows that rivers like the Xe Bang Fai are of immense economic importance to the people of Laos. To appropriate this river for hydropower is to knowingly invite social upheaval."

Nam Theun 2 is expected to generate about 1,000 MW of power primarily for export to Thailand. The project is currently on hold pending the signing of a power purchase agreement between Thailand and Laos and the agreement of the World Bank to provide a partial guarantee.

While the new report, "The People and Their River: A Survey Of River-Based Livelihoods in the Xe Bang Fai River Basin in Central Lao PDR," by Bruce Shoemaker, Ian G. Baird and Monsiri Baird, does not directly consider issues related to the Nam Theun 2 Dam, it sheds new light on the complex relationships that people have with the natural resources in the basin. The Xe Bang Fai is one of the major rivers of central Laos and flows from its headwaters in the Say Phou Louang mountain range along the Lao-Vietnam border down to the Mekong River.

In their travels to 24 villages, the researchers gathered data showing that aquatic and forest resources, along with agriculture, provide the foundation for many villagers' livelihoods. For instance, researchers documented how fishing methods have adapted to the ebb and flow of the river – people fish in the main river during the dry season and move to the seasonally flooded forests and wetlands during the rainy season as the fish migrate. Many villagers rely on the cultivation of riverbank vegetable gardens for food and income. Some collect edible insects, frogs, shrimp

and plants from seasonally flooded forests and wetlands. All villages located along the lower and middle sections of the Xe Bang Fai River rely on lowland rice farming, which is dependent on the deposition of silt during annual flooding to fertilize the soil.

A female elder of a village in Mahaxay district best summarized the interdependencies that have evolved between people and the river. "I was able to raise five grandchildren because I could catch fish, shells, and crabs in the stream during the dry season and find bamboo shoots, rattan shoots, and wild vegetables in the area near the stream. I fish in the rice fields during the rainy season. I have not had much money but my grandchildren and I have been able to survive."

The report concluded that the basin is "a fragile system that is very vulnerable to change" and called for additional research to examine the complex natural resource management and development issues in the basin.

"Without understanding and appreciating these livelihood links, there is the danger that poorly conceived development initiatives, even if well-intentioned, could have many unforeseen results and the potential for doing more harm than good," concludes the report. ■

For a copy of the report, contact the Lao PDR/Canada Fund, P.O. Box 5988, Vientiane, Lao PDR. The report will soon be available electronically at www.irm.org.

Villagers Chart River Recovery Since Pak Mun Gates Opened

by Susanne Wong

Since the Thai government opened the gates of the Pak Mun Dam over a year ago, Mun River fisheries have been flourishing and people's livelihoods have begun to recover, according to a new study based on affected people's research. People affected by Pak Mun initiated the research program to investigate the effects of opening the dam's gates and to empower communities by promoting local knowledge on resource management.

"Local villagers have been catching fish and living in this area for decades and have a rich knowledge of the river ecosystem and fisheries," said Chainarong Sretthachau of Southeast Asia Rivers Network (SEARIN). "This study reaffirms that knowledge and shows that their wisdom is valuable for the

management of natural resources within Thailand."

The full report, compiled by the Thai groups Assembly of the Poor and SEARIN, is expected to be released very soon.

Pak Mun Dam was built in 1994 by the Electricity Generating Authority of Thailand, with financing from the World Bank. After a decade of resistance by local villagers, the government opened the gates for one year and commissioned studies on fisheries, social impacts and the importance of the dam's contribution to the country's electricity supply. The studies, being carried out by Ubon Ratchathani University, will be completed in August, at which time the Thai government will decide whether the dam's gates should remain permanently open.

The villagers' research found that opening the dam gates has stabilized local communities' food security. Villagers living along the Mun River and its tributaries can once again catch fish, cultivate vegetables in riverbank gardens and collect food plants and herbs on islands, riverbanks and rapids previously underwater from the dam. Water is available for daily use. The villagers have returned to using the rapids and riverbanks for ceremonies such as the songkran or Thai New Year festival. Villagers of upland communities can once again fish. Small businesses and local tourism enterprises have also profited from the opening of the dam's gates.

Assembly of the Poor and SEARIN report that 152 species of fish have returned to the

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Forced Labor on the Shwe Gin River in Burma

by Ken MacLean and Mahn Nay Myo

EarthRights International (ERI) has received credible reports regarding the use of forced labor to construct a new hydroelectric dam on the Shwe Gin River, near Kyaut Nagar in Eastern Burma. This predominantly Karen area, north of Shwe Gin Township, is home to thousands of "internally displaced" people who have been repeatedly forced out of their homes by the military junta's activities. The dam project, which will eventually dislocate them once again, is currently pushing the local people further into poverty by stealing their labor.

According to villagers interviewed by an ERI fact-finding team in May, soldiers routinely force them to work on the construction project. According to one local man, "We can only come back after we finished the work in the camp. In the camp, they don't have water or food for the workers. The military orders the villagers to do what they want."

Official information regarding the project, which is located on the edge of the armed conflict, is extremely difficult to obtain. The project is overseen by the state-owned Myanmar Electrical Power Enterprise (MEPE). In early 2001, four Japanese technicians working for an undisclosed company conducted a survey of the area. Construction began shortly after and is to be completed in 2005. No social or environmental impact assessment was carried out prior to beginning construction. Reconnaissance of the area also reveals the construction of roads, military barracks, a helicopter pad, and surveillance posts on the western side of the river. The area surrounding the dam site is now heavily militarized.

Wretched History

The State Peace and Development Council (SPDC), the military junta ruling Burma, targeted the area around the Shwe Gin River for its infamous "Four Cuts" operations, an anti-insurgency technique. The "Four Cuts" was intended to cut the links between civilians and anti-Rangoon resistance groups by stopping the flow of food, money, intelligence information, and recruits and was used as part of the SPDC's brutal military struggle against the Karen National Union (KNU) during the late 1970s and early 1980s.

During this tumultuous period, 45 villages, all located within five miles of the Shwe Gin River, were forced to relocate at gunpoint. Thousands of ethnic Karen abandoned their homes and ancestral lands without any compensation and tried to rebuild their lives at the relocation site near Shwe Gin Township. Thousands more opted to eke out a meager living in the surrounding jungle as "internally displaced people." As the situation stabilized in the mid-1980s, most people returned home and resumed their normal lives. But in 1988, the SPDC's military offensive against the KNU forced people to flee and these villages were completely destroyed again. Nearly all of these villages remain empty today.

Local people, who were required to carry out forced labor related to the construction of the dam, report that the area from Kyuat Nagar Village north to Sumuhte village is likely to be flooded. When this occurs, the local economy will be destroyed. In the meantime, SPDC officials and non-local entrepreneurs are exploiting the area's natural resources.

Gold Mining: Since construction began on the dam in early 2001, the military began illegally issuing gold mining permits in order to raise funds to support its operations.

According to the interviewees, military commanders claimed that the land belongs to the Government and have since been selling permits to ethnic Burmans come from outside the area. Local farmers, most of whom have worked the land for generations but lack official papers, have received no compensation. They have had to watch as the economic migrants have dug up their crops, cut down their fruit trees, and polluted water supplies in the search for gold.

Logging: Before dam construction and the gold mining, 200 orchards lined the banks of the Shwe Gin River. According to local records, there were more than 3,000 acres of Shaut (a kind of lemon-lime). One-third of Burma's Shaut crop comes from this area, as well as other valuable cash crops including betel nut and durian. Rubber trees, originally planted by the British during the colonial period, still stand as well. Due to the construction and gold mining, local people report that large numbers of the Shaut trees have already died. The loss of the trees has dramatically reduced their income, making it difficult to pay taxes and provide for their families. In 2003, the situation is expected to deteriorate further as the military has announced that all trees will be cut down and sold prior to inundating the area.

Forced Labor: Since 1999, the SPDC has issued a series of Orders and Instructions that have gradually outlawed all forms of forced labor in Burma. However, the implementation of these decrees has been arbitrary. Local commanders around Kyaut Nagar Village, for example, told the headman that if the villagers didn't want to provide porters to carry food, water, and ammunition to the frontline for the military, each household would have to pay 5,000 Kyat per year, a significant sum for subsistence farmers. While some people were able to pay, most could not, and have to work as unpaid laborers on a rotating basis. Men caught without ID papers or outside at night past curfew (even on their own property) are routinely arrested and forced to work for the military as porters. As a result, most of the villages around the dam remain empty. Without legal recourse and increased international pressure for change, people feel they have no choice but to submit or flee. ■

Pak Mun continued from page 10

Mun River, most of which are migratory species that travel from the Mekong River to the Mun to live, feed and spawn. The return of fisheries has brought a resurgence in the use of fishing gear, which had in many cases been left to deteriorate while the dam was operating. According to the study, fishing gear not only has practical use for catching fish, but also reflects community values and local fishermen's knowledge of the Mun River ecosystem. It guarantees that there will be food for the family and the community, represents the passing down of knowledge to future generations and is a source of

honor and dignity for fishermen. Since the opening of the dam's gates, 22 types of fishing gear made obsolete by the dam are now in use again.

"The research is a confirmation that crises and disputes in managing the Mun River basin can be turned into opportunities if the power of managing resources is shared with all people rather than having one group of people monopolizing this power," concludes the study. ■

Preliminary findings of the villagers' research are available at www.rwesa.org.

The author is the Senior Advisor to EarthRights International's Burma Project. ERI conducts fact-finding research on a range of human rights and environmental abuses in Burma. For more information, visit: www.earthrights.org.

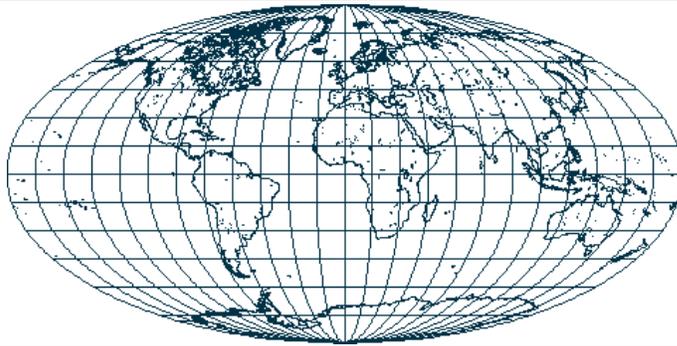
SHORTS

A record number of US dams – 63 in the 15 states and the District of Columbia – are scheduled for removal this year, says the Washington, DC-based group American Rivers. These removals will bring US dam removals to over 100 since 1999, when the breaching of Maine's Edwards Dam garnered national attention. The Association of State Dam Safety Officials estimates that about 30 percent of America's dams have reached the end of their useful lives.

The Australian government in July rejected a proposal to buy and close the nation's largest cotton farm in dry Queensland state to divert water into the stressed Murray Darling River basin and fight rising salinity. The provincial government had called on the national government to purchase Cubbie Station, an 80,000 hectare farm whose dams can store up to half a million megalitres of water – more than Sydney Harbor. But the national government dismissed the A\$160 million purchase, calling it unrealistic and too expensive. A new study shows that up to 26 million hectares within the basin could become salinity wasteland without urgent steps to improve land use practices in the region.

Forty-three people have been arrested since the collapse of Zeyzoun Dam in northern Syria on June 4, 2002. The disaster killed 22 people and flooded several villages. The collapse of the dam has sparked strong calls from the opposition party for reforms and tough anti-corruption measures. The official daily newspaper Tishrin blamed the disaster on faulty studies, bad construction and mismanagement and said the government would round up those responsible for the dam's defects. The Zeyzoun Dam was built with a capacity of 71 million cubic metres in 1996 on the Orontes River, which has been used for irrigation of the surrounding countryside for centuries.

News Briefs



UPDATES

CHINA: Farmers forced from their villages by construction of the Three Gorges Dam have been detained after protesting discrimination and hardship in their new communities. The Hong Kong based Information Center for Human Rights and Democracy reported that 40 migrants, representing a group of 1,119 who had been relocated to Qingdao in eastern China, were taken into custody July 21 after scuffling with police while trying to deliver a petition to the city government. Qingdao government officials said there had been a peaceful demonstration and claimed that no arrests were made.

The protest was prompted by officials' refusal to take action after the beating of three migrants by longtime Qingdao residents. According to the center, the migrants, who came from Chongqing in western China, complained their new land was too far from their homes and they had no money to buy farming equipment. Rice, their staple food, cost three times as much in Shandong than at home, and officials had provided an inadequate 100 yuan (\$12) a month per person in subsidies, the Center reports. Migrants also suffered routine discrimination at the hands of municipal authorities and the area's residents, who speak a different dialect.

Earlier last year, Three Gorges authorities arrested four men in Yunyang, another town slated for submergence, during their attempts to petition the central government with grievances including corruption of resettlement funds and inadequate compensation. The men were sentenced to 4-6 years in prison on charges of "interfering with Three Gorges resettlement."

More than 1.3 million people are being relocated ahead of the filling of the 400-mile-long reservoir behind the Three Gorges Dam – the most people ever resettled for a dam. The majority are being forced hundreds or thousands of miles away to unfamiliar territory. Relocates have been reported to return to their residence in the Yangtze

valley. The first stage of reservoir filling is expected to begin in November.

ICELAND: The US aluminum giant Alcoa signed an agreement on July 19 to build a large aluminum smelter and a 190-meter-high dam in Iceland's glacial wilderness. The dam and smelter project is expected to cost up to US\$3 billion.

The latest plan for the huge development scheme calls for a number of dams on two of the area's three wild rivers, 24 miles of tunnels, and many miles of roads in Europe's largest highland wilderness. River flow in the scenic canyon below the largest dam will disappear altogether except for one or two summer months, environmentalists report.

A July 5 sign-on letter from Icelandic groups to the chief executive of Alcoa states, "In Iceland, there is no dispute that the project will have significant, direct and lasting impacts on the most diverse and well-preserved area in the Icelandic highlands." The letter urges Alcoa to reconsider its involvement in the project.

The dam scheme was rejected by the Icelandic Planning Agency on August 1, 2001 because its benefits did not outweigh the "irreversible" environmental damage to Iceland's rare ecosystems. The Icelandic National Power Company, Landsvirkjun, a partner in the scheme, submitted an appeal to Iceland's environment minister, who then overruled her own Planning Agency and granted permission to proceed with the project. One environmental group has stated it will sue the environment minister and Landsvirkjun, for overturning the previous decision by the planning agency.

The Icelandic Nature Conservation Association is urging the public to besiege Alcoa with e-mails demanding it pull out of the development. "This is an appeal to Alcoa and the conscience of its board," said Arni Finnsson, the group's director. (See <http://www.inca.is/> for more information).

Activists want the area made into a national park. Ecotourism has been expanding dramatically in recent years, and the stunning landscape is already a draw for tourists.

US: Thirty-five years after federal engineers drained all the water from a scenic stretch of California's American River to construct a 700-foot-tall dam, the forces for a wild river have prevailed. The engineers are returning to the river, but this time they'll turn back the clock, and remove the 35-foot-wide pipe that has diverted the river since 1967. They'll put its clear, cold waters, its fish and plants back into the abandoned river bed – without the controversial Auburn Dam ever having been built. In an event with little precedent during its 100-year history of taming Western rivers, the federal Bureau of Reclamation is finishing a plan to flood the construction zone for what would have been one of the largest dams in the United States. The project will open seven miles of river for whitewater rafting by 2004, restoring habitat for fish and other species. Politically, it virtually guarantees that Auburn Dam – slated by President Lyndon Johnson's administration to be taller than the Washington Monument but halted over earthquake concerns in the 1970s – will be impossible to resurrect or build. Environmentalists, taxpayer groups and lawmakers have battled over the dam for more than 20 years. "This is one more nail in the coffin for Auburn dam," said Ron Stork, senior policy analyst with Friends of the River, a Sacramento environmental group.

BELIZE: The national Public Utilities Commission acknowledged in June that it never approved plans for a hydroelectric dam that would flood the Macal River Valley, a critical wildlife corridor sheltering tapirs, howler monkeys and rare scarlet macaws. The admission was made in Belize's Supreme Court, in response to one of two lawsuits brought by Belizean environmentalists.

Road construction to the dam site was halted earlier this year when consumer and environmental advocates filed two lawsuits challenging the Belize government's approval of the Chalillo Dam.

Lawyers for the Belize Electric Company (BECOL), a subsidiary of Canada-based Fortis, Inc. which wants to build the dam, admitted that BECOL does not have a license to operate and has not applied for permission to build the dam. Belize's Public Utilities Commission (PUC) said only that it had approved a power purchase agreement for the dam, but not its construction.

As a result, Supreme Court Justice Christopher Blackman dismissed the lawsuit as "premature." The groups will appeal the ruling, arguing that construction began after the PUC's approval of a power purchase

agreement without first holding public hearings and inviting competitive bids from private power suppliers, as required by the country's electricity act.

Ambrose Tillet, a Belize energy expert and advisor to the NGOs filing the suit, said he is disappointed by the judge's ruling.

"The Public Utilities Commission is required by law to protect rate-payers from monopoly abuse by holding public hearings and inviting competitive bids from potential suppliers before approving any new power projects," he said. "Instead, it rubber-stamped a backroom deal that gives Fortis the monopoly power to overcharge Belizeans for unreliable hydro and deny us access to more competitive suppliers."

The judge did, however, order BECOL to release all project contracts signed for the dam. "Belizeans can now judge for themselves if the Chalillo serves their interests," Tillet said. *Probe International*

WATER WAYS

CANADA: Canada will implement new environmental regulations to reduce water pollution from metal mines across the country, Environment Minister David Anderson announced in mid-June. The new rules impose limits on releases of cyanide, metals and suspended solids, and prohibit the discharge of effluent that is lethal to fish. The regulations will go into effect in December.

The regulations require metal mines to conduct environmental monitoring to identify any adverse effects of their effluent on fish, fish habitat, and the use of fisheries resources.

These new rules were developed through consultations with the mining industry, environmental organizations, First Nations, and local governments. They apply to the nation's 100 metal mines.

Conservationists such as the Environmental Mining Council of British Columbia have been warning for years about the deadly effects of acid mine drainage on fish.

"Acid mine drainage is the mining industry's greatest environmental problem and its greatest liability, especially to our waterways. An acid generating mine has the potential for long term, devastating impacts on rivers, streams and aquatic life, becoming in effect a perpetual pollution machine," the council states.

THAILAND: Plans to create a navigation channel along the Upper Mekong River hit a roadblock on July 31, when the Thai government called for a review of the project. Thai-

land will not clear rapids and shoals in its navigable section of the river until border demarcation with Laos is resolved, said Preecha Phetwong, a senior official.

The river forms about 1,100 kilometres of the border between Thailand and Laos. The river boundary has not yet been defined.

In January, the Thai Cabinet backed a plan to blast rapids, shoals and reefs in the river to allow the passage of 500 ton ships to travel from southern China to northern Thailand and northern Laos. The project is supposed to boost trade and tourism between the four nations. However, local groups have raised concerns that the project will damage the ecosystem.

"Dredging and blasting of rapids for this project will harm the river and impact villagers who rely on the Mekong for a living," said Chainarong Sretthachau, director of Southeast Asia Rivers Network. "We welcome the government's decision to take another look at this project."

REPARATIONS

SUMATRA: Citizens of Indonesia's Sumatra Island plan to sue the Japanese government and its affiliates in September for damage caused by a Tokyo-funded hydropower dam, the Japanese Kyodo News reported on July 8. The case would mark the first legal challenge over a project paid for by Japan's official development assistance, Kyodo added.

About 3,000 people from 13 villages on the island are planning to file a lawsuit in the Tokyo District Court to seek compensation from the Japanese government, the Japan International Cooperation Agency, the Japan Bank for International Cooperation (JBIC) and Tokyo Electric Power Services Co., the report said. These agencies were involved in building Kotopanjang Dam, which Japanese supporters say caused the forcible resettlement of 23,000 villagers.

According to Japanese supporters, the local residents have been left without proper living facilities on the resettled land, such as clean water, and haven't been guaranteed job opportunities there, meaning they could later become developmental refugees.

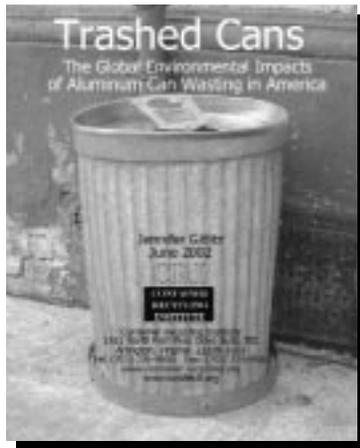
"The plaintiffs and local residents are seeking restoration of their living conditions and natural environment, while a growing number among them are calling for the dam to be dismantled," said Akihiko Oguchi, who heads the Japanese lawyers representing the plaintiffs. "We may include its removal in our demands when we file the suit."

Trashed Cans: The Global Environmental Impacts of Aluminum Can Wasting in America by Jennifer Gitlitz. Published by Container Recycling Institute, 2002. \$20; order from www.container-recycling.org, or (703) 276-9800.

Americans wasted 50.7 billion aluminum beverage cans in 2001 – greater than the amount used nationally for trucks, buses, bridges and roadway applications combined. *Trashed Cans* notes that the energy required to replace the aluminum cans wasted in 2001 was equivalent to 16 million barrels of crude oil, enough to meet the electricity

needs of all the homes in Chicago, Dallas, Detroit, San Francisco and Seattle for a year. “The single-serving aluminum can is the most energy-intensive and environmentally destructive beverage container on the market,” the report states.

Aluminum has been called “frozen energy” because it requires so much electricity to manufacture. *Trashed Cans* docu-



ments the sharp rise in aluminum can wasting over the past 30 years and draws a detailed picture of the impacts of extracting energy and resources to replace these

wasted cans. It describes some of the reasons for the decline in recycling, and suggests ways for fixing the problem.

Because aluminum production relies heavily on hydropower (see *WRR*, October 2001), the toll on rivers and river communities has been heavy. Dams built to power smelters have flooded over 30,000 square kilometers of forested land worldwide, and caused the relocation of over 200,000

indigenous people in nine aluminum-producing countries, says Gitlitz.

The problem is not likely to be solved soon. “In 2001, Americans consumed 9 billion more aluminum beverage cans than they did in 1991, yet recycled 6 billion fewer,” the report states. A multi-pronged approach – financial incentives, education, legislation, and expanding recycling pro-

grams – are all needed, but making recycling financially attractive is key. “The only proven mechanism for achieving beverage container recycling rates of 80% or more is the deposit system,” the report notes.

“Flooding the Land, Warming the Earth: Greenhouse Gas Emissions from Dams” by Patrick McCully, published by IRN, 2002.

Hydropower is not emissions-free. This new report which summarizes the latest research on greenhouse gas emissions from dams and reservoirs reveals that greenhouse gases have been measured at all 30 reservoirs where research has been carried out. In tropical areas, hydropower reservoirs may be much worse climate polluters than even coal power plants, the report notes. Yet international climate negotiators have so far largely ignored the role of dams and reservoirs in global warming.

The report concludes that because of their negative social, environmental and climate impacts, large hydropower projects should not receive carbon credits under climate trading schemes such as the Clean Development Mechanism (CDM) of the Kyoto Protocol. ■

The report can be downloaded from www.irn.org.

Sichuan Dam continued from page 1

al flow in Min River is 90 billion cubic meters, which means a weak flood prevention capability.

Seismologists from the Earthquake Bureau warned at the meeting that Zipingpu is sited too close to an active fault line (just 112km away). They cited fears that the dam could trigger disastrous earthquakes. They pointed out that in 1933, an earthquake in the region caused landslides which killed 9,000 people in the upper Min River area.

Other critics cited fears about the dam’s effect on biodiversity and the technical challenge of preventing silt building up behind the dam. The biggest concern raised at the meeting was that a 20-meter-high regulating reservoir, Yuzui, which engineers are proposing just 700 meters away from Dujiangyan, would destroy the area’s scenery and end Dujiangyan’s role as an effective irrigation and flood management system.

Soon after the September 2000 meeting, plans for the Yuzui Dam were officially put on hold. The Zipingpu project was officially launched in July 2001.

Since power sales are necessary to pay back Zipingpu construction loans, dam opponents fear that once Zipingpu is completed, plans for Yuzui are likely to be revived. The Yuzui dam would re-regulate Zipingpu’s releases and increase its power generation by more than 50%, and have many serious impacts of its own.

The Chinese language press outside of the mainland has been vocal in fighting the dam. The Hong Kong magazine *Cheng Ming* ran a story by a Chinese hydrologist with the headline “Please Save Dujiangyan: Dujiangyan will disappear if the senseless Zipingpu project moves forward.” A recent article in the Boston-based *Epoch Times*, a Chinese language internet news service,

What Is IRN Doing?

IRN and Friends of the Earth/Japan are working with Japanese journalists to raise concerns and awareness about Zipingpu’s impacts. The groups are pressuring JBIC to refrain from disbursing loans for Zipingpu until the environmental impact assessment is released to the public.

For updates or more information, contact Doris Shen (doris@irn.org).

described the potential harm to Dujiangyan as “the death knell of the essence of traditional Chinese culture.” However, within mainland China, public questioning of the project is taboo. ■

Brazil continued from page 9

ing capacity to guarantee the peak power needed to fuel them.

Brazil also has a long way to go in energy efficiency and demand-side management measures. According to Marina Godoy Assumpção, Coordinator for Energy Efficiency of the Mines and Energy Ministry, Brazil is the third largest exporter of industrial motors in the world. Since many of their customers live in countries with efficiency standards, Brazil manufactures thousands of energy-efficient motors. However, Brazil lacks such standards for engines used in-country, and as a result, 95% of motors used in Brazil are not considered energy efficient. A new law, which has been approved but also still awaits regulation, would require new machines and equipment to be energy efficient.

Célio Bermann of the Sustainable and Democratic Brazil Program emphasized the need for reducing losses in Brazil's transmission and distribution systems. Brazil's losses are quite high, at 15% of all electricity generated, compared with an international standard of about 6%. Bermann said that Brazil could save the equivalent of more than half an Itaipu Dam (the world's largest, at 12,600 MW installed capacity) by modernizing its electrical system. Conference participants agreed that investments in energy efficiency should be prioritized in contracts with electrical generators. Current agreements require that companies investing in the electric sector direct only 1% of their profits to increasing efficiency, and even that modest requirement is not enforced.

The government should also devote urgent attention to retrofitting older dams, Bermann said, which could provide 6,000-8,000 MW of additional generating capacity in the short term – and with no additional environmental costs. Brazil's electricity sector has acknowledged the potential of increasing the efficiency of these dams, but has failed to require dam operators to take action. Several mega-projects from the 1970s and 1980s, including Xingó Dam on the São Francisco River, have never had their design capacity fully installed, and Bermann stated that completing these projects, whose social and environmental impacts have already been felt, should be a priority.

Small hydro, which in Brazil is officially defined as dams with less than 30 MW of installed capacity and a reservoir of three square kilometers or less, could provide a substantial quantity of the "new" energy sources Brazil is projected to need, but is considered controversial. Tolmasquim estimated the potential of small hydro to be between 7,000 and 14,000 MW. Environmentalists at the conference stressed that decisions on small hydro should be made only after consulting with local populations and analyzing the projects' impacts, so that the cumulative impacts of multiple small projects may be adequately studied.

What, then, needs to be done for Brazil to make this transition as quickly as possible? As things now stand, Brazil's energy plan focuses on expanding generating stations, principally large dams and gas-fired power plants. Almost two-thirds of the country's hydro potential is in the rivers of the

Amazon, meaning that the rainforest, indigenous and riverbank communities will be asked to pay a heavy price in coming years. Another 20% is in the Paraná and Uruguay River valleys, which supports a dense population of small farmers. In either case, the number of dam-affected could rise significantly in coming years.

One solution proposed at the meeting was for Germany to sign an accord with Brazil to promote the transfer of alternative energy technologies. According to Lúcia Schild Ortiz of Friends of the Earth Brazil, "Instead of providing support for the completion of the Angra III nuclear plant, Germany can help spur the transition to new forms of energy in our country." Brazil has spent \$1.2 billion so far on the still-incomplete Angra III plant built with German technology, and needs to decide whether to invest at least an additional \$1.7 billion to finish the project.

Much of Brazil's energy planning is still based upon supplying heavy industries – just 200 of these companies consume near half the nation's electrical energy. The transition to an era of alternative energy sources will therefore also have to involve a re-examination of the country's development model. Currently, decisions are highly centralized in an elite technocracy. According to Hélio Mecca of the Dam-Affected People's Movement, "There are no alternatives if we don't change the pattern of consumption in our country." A more democratic decision-making process could help push Brazil's energy future forward. ■

Resettlement continued from page 7

[AESNP's] land without our written permission is criminal and should therefore be stopped immediately failing which we shall have no alternative but to refer the matter to police and cause your arrest." No explanation is given as to exactly which land is being referred to. The people at Naminya understand that the letter is ordering them not to cultivate their new plots (as they don't yet have land titles, the land formally belongs to AESNP). The families thus see a choice of either hunger or arrest.

Wanyana explained that he had been a fisherman before being evicted. Now he is distant from the river (it's about an hour's walk) and the place where he used to fish is fenced off. One ex-fisherman stated that "if we went there now we would come back with whip marks on our backs."

An April 2000 report on Bujagali by engineering consultants Acres International

reveals that AES has long been aware of people's dependency on fishing, but apparently chose to ignore the information. This report states: "The baseline survey indicates that 53% of households fish in the Nile River. Much of the fish is sold commercially. The developer believes these [income figures] are exaggerated in anticipation of compensation." It notes that there is no baseline data on fish landings, so it is unclear why the company claims the income figures are exaggerated. Acres notes that "There is no compensation plan for fishermen... it appears a compensation plan will be difficult to develop." In 2000, IRN wrote the World Bank on this lack of information on fisheries, stating, "It is clear that too little is known about fisheries to proceed."

The result of reduced access to land and the river is that the evicted families now have less food to eat, in terms of both its

variety and quantity. One man told us that "now we sleep with empty stomachs."

When we asked if the resettled people believed, as AESNP claims, that they were better off after their move, the answer was unanimous. The group we talked to said they would "return running" if they could (their homes were flattened by AESNP after being vacated).

The conditions we found at the Naminya site contrast markedly with the glowing claims of successful resettlement given in AESNP's publicity materials. They are all the more incomprehensible since so far, only about 30 families have been resettled. Another 70 are scheduled to move to Naminya in the future. AESNP, their Panel of Experts and the World Bank share a responsibility to make good on their rhetoric and immediately begin a program to ensure that the resettlers' living conditions are drastically improved. ■

Group Calls Attention to Canada's Endangered Rivers

by Elizabeth Brink

Canada's rivers are under siege. To draw attention to current threats and to motivate citizens and governments to better protect and restore these national treasures, the Vancouver-based group Earthwild International has launched a project to annually document Canada's "Ten Most Endangered Rivers." The first "top ten" list was released in June.

Sharing top position on this year's list are Quebec's Rupert and Kipawa rivers. Both have been slated for extensive development by dam developer Hydro-Quebec, which got the green light for massive expansion of the province's hydroelectric system from Premier Bernard Landry (see *WRR*, Feb. 2002). As many as 24 rivers may be dammed or diverted in the next five years as Hydro-Quebec seeks to add 1,800 megawatts to serve the huge US energy market.

"Quebec should not be allowed to sacrifice magnificent wild rivers like these to feed the insatiable American appetite for energy," said David Boyd, Chair of the Canadian Endangered Rivers Review Com-

mittee. "The claim that hydroelectricity provides clean energy ignores compelling scientific evidence about the impacts on fish, wildlife, and the health of Aboriginal people."

Next on the endangered list is the Petitcodiac River in New Brunswick, where a 34-year-old causeway (a road raised above the river that acts as a dam) has dramatically altered the river and its ecosystem, including a dramatic loss of fish species. Called the Chocolate River for its high sediment load, the Petitcodiac is most famous for its high tidal flows from the Bay of Fundy. The Mi'gmaq First Nation people utilized these flows as part of their ancient transportation route, but the one-kilometer-long causeway has basically eliminated this practice. The detrimental human influence on the river can actually be seen from space.

"The Petitcodiac used to be one of New Brunswick's most beautiful and productive rivers, but all that changed when the causeway was built," said Mark Angelo, vice-chair of Earthwild's river study. "It had a devastat-

ing effect on the river and the ecosystem of the inner Bay of Fundy."

Angelo called on the federal and provincial governments to replace part of the causeway with a bridge and restore the river's unique tidal flow. "With an adequate commitment from government, the Petitcodiac could become a site of one of Canada's great river restoration initiatives," he said.

Other rivers featured in the report are the Okanagan and Fraser rivers (British Columbia), the St. Lawrence River (Quebec), the Detroit River (Ontario), the Peel River (Yukon and the Northwest Territories), the Berens and Albany rivers (Manitoba and Ontario) the Main River (Newfoundland), and the Cornwallis River (Nova Scotia).

"Few countries owe more to their rivers than Canada, and yet our waterways face an array of threats," concludes Angelo. "Consequently, there's a need for all levels of government to develop new and more extensive strategies to better care for our rivers."

To view the full report, visit www.earthwild.ca.

NOTE TO SUBSCRIBERS: Due to an extended leave for the editor, this issue is being combined with the October issue. The next issue will be December.

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